BBA (T&H) Full Time Eight Semester Programme
Choice Based Credit System (CBCS)
(As per NEP 2020 & CBCS Ordinance 14 A)
Study Centre for Tourism
A.P.S University, Rewa (M.P.)

1st Year

SEMESTER – I					
Course Code & Name	Course Type	Theory Paper	Internal Assessment	Maximum Marks	Credits
101 Introduction To Tourism	Major Core	60	40	100	6
102 Management Concepts & Principles	Minor Core	60	40	100	6
103 Indian Economy- An Introduction*	GE	60	40	100	4
104 English Language	AE	60	40	100	4
SEMESTER TOTAL				400	20
CUMULATIVE TOTAL				400	20

SEMESTER – II					
Course Code & Name	Course Type	Theory Paper	Internal Assessment	Maximum Marks	Credits
201 Travel Agency & Tour Operation – I	Major Core	60	40	100	6
202 Tourism Product in India	Minor Core	60	40	100	6
203 Physical Geography*	GE	60	40	100	4
204 Environmental Studies	AE	60	40	100	4
SEMESTER TOTAL				400	20
CUMULATIVE TOTAL				800	40

GE: Generic Elective AE: Ability Enhancement

*Students may choose this course as a Generic Elective or may choose a Generic Elective Course offered in other UTDs at the same level or may choose a Course offered by MOOCs through SWAYAM.

The student will be awarded Certificate in Business Administration (T&H) on successful completion of first year.

2nd Year

SEMESTER – III					
Course Code & Name	Course Type	Theory Paper	Internal Assessment	Maximum Marks	Credits
301 Tourism Impact (I[st])	Major Core	60	40	100	6
302 Cultural Tourism Resource of India	Minor Core	60	40	100	6
303 International Trade & Public Finance*	GE	60	40	100	4
304 Information Technology	SE	60	40	100	4
SEMESTER TOTAL				400	20
CUMULATIVE TOTAL				1200	60

SEMESTER – IV					
Course Code & Name	Course Type	Theory Paper	Internal Assessment	Maximum Marks	Credits
401 Tourism Entrepreneurship	Major Core	60	40	100	6
402 Tourism Marketing	Minor Core	60	40	100	6
403 Communication Skill & Development*	GE	60	40	100	4
404 Event Management	SE	60	40	100	4
SEMESTER TOTAL				400	20
CUMULATIVE TOTAL				1600	80

GE: Generic Elective SE: Skill Enhancement

*Students may choose this course as a Generic Elective or may choose a Generic Elective Course offered in other UTDs at the same level or may choose a Course offered by MOOCs through SWAYAM.

The student will be awarded Diploma in Business Administration (T&H) on successful completion of second year.

BBA (T&H) PROGRAM-PROGRAM AND COURSE OUTCOMES- 2022-2023

No.	***Program outcome***
PO1	Apply knowledge of tourism concepts along with the management theories and practices to solve business related problems in tourism Domain
PO2	Contextualize tourism within broader cultural, environmental, political And economic dimensions of society.
PO3	Foster analytical and critical thinking abilities for data-based decision Making
PO4	Ability to develop value based Leadership ability.
PO5	Ability to understand, analyze and communicate global, economic, legal, and ethical aspects of business.
PO6	identify and understand how new ideas, concepts or products emerge within relevant fields
PO7	communicate key ideas in written texts and oral presentations

Program Specific Outcome

- To offer wide exposure to the students to handle issues in tourism related businesses professionally.
- To bridge the gap between theoretical and practical knowledge of the students by adopting innovative teaching pedagogy.
- To sharpen soft and hard skills among the students for being better professionals.
- To promote entrepreneurial skills among students, for promoting a better ecosystem of business.

I st Semester
BBA (T&H)-101 M1
Introduction to Tourism

Course Objective:
The Primary purpose of the paper is to acquaint the students about the basic and preliminary knowledge of the terms, concepts, systems and trends in tourism. It will form the first step to move forward to interact with the advance knowledge pertaining to tourism.

Unit-I Basic of Tourism

Tourism, excursion, Leisure and Recreation; Tourist, visitor, Traveler; History and evolution of tourism- (Introductory), Thomas cook & early organized travel.

Unit-II Typology of Tourism

International Tourism, Domestic Tourism, Inbound, Outbound, inter- regional, Intra-regional, Typology of Tourism, contemporary trends in Indian Tourism.

Unit-III Tourism system

Components of Tourism, 5 A's of Tourism, Elements of Tourism, Characteristics of Tourism.

Unit- IV Tourism Demands & Travel Motivators

Pattern of movement of Tourists to India, Basic of Tourism Demands, Travel Motivators- Physical Motivators, Inter personal Motivators, Status & Prestige.

Unit- V Future growth and development of Indian tourism

5T's of Brand India, Some Tourism Schemes of Govt. of India- Visa on Arrival (VOA), PRASAD Scheme, HRIDAY Scheme, Introduction of Incredible India.

Reference Readings:

- The Business of Tourism, Holloway, J.C. Pitman Publishing, London, 1994
- Tourism principles and practices, Kumar S., Mishra S. & Mohan J., Oxford Higher Education, 2012.
- Leisure and Tourism, Hayward P., Hiennemann GNVQ Intermediate,Hiennemann Educational Publishers, 2000.
- Successful Tourism Management, Seth P.N. Sterling Publication Pvt Ltd., Delhi, 1997.

Online Resource

- http://Tourism.gov.in
- https://www.nios.ac.in/media/documents/tourism_337_courseE/337
- Economic impacts of tourism- Tourism Teacher

I st Semester
BBA (T&H)-102 MN1
Management Concepts & Principles

Course Objective:
To prepare the budding Managers in tourism and to improve the students basic knowledge to management and managerial skills.

Unit-I Introduction to Management

Concept of Management, Definitions, nature, purpose, Management as an art, science, and a profession, function of Management, Systems approach to Management.

Unit-II Planning

Planning meaning, steps in planning process, purpose, type of plans, management by objectives, Decision making- meaning, definition, importance, ration, process of decision making, limitations.

Unit-III Organizing

Meaning process of organizing, levelफ्ts of organizing, span of management, forms- line, functional. Line & staff and Committee form of Organization, Delegation of Authority and Decentralization, Centralization.

Unit- IV Directing & Motivations

Motivations and Theories of Motivation – X and Y theories of motivation, Maslow's Need Hierarchy theories, Leadership traits and Styles.

Unit- V Communication & Controlling

Communication process and barriers, controlling process, need, feedback and feed forward control.

Reference Readings:

- Essentials of management, Dubrin Andrew J., Thomson Southwestern, 2012 edition.
- Essentials of management: An international & Leadership Perspective, Harold K. and Heinz W. Tata McGraw-Hill Education, New Delhi. 2012, 9th edition.
- Principles of Management. Hill Charles W.L and McShane Steven L., McGraw-Hill Education, New Delhi Special Indian edition.
- Organizational Behavior. Prasad L.M. Sultan Chand & Sons: New Delhi (2014)

Online Resource
- http://ncert.nic.in/textbook/pdf/lebs102.pdf/
- Principles_and_practices of Management.Pdf (gurukpo.com)
- Principles of management:meaning, definition, example (byjus.com)
- Management: Concept, Definition and Process (businessmanagementides.com

I^st^ Semester
BBA (T&H)-103 GEC 1
Indian Economy- An Introduction

Course Objective:
The economics courses also contain projects and activities. These will provide opportunities for the students to explore various economic issues both their day-to-day life and also from issues, which are broader and invisible nature.

Unit I-Introduction

1. Characteristics of Indian Economy
2. Sector Distribution of Workforce
3. Natural Resource Endowments-Land Water, Livestock, Forest and Minerals

Unit II - Agriculture

1. Nature, Importance and Characteristics of Indian Agriculture
2. Trends in Agricultural Production and Productivity
3. Agricultural Finance and Insurance
4. Agricultural Insurance
5. Agricultural Marketing

Unit III- Industry and Foreign Trade

1. New Industrial Policy of 1991
2. Role of Public Sector and Private Sector in Industrialization
3. MSME – Definition Trends and Challenges
4. Start-up-India, Make in India and Aatm Nirbhar Bharat.
5. Indian's Foreign Trade- Importance, Composition and Direction

Unit IV- Planning and Development

1. Indian Planning-Objective, Achievements and Failures
2. NITI Aayog
3. Indian Economic Problems- Poverty Unemployment and Regional Inequality

Unit V- Economy of Madhya Pradesh

1. Salient Features of Madhya Pradesh Economy
2. Industrial Development in Madhya Pradesh
3. Infrastructure Development in Madhya Pradesh- Power, Transport and Communication

Reference Reading

1. Panagariya, Arvind. (2020)- India Unlimited Reclaiming the Lost Glory, HarperCollins Publishers India
2. Mishra and puri (2020)- Indian Economy, Himalaya Publishing House, New Delhi.
3. Rudra Dutt and Sundram- Indian Economy, S. Chand and Company, New Delhi.
4. Hariharan, N.P.(2008)- Lights and Shades of Indian Economy, Vishal Publishing Co., Jalandhar

Online Resource

1. http://www.indiabudget.gov.in/ecomomicsurvey/ebook_es2021/index.html
2. https://des.mp.gov.in/Portals/0/Economic_survey_%202020-21.pdf
3. www.indiabudget.gov.in/economicsurvey

I^st^ Semester
BBA (T&H)-104AEC 1
ENGLISH LANGUAGE

Course Objective: The objectives of the course are to improve the competence of the student's basic language skills and to acquaint student with working official English Language.

I. *Language content:*

A. Structural Items:
i. Simple, Compound and Complex Sentences.
ii. Co-ordinate clauses (with, but or, neither-no, Otherwise or else)
iii. Sub-ordinate clauses- Noun clauses- as subject object and complement. Relative clauses, (restrictive and non-restrictive clauses) Adverb Clauses (open and hypothetical, conditional: with because, though, where, so, that, as long as, as soon as)
iv. Comparative clauses (as+ adjective / adverb + as no sooner ....that)

B. Tense:
i. Simple present, Progressive and present perfect
ii. Simple past, progressive and past perfect
iii. Indication of futurity

C. The passive (Simple present and past, Present and perfect and to infinitive structure)

D. Reported speech
i. Declarative sentences
ii. Imperatives
iii. Interrogative-wh-questions, yes/no questions
iv. Exclamatory sentences.

E. Modals (Will, shall, would, ought, to have to/have got to, can-could, may-might and need)

F. Verb Structures (infinitive and gerundial)

G. Linking devices

Note: The above language item will be introduced to express the following communicative functions:
a. Seeking and imparting information
b. Expressing attitudes-intellectual and emotional
c. Persuasion and discussion etc.

II *Reading Comprehension*: Adequate practice should be provided in reading with understanding through graded materials prescribed in the text book. Attempt should also be made to expand the learner's vocabulary.

III *Writing Skills*: Graded practice should be provided in the basic skills of composition. The following forms of composition should be practiced.
a) Paragraph writing (150 words)
b) Letter Writing (both formal and informal)

IV *Speaking:* Contextualized vocabulary teaching and oral work should be used to strengthen the learner's acquirement of the sound distinction, stress and intonation in English.

IInd Semester
BBA (T&H)-201 M2
Travel Agency & Tour Operation – I

Course Objective:-
The study includes the functions, Regulations for Recognition of Travel Agents, Tour Operators and Excursion Agents. The Role of Sectors like Airlines, different Railways Transport is also covered. The learner will also be familiarized with the contribution of important Associations in these sectors.

Unit-I Travel Agency (Introductory)

Introduction to Travel Agency- Definition, Scope, functions, types of Travel Agency, Source of revenue, History of Travel Trade and Travel Agency Business. Role and responsibility of Travel Agents.

Unit-II Tour Operations (Introductory)

Definition of Tour Operations, Functions, Types of Tour Operators, Challenges to tour operators.

Unit-III Travel Agency Business

Travel Distributions System, Travel Market: Local, National, and International, Special Interest Travel Agencies and Tour Operators.

Unit- IV Travel Agency Organization

Organization Structure of Travel Agency/ Tour Operators, Procedure for recognitions of Travel Agency and Tour Operations from Ministry of Tourism, Govt. of India.

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Unit- V Tour Package & Design

Introduction- Package Holidays, The economics of holidays, Planning a package holiday program: Research and product development, Contracting, Costing-fixed and variables cost in tour operation, Brochure productions and pricing Selling package holidays.

Reference Readings:

Text Books

- Bhatia, A.K. (2012) Business of Travel Agency & Tour Operations Management, Sterling Publishers.
- Butler, R.W. (2006). The Tourism area life cycle: Applications and Modifications. Bristol: Channel View Publications.
- Claire, H.T. & Jones, E.E. (2005). Tourism SME$_s$, Service Quality and Destination Competitiveness. London: CABI.

Reference Books

- Gunn, C. (2002). Tourism Planning: Basic, Concept and Case. New York: Routledge.
- Morgan, N. Prichard, A., & Pride, R. (2001), and Destination Branding: Creating the Unique Proposition. London: Butterworth and Heinemann.
- Ritchie, J.B., & Crouch, G.I. (2003). The Competitive Destination: A Sustainable Tourism Perspective. London: CABI

II^nd Semester
BBA (T&H)-202 MN2
Tourism Product in India

Course Objective:
Tourism begins with the motivation to visit attractions at destinations. The attractions may be natural or manmade (Cultural). The natural attraction such as mountains, hills, forests with wild animals, coastal area and islands are attracting all. India is seventh largest country with rich diversity of natural tourist resources. It is very necessary for the students of tourism to know about these tourist products. This course will help the students to give an insight about the rich natural tourist products of India.

Unit-I Introduction of Tourism Product

Definition of Tourism Products, Concept of Tourism Products, Classification of Tourism Products, Nature of Tourism Products and Feature of Tourism products of India: Seasonality and Variations.

Unit-II Art of India

Types and Forms of Classical Dance – Bharatanatyam, Kathak, Kuchipudi, Manipuri, Kathakkali, Odissi. Folk dance of Different Regions – Hikat, Yakshgana, Ottam, Lavani, kolattam, Bihu, Garba-Dandiya, Ghoomar, Jatara, Bhangra-Giddha, RassLeela, Grida, Dhol Cholam, Cherao-Nritya, Rangma, Lava.

Unit-III Tangible and Intangible Heritage

Museum, Park, Ancient and Historical Monuments, Temple and their Architectural Style, Fair and Festivals, and Indian Cuisine.

Unit- IV Geographical based Tourism Product

Famous Hill Station- Kufri, Darjeeling, Coorg, Pavagadh, Manali, Shimla, Shillong, Munnar, Mount-abu, Leh and Ladakh. Desert- Jaisalmer and Rann of Kutch. Coastal areas and Beaches- Goa (Calangute, Dona-Paula, Palolem, Agonda) Kerala (Kovalam, Varkala and Marari) Maharashtra (Juhu and Ganpatipule) Gujarat (Dwarika, Mandvi, Somnath)
.

.Unit- V Eco Tourism Product

National Park- Jim Corbett, Gir National Park, Bandhavgarh National Park, Sanjay National Park, Kaziranga National Park. Biosphere Reserve- Nanada devi Biosphere Reserve, Dibru-Saikhowa Biosphere Reserve, Gulf of mannar Bio Reserve. Tiger Reserve- panna Tiger Reserve, Kanha Tiger Reserve, Ranthambore National Park/ Tiger Reserve, Namdapha National Park/Tiger Reserve and Satpura Tiger Reserve.

Reference Readings:

- Jacob Robinet, Indian Tourism Products, Abhijeet Publications, Delhi, 2008
- Basham, A.L., A Cultural History of India. Oxford University Press, USA, 2007
- Ball Stephen, Encyclopedia of Tourism Resources in India, Butterworth- Heinemann. 2007

Online Resource
- Travel & Tourism National Portal of India
- Indian Tourism Industry, Tourism Industry in India, Tourism Industry, Tourism Industries (indianmirror.co

IInd Semester
BBA (T&H)-203 GEC 2
Physical Geography

Course Objective:
Students to the basic structure and composition of the earth and will explore various surface processes and their impact on and role in living systems. It will also deal with the interactive processes in the inner as well as outer Earth's surface.

Unit-I Introduction to Physical Geography

1. Definition and scope
2. Components of the Earth System
3. Age of the Earth
4. Geological time table

Unit-II Lithosphere and Geomorphic Processes

1. Rocks
2. Plate Tectonics and related features
3. Geomorphic Processes:
   3.1. Concept of Weathering, Mass Wasting and Erosion
   3.2. Fluvial Cycle of Erosion: Davis and Penck.

Unit-III Atmosphere

1. Weather and Climate
2. Heat Balance
3. Global circulation pattern
4. Cyclones
5. Monsoon
6. Climatic classification.

Unit- IV Hydrosphere

1. Hydrological cycle
2. Ocean bottom relief features
3. Temperature
4. Salinity
5. Tides and Currents
6. Marine Resources.

Reference Readings:

1. Monkhourse, F.J: Principles of Physical Geography, Hodder & Stoughton, London (1960).
2. Small, R.J.: the study of Land Forms McGraw Hill, New York (1985)
3. Wooldring, S.W. and Morgan, R.S.: The physical Basis of Geography – An outline of Geomorphology, Longman, Green & Co. London (1959).

Online Resource

1. epgp.inflibnet.ac.in
2. Virtual lectures available on You Tube.

IInd Semester
BBA (T&H)-204 AEC 2
Environmental Studies

Course Objective:

The aim of this course is to provide basic knowledge of environment and familiarize them with its management.

UNIT – I

Introduction to environmental studies-Multidisciplinary nature of environmental studies; Scope and importance; the need for environmental education. Concept of sustainability and sustainable development.

UNIT – II

Ecosystem-What is an ecosystem? Structure: food chains, food webs and function of ecosystem: Energy flow in an ecosystem, nutrient cycle and ecological succession, Ecological Interactions.

UNIT – III

Biodiversity - a. Levels of biological diversity: genetic, species and ecosystem diversity; Bio geographic zones of India; Biodiversity patterns and global biodiversity hot spots b. India as a mega-biodiversity nation; Endangered and endemic species of India c. Threats to biodiversity: Habitat loss, poaching of wildlife, man-wildlife conflicts, biological invasions;

UNIT – IV

Environmental Pollution and Global Environmental Issues:- a. Environmental pollution, b. Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture c. Nuclear hazards and human health risks (Chernobyl, 3 mile Island, Daiichi- Fukushima) d. Solid waste management; Pollution Tragedies: Love canal, Bhopal Gas, Endosulfan, Minamata and Flint water

UNIT – V

Environmental Management: Policies & Practices-Environmental ethics: Role of Indian and other religions and cultures in environmental conservation. Green Politics, Earth Hour, Green Option Technologies. Environmental communication and public awareness, Role of National Green Tribunal.

Suggested Readings:

1. Basu, M. and Xavier, S., Fundamentals of Environmental Studies, Cambridge University Press.
2. Mitra, A. K and Chakraborty, R., Introduction to Environmental Studies, Book Syndicate.
3. Enger E. and Smith B., Environmental Science: A Study of Interrelationships, McGraw-Hill Higher Education.
4. Basu, R.N, Environment, University of Calcutta.

IIIrd Semester
BBA (T&H)-301 M3
Tourism Impact (Paper-I)

Course Objective:- The module aims to give the details on various impacts of tourism.

Unit I Tourism Growth

Growth of tourism over last 50 years, Mass tourism and Issues, Third world countries and tourism, Tourism Area Life Cycle, Type of tourists and the impact level, Cooper's typology, Host Behaviour, Attitudinal changes, Doxey's index of irritation

Unit II Economic Impacts of Tourism

Receipts from Tourism, infrastructural development, Employment, Multiplier effect, Tourism and economic prosperity, myth and truth, economic leakages

Unit III Environmental impacts of tourism

Tourist activity and environment, nature and impacts, concept of preservation, climate change and tourism new age tourist and eco tourism, Tourism development and issues of Coast line, wildlife, lakes and other natural area

Unit IV Socio Cultural Impacts

Preservation of art forms, Museums, supporting local artists, cultural issues and staged authenticity, cultural drain, demonstration effect.

Unit V Tourism in South East Asia

Issues of Mass Tourism in Thailand, Vietnam and Philippines, Indonesia, proposal of Low Impact Tourism, Eco friendly practices, case study of Kovalam/Goa.

Reference Books

- Peter Mason: Tourism Impacts, Planning & Management Butterworth-Heinemann, 2003,
- Romila Chawla: Impacts of Tourism, Routledge, 2019.
- Lynn Jones: The Impacts of Tourism Case Study
- Cooper, World Wide Destinations, Case Study
- Shaw & Williams: Critical Issues in Tourism, Oxford: Blackwell, 1994.

Online Resources

- 337 Tourism Eng L3.pdf (nios.ac,in)
- 1.5 Impacts of tourism –Introduction to Tourism and Hospitality in BC- 2nd edition
- Tourism Management- Impacts (tutorialpoints.com)
- What is the impact of tourism on The Economy pdf (scribd.com)

IIIrd Semester
BBA (T&H)-302 MN3
Cultural Tourism Resource of India

Course Objective:- This Course aims to give detailed outlook on various a brief outline on Indian Cultural Tourism Resources.

Unit- I Indian Cultural History

Early and Post Vedic Period- Ancient Indian Literature- Sacred Literature- Secular Literature – Ancient Society & Culture – Varna System – Purushartha – Cultural Erosion

Unit- II Religion of India

Religious Shrines & Pilgrimage Centres – Hindu, Buddhist, Jain, Sikh, Muslim, Christian and others

Unit- III Non- Material Cultural Heritage

Performing Arts, Dance forms, Music – Vocal & Instruments – Folk Arts – Indian Paintings and Sculpture – Fair and Festivals, Indian Cuisine, Traditional Arts and Crafts.

Unit IV Architectural Heritage

Significance & Places of Importance – Rock – Cut Architecture- Architectural Styles – Indus valley, Buddhist, Jain, Mauryan Architecture, Vakataka (Ajanta), Nagara: Gupta Era (Bhitargaon Deograh, Udayagiri, Nachnakutaral), Chandels (Khajuraho). Vesars/Sankara: Early Chalukyan (Aihole, Badami, Paltadakkal), Hoyasala (Belur), Rashtrakutas (Ellora), Dravidian: Pallavas (Mahabalipuram, Kanchipuram), Pandyas (Madurai, Rameshwaram, Trichy, Tirnalveli): Cholas (Tanjore, Gaigaikon,Dacholapuram, Darasuram) ; Vijayanagara (Hampi), Mhaur Gurjara (Gujarat & Rajasthan step wells): Himalayan Style, Ratna Style (west Bengal), Indo Islamic (Fatehpur sikhri, Agra, Delhi) World Heritage sites in India- Problem & Prospects of Cultural Tourism in India.

Unit V Museums and Art Galleries

Significance, Types and Importance of Museums and Art Galleries – Indian Museums, Kolkata, National Museums, New Delhi, Salar Jung Museums, Hyderabad, City Mahal Museums, Jaipur, Udaipur, Jodhpur – Unique Museums of India.

Suggested Reading:-

- Basham A.L. (1988). The wonder that was India. Rupa And Co., New Delhi
- Sen, Sailendranath (2007) Textbook of Indian History & Culture, macmillan, New Delhi

Reference Books

- Gupta, S.P.(2002). Cultural Tourism in India, Indraprastha Museum of Art & Archaeology New Delhi.
- Hussain, A.K.(1987) The National Culture of India: National Book Trust, New Delhi.
- Jacob, R . (2012) Indian Tourism Products, Abhijeet Publication.

Online Resources

- https://www.bing.com
- 337 Tourism Eng L3.pdf (nios.ac,in)

III[rd] Semester

BBA (T&H)-303 GE 3

International Trade and Public Finance

Course Objective:- To give the students a wide knowledge of the International Trade and Public finance in Tourism.

Unit- I International Trade

1. International Trade- Meaning, Need, Importance and Effects
2. Interregional Trade and International Trade
3. International Trade & Economic Development
4. Principles of International Trade – Theory of comparative cost and Modern Theory

Unit- II Terms of Trade, Balance of Payment and Exchange Rate

1. Terms of Trade – Meaning, Types and Importance
2. Balance of Trade and Balance of Payment
3. Exchange Rate – Meaning and Types
4. Determination of Exchange Rate
5. Tariffs
6. Devaluation and Overvaluation of Currency
7. World Trade Organization

Unit- III Introduction of Public Finance

1. Public Finance- Meaning, Nature and Scope
2. Distinction between Private and Public Finance
3. Public Goods, Merit Goods and Private Goods
4. Market Failure and Role of Government
5. Principles of Maximum Social Advantage
6. Public Expenditure- Meaning, Classification and Effects
7. Prices and Taxes. Shanti Parvof – Book. XII of Mahabharat.
8. Concept of Public Goods and Taxes as per Kautilya.

Unit- IV Public Revenue

1. Sources of Public Revenue
2. Taxation – Meaning, Canons, and Classification of Taxes
3. Impact, Incidence of Taxes and Tax Shifting
4. GST – An Introduction
5. Effects of Taxation

Unit- V Public Debt and Financial Administration

1. Public Debt – Meaning, Sources and Effects
2. Deficit Financing
3. Federal Financial System in India
4. Recommendations of Latest Finance Commission in India
5. Latest Budget of Centre and state

Suggested Reading:-

1. Jhingan M.L. – Money Banking International Trade and public Finance, Vrinda Publication, New Delhi.
2. Mithani D.M. - Money Banking International Trade and public Finance, Himalayan Publication, Mumbai.
3. Singh A.K.- Finance Budget in India, Gyan Books New Delhi.
4. Hajela T.N.- Money, Banking and Public Finanac, ANE Books, New Delhi.
5. Ganguli k (1986) Mahabharat, Shanti parv.

Online Resources

1. https://nptel.ac.in/courses/ 109/107/109107173/
2. https://nptel.ac.in/courses/ 109/104/109104071

III[rd] Semester
BBA (T&H)-304 SE 3
Information Technology

Course Objective:- The Course will introduce learner to the role and importance of computers and information technology.

Unit- I

Information Technology- Introduction to IT, Objectives, Evaluation, Purpose (Connecting, Creating, Interacting), Usefulness, Applications, Types of IT, Creating textual, visual and audio- video communication.
IT application areas in everyday life- E-Commerce, E-governance, Banking, Agriculture, Education, Medicine, Defense, Transport, Publicity, Manufacturing, Finance, Travel & Leisure, Libraries, Expert Systems, Retail.
Advantage of IT in everyday life, its Disadvantages.
IT Terminology-The Internet and its uses and services, WWW, Web Browser, Search Engine, Website, Portal, and Internet service provider (ISP), structure of a web address, URL, Hyperlink, Cloud

Unit- II

Computers, Data Storage and Peripherals: Types and classification of computers, Block diagram of computer.
Inside a Computer- SMPS, Motherboard, Ports and Interfaces, expansion cards, ribbon cables, memory chips, different processors and clock speed.
Input Devices: Characteristics and uses of keyboard, numeric keyboard, pointing devices, remote control, joystick/driving wheel, touch screen, scanner, barcode reader, camera, microphone, sensors, light pen.
Output Devices: Characteristics and uses of monitors touch screen, multimedia projector, and different types of printers, plotter, 3D printers, speaker, and actuator.

Unit- III

Storage Devices: Hard Disks and its types, PATA, SATA, SCSI, SSD, NVM Express etc., Compect Disc- CD-ROM, CD-RW, VCD, DVD, DVD-RW, USB Drives, Blue Ray Disc, SD/MMC Memory cards, Zip Drives, Formatting & Scanning a HD, Partitioning a HD.
Computer Software: Definition, Characteristics, Relationship with hardware, Types of Software, system software, Application Software, Firmware, Role of System Software, Types of system Software: Operating Systems, Language Translator, Utility Programs, Communication Software , Antivirus Software.

Unit IV

Application Software- Types- Database, Graphics, Education, Entertainment Software, Mobile App Software, Social media Software: Instant Messaging, Email, Chat Boat, Web Blogs, Free Open Source Software (FOSS).

Application Software uses – Word Processing, Spreadsheet, Presentation, Database, Graphics, Designing, Recording sound and video, newsletters, posters, websites, multimedia presentation, audio, video, media streaming and E-publications, blog, forum, wiki, social networking.
Using office tools- any of MS- office/ Libre office,

Cloud based services- Google workplace- working with mail, Google Docs, Sheets, Forms, Slides, Calendar, Meet, Drive, Zoho Mail, WPS Office, Office Suits, Polaris office, Only office Docs, Word Perfect etc.
Utility Software- PDF Creator, File Archiving and storage, File Converter
Collaboration tools- Docs, Chat, Wiki, online groups, audio/video conferencing, social bookmarking, Tools for social networking, and Web Conferencing.

Unit V

Managing Files- Locate stored files, Open and Import files of different types, save files in a planned hierarchical directory/folder structure, Save files using appropriate files names.
Save and print files in a Variety of formats including a document, screenshots, database report, data tables, graphs/charts, a web page in browser view, a web page in HTML view save and export in the file format of an application package including .docx, .doc, xlsx, xls,sdb, sdc, accdb, odb, rtf, .pptx, .ppt, save and export in a generic files format, including .csv, .txt, .rtf, .pdf, .css, .htm, .jpg, .png
File Formats – Characteristics and uses of file formats including css, csv, gif, htm, jpg, pdf, png, rtf, txt, zip, rarcsv, gif, htm, jpg, pdf, png, rtf, txt, zip, rar
Compress files- Reduce file sizes for storage or transmission where necessary using file compression including .zip, .rar
File Compression- The need to reduce file sizes for storage of transfer, tools for file compression.

Suggested Reading:-

- Sinha P.K., Sinha Priti, "Computer Fundamentals", BPB.
- Alexa Leon & Mathews Leon "A Beginners Guide To Computers:, Vikas Publishing House Pvt.Ltd.
- Mohan P., Fundamentals of Computers, Himalaya Publishing Hoise.
- Working in Microsoft Office, Ron Mansfiled, TMH Publishing Company Ltd.

Online Resources

- https://egyankosh.nc.in//handle/123456789/9489
- https://Workspece.google.com/intl/en_in/training/
- https://www.itdesk.info/handbook_using_computer_managing_files.pdf
- https://www.coursera.org/courses?query-microsoft%20excel

IVth Semester
BBA (T&H)-401 M4
Tourism Entrepreneurship

Course Objective: - The aim of this course is to enrich students with entrepreneurial styles.

Unit- I Basics of Entrepreneurship

Entrepreneurship and small- scale Enterprises in Tourism, General Introduction of entrepreneur and Entrepreneurship. entrepreneur and Entrepreneurship- definition-concepts- characteristics and functions. Distinction between entrepreneur and manager, entrepreneur and entrepreneur, entrepreneur and entrepreneurship- its traits and motivation; theories of motivation. Role of entrepreneur in economic development- factors affecting entrepreneurial growth. Tourism as an industry, basic needs of a tourism entrepreneur. Risk and uncertainty in entrepreneurship with particular reference to tourism. Entrepreneurial competencies.

Unit- II Small Scale Industry

Institutional Interference for Small Scale Industries, Definition, Opportunities, Characteristics, Need and Rationale: Objectives, Scope, Role of SSI, Advantage of SSI, Different Policy of SSI, Government support for SSI during Five-Year Plans, Impact of Liberalization, Privatization and Globalization, Effect of WTO/GATT
Scanning and Identification. Market Assessment, Small Scale Industries in Tourism.
Case Studies of at least 3-4 MSME organization of Tourism.

UNIT-III Entrepreneurship in India

Functions of entrepreneur: Idea Generation, Idea evaluation, Feasibility analysis, product/ Market fit, checking the legal requirements (licenses & Permits), Hire a team, set an ethical culture, entrepreneur motivation & performance evaluation. Communities promoted entrepreneurship in India.

Unit- IV Prospects and Challenges

Financial Assistance, Institutional Assistance and support, Challenges of family- based entrepreneurship. Preparing a business plan, organizing and controlling of small-scale industry. Understanding Trade Practice. Strategies for a successful entrepreneurship. Innovation & entrepreneurship. Entrepreneurship & Tourism.

Unit- V Current and future Trends

Management Performance, managing family enterprises in Tourism industry, Future prospects for small scale enterprises in tourism industry, role of entrepreneurs in economics development of a country, Entrepreneurship & Its barriers in India. Current Trends in MSME sector with special reference to tourism industry, measure to be taken for the growth and development of tourism industry.

Suggested Reading:-

Text Books

- Chowdhary, Nimit and Prakash, Monika. (2010). Managing small Tourism Business, New Delhi: Matrix Publications.(L)
- Desai, V. (2014). The Dynamics of Entrepreneurial Development and Management (6theditions). Himalaya Publishing House.
- Prakash, Monika And Chowdhary, Nimit (2010) Starting a Tourism Company, New Delhi: Matrix Publications. (L)

Reference Books

- Mohanty, Sangram Keshari (2005). Fundamentals of Entrepreneurship, New Delhi: Prentice Hall of India.
- Scarborough, N.M. and Zimmer, T.W. (1996), Effective Small Business Management, 5/e, New York: Prentice Hall, Inc.
- Hisrich, R.D. & Michael, P.P. (2002). Entrepreneurship (5th ed.) New Delhi: Tata McGraw Hill.
- Hisrich, R.D., Peters, M.V., & Shepherd, D.A. (2007). Entrepreneurship (6th ed.) Tata McGraw Hill.

Other Sources

- Sido-online. Portal of MSME. Government of India (www.smallindustryindia.com)
- Desai, V. (2014). The Dynamics of Entrepreneurial Development and Management (6theditions). Himalaya Publishing House.
- IGNOU MTM-8 (2005, Reprint). Managing Entrepreneurship and small Business in Tourism

IVth Semester
BBA (T&H)-402 MN4
Tourism Marketing

Course Objective:- The students are expected to attain basic knowledge of marketing, principles and promotional programme, formulate marketing plans to tourism and other related organizations.

Unit- I Introduction to Tourism Marketing

Meaning, definition, and evaluation of Marketing. Basic concept of – need & wants, demand, product, service, Market and sales. Marketing mix. Marketing for tourism and travel services. Tourism Marketing-special features. Marketing environment- Global marketing environment for tourism and Domestic marketing environment for tourism. Difference between traditional marketing and tourism marketing. Use of social media for marketing of tourism products. Service marketing, characteristics of service marketing, service marketing mix.

Unit- II Tourism Market and Consumer Behaviour

Understanding of market research – Concept of primary data and secondary data, Marketing Information System (MIS), Function of MIS. Tourism Market classification/ types. Tourism Market segmentation-Targeting and positioning strategies, segmentation process, Market identification and selections. 8 P`s of tourism marketing. Characteristics affecting consumer behaviour- Cultural factor, Social factor, Personal factor, Psychological factor, Buyer decision process.

Unit- III Tourism Product Development and Branding

Tourism Product- Research, Decision and formulation, Branding and packaging of tourism products, New product development stages, Product Life Cycle, Internal Marketing. Service culture, Customer Value, satisfaction and loyalty, Relationship marketing.

Unit IV Pricing and Distribution

Pricing methods, factors affecting pricing, pricing strategies for both new and existing tourism products, pricing adjustment during off and peak season, Tourism product distribution, Internet as evolving tourism distributions channel.

Unit V Marketing Strategies

An Overview of National Promotion Campaigns, Promotion mix, Advertising- Creative advertising, Major decision & process in creative advertising, Innovative advertisements for tourism marketing, Internet for the promotion of tourism products, Role of tourism promotion boards, Public relation, Product publicity, Corporate communication, lobbying and counseling, Role of local community in promotion of tourism, Promotion of positive tourism practices.

Suggested Reading:-
Reference Books

- Morrison, A.M. Hospitality and Travel Marketing. Delmer Thomson Publising
- Kotler Philip and Armstrong, G. Principles of Marketing, PHI

- Stanton, William J. Fundamentals of Marketing, McGraw Hill. 13
- Ramaswamy, V.S. and Namakemari, S. Marketing Management, Mcmillan.

Online Resources

- Unit-1 INTRODUCTION TO TOURISM.pdf (ihmnotes.in)
- DOMESTIC TOURISM.pdf (du.ac.in)
- http://www.marketing91.com/what-is-tourism-marketing/

IVth Semester
BBA (T&H)-403 GE 4
Communication Skills and Development

Course Objective:- This course aims at imparting the focused and specific skills related to the Tourism Industry.

Unit- I Managerial Communication

Nature and scope of communication, functions of communication, roles of manager, communication process, communication network, information Communication. Effective listening, Poor listening habits, types of listening, barriers of effective listening, Persuasive communication and Role of Mentoring.

Unit- II Oral & Written Communication Skills

Practical Business Communication- business letters, meeting notice, agenda, report making and its structure, literature review, C V Preparation & Advertisements, presentations- seminars, electronic communication etiquettes- Importance of public relations in tourism.

Unit- III Business Communication

Effective leadership- learning to lead, how to lead others, improve your excellence and inspiring excellence- Dealing with customers-types of customers, finding customers, researching customers customer service, satisfying customers- Business Etiquette- Team Management- how does a team work, setting up team, how to improve team efficiency, working for the future.

Unit IV Personality and Communication

Personality- general definitions- behavior- character and Personality- Barriers to goal achievement (four types)- Anxiety-anxiety management-personality disorders: a very general outline.

Unit V Customer Care Handling

Customer care and mannerism, handling complaints, handling queries, resolving conflict. Communication and customers revisit, legal aspects of business communication.

Suggested Reading:-
Reference Books

- Kumar Raj (2010), basic business communication, Excel books.
- Sinha K.K (2000), business communication
- P.D. Chaturvedi- Business communication (Pearson Eduction,3st Edition 2006).
- Rajendra pal- Business communication (Sultanchand & Sons Publication).

Online Resources

- Business communication – Notes on Business Communication | Simplynotes
- Goals of Business Communication- eNotes.com
- Report Writing, Characteristics, Structure and Types | Simplynotes

IVth Semester
BBA (T&H)-404 SE 4
Event Management

Course Objective:- The students will learn importance of events as a business, importance types of events and managing events.

Unit- I Introduction Management

Meaning and functions. Event Management: Concept and Scope, Categories of Events: Personal/Informal Events and Formal/ Official Events, Requirement of Events Manager, Roles & Responsibilities of Events Manager in different Events; Special event topics

Unit- II Planning and Organizing for Events

Characteristics of Good Planner, SOWT Analysis, Understanding the Clients needs, identification of target audience; Event planning Process, Conceptualization, Costing, Canvassing, Customization, and Carrying-out. Critical Success Factors; Outsourcing Strategies, working with Vendors, Negotiating Tactics, Accountability and Responsibility. Events Risk Management and IT for Event Management.

Unit- III Managing Team

Team Building and Managing Team: Concept, Nature, approaches, activities and practices. Characteristics of a high performing team. Skills required and Job Responsibilities of Leading Teams; Business communication.

Outcome:-

- ➢ Exhibit the capability to organize a formal events;
- ➢ Analysis, interpret and present the learning lessons to organizing the event and critical Success Factors;
- ➢ Create, Organize, and manage team;
- ➢ Prepare and Present the promotional material;

Suggested Reading:-

- Stephen, Annie & Hariharan, Event Management, Himalaya Publishing House.
- Wagen, Event Management, Pearson
- Dr. Sharma Anukrati, and Dr. Arora Shruti, Event Management and Marketing: Theory Practical Approaches and Planning, Bharti Publications

Online Resources

- httpe://www.uou.ac.in/sites/default/files/slm/HM-402.pdf
- httpe://ncert.nic.in/textbook/pdf/lehe209.pdf
- httpe://backup.pondiuni.edu.in/sites/default/files/event-mgt-260214.pdf

Course Outcomes

BBA (T&H) I Semester ***INTRODUCTION TO TOURISM*** ***PAPER CODE: 101 M1***	***Max. Marks: 100*** ***Min. Marks: 40*** ***External: 60*** ***Internal: 40***

- CO1: The paper is to acquaint the students about the basic and preliminary knowledge of the terms, concepts, systems and trends in tourism.
- CO2: Introduction to tourism the first step to move forward to interact with the advance knowledge pertaining to tourism.
- CO3: Students will develop understanding of various fundamental concepts of travel trade.
- CO4: Students will understand the significance of tourism industry in nation's economy and other with other industries too.
- CO5: Students would be able to establish the importance of linkages of various components in tourism industry.

BBA (T&H) I Semester ***MANAGEMENT CONCEPTS & PRINCIPLES*** ***PAPER CODE: 102 MN1***	***Max. Marks: 100*** ***Min. Marks: 40*** ***External: 60*** ***Internal: 40***

- CO1: To prepare the budding Managers in tourism and to improve the students basic knowledge to management and managerial skills.
- CO2: Introduction to Management Concept, Nature, Purpose, Function & System Management.
- CO3: Students would be able to describe and discuss the element of effective management.
- CO4: Students would be able to discuss and apply the planning, organizing and control processes.
- CO5: Students would be able to describe various theories related to the development of leadership skills, motivation techniques, team work and effective communication.

BBA (T&H) I Semester ***INDIAN ECONOMY- AN INTRODUCTION*** ***PAPER CODE: 103 GEC 1***	***Max. Marks: 100*** ***Min. Marks: 40*** ***External: 60*** ***Internal: 40***

- CO1: The economics courses also contain projects and activities. These will provide opportunities for the students to explore various economic issues.
- CO2: Characteristics of Indian Economy their both their day-to-day life and also from issues, which are broader and invisible nature.
- CO3: After completing this course, students will be able to understand the basic concepts of the Indian economy.
- CO4: They will be familiar with the issues. Related to Agriculture, industry, Foreign Trade, Economic planning and various Economic Problems of India.

- CO5: They will also be able to understand the various issues of Madhya Pradesh Economy.

BBA (T&H) I Semester ***ENGLISH LANGUAGE*** ***PAPER CODE: 104 AEC 1***	***Max. Marks: 100*** ***Min. Marks: 40*** ***External: 60*** ***Internal: 40***

- CO1: The course is to improve the competence of the student's basic language skills and to acquaint student with working official English Language.
- CO2: This course will hone reading, writing and over all communication skills of the participants which is very basic and imperative for almost all kind of management jobs in the organization.
- CO3: The graduates are expected to understand the process of communicating and interpreting the human experiences through literary representation using historical context and disciplinary methodologies.
- CO4: Simple, Compound and Complex Sentences of working official English language boost and to adequate ascent.
- CO5: New advance English learning and understanding skill development.

BBA (T&H) II Semester ***TRAVEL AGENCY & TOUR OPERATION-I*** ***PAPER CODE: 201 M2***	***Max. Marks: 100*** ***Min. Marks: 40*** ***External: 60*** ***Internal: 40***

- CO1: Gaining in-depth knowledge of history of travel agency, nature, and form of travel.
- CO2: Build an understanding of functions performed by the Travel agency and tour operator.
- CO3: Comprehends the foundation and organization structures of travel agencies.
- CO4: Build an understanding of a few important international conventions.
- CO5: Understand and evaluate the legal aspects needs to understand for opening a travel agency.

BBA (T&H) II Semester ***TOURISM PRODUCT IN INDIA*** ***PAPER CODE: 202 MN2***	***Max. Marks: 100*** ***Min. Marks: 40*** ***External: 60*** ***Internal: 40***

- CO1: Tourism begins with the motivation to visit attractions at destinations. The attractions may be natural or manmade (Cultural).
- CO2: The natural attraction such as mountains, hills, forests with wild animals, coastal area and islands are attracting all. India is seventh largest country with rich diversity of natural tourist resources. It is very necessary for the students of tourism to know about these tourist products.

- CO3: Students will develop understanding of various fundamental concepts of tourism products.
- CO4: Students will understand the significance of tourism industry in nation's economy and other with other industries too.
- CO5: Students would be able to establish the importance of linkages of various components in tourism industry.

BBA (T&H) II Semester ***PHYSICAL GEOGRAPHY*** ***PAPER CODE: 203 GEC 2***	***Max. Marks: 100*** ***Min. Marks: 40*** ***External: 60*** ***Internal: 40***

- CO1: The basic structure and composition of the earth and will explore various surface Processes and their impact on and role in living systems.
- CO2: Learn about the Universe, Solar system, Interior of the Earth and denudation processes that shape the land forms.
- CO3: Understand the elements of Weather and Climate, Atmospheric processes and climate classification.
- CO4: Learn about the Hydrological cycle, Ocean bottom relief and Marine Resources.

BBA (T&H) II Semester ***ENVIROMENTAL STUDIES*** ***PAPER CODE: 204 AEC 2***	***Max. Marks: 100*** ***Min. Marks: 40*** ***External: 60*** ***Internal: 40***

- CO1: Gaining in-depth knowledge on Ecology, ecosystem and different ecological pyramids.
- CO2: Demonstrate an integrative approach to environmental issues with a focus on sustainability
- CO3: Use critical thinking, problem-solving, and the methodological approaches of the social sciences, natural sciences and humanities in environmental problem solving
- CO4: Develop skills essential to analyze the use of secondary data in assessing the transnational marketing opportunities.
- CO5: This will develop the critical thinking and analytical ability among the participants to strategize for environmental protection and conservation of biodiversity.

BBA (T&H) III Semester ***TOURISM IMPACT (PAPER-I)*** ***PAPER CODE: 301 M3***	***Max. Marks: 100*** ***Min. Marks: 40*** ***External: 60*** ***Internal: 40***

- CO1: comprehend the concept of destination management.
- CO2: plan tourism activities and perform project feasibility study.
- CO3: apply concept of destination life cycle in destination planning
- CO4: define and comprehend various types of tourisms.

- CO5: identify trends and in tourism.

BBA (T&H) III Semester ***CULTURAL TOURISM RESOURCE OF INDIA*** ***PAPER CODE: 302 MN 3***	***Max. Marks: 100*** ***Min. Marks: 40*** ***External: 60*** ***Internal: 40***

- CO1: The students will be developing an appreciation of the contributions made by history to the total heritage of mankind and conceptual knowledge about Ancient Travel Era along with diversified culture and heritage of India.
- CO2: The learner will know with the rich cultural and historical aspects of India for the purpose of promoting tourism and national interests.
- CO3: The students will be equipping with a positive attitude towards living culture, performing culture and cultural heritage of India and also developing and will harness the rich Historical and Cultural heritage
- CO4: The learner will be categorizing and comparing about the multiciplity of Indian societies and unification and diversification of India
- CO5: The students will be understanding and evaluating the mutual interaction with different cultures and also examine the Indian allegories.

BBA (T&H) III Semester ***INTERNATIONAL TRADE AND PUBLIC FINANCE*** ***PAPER CODE: 303 GE 3***	***Max. Marks: 100*** ***Min. Marks: 40*** ***External: 60*** ***Internal: 40***

- CO1: Examine and analyze the different phases of business cycle and methods of demand forecasting in economic analysis
- CO2: Recognize the key trends, developments, challenges, and opportunities affecting Service industry.
- CO3: Explain the Various concepts and basic principles of International Trade
- CO4: Understand the issues like the role of the government, provision of public goods, optimal design of tax and economic policies.
- CO5: Describe the effects of taxation and role of public expenditure and public debt in developing country.

BBA (T&H) III Semester ***INFORMATION TECHNOLOGY*** ***PAPER CODE: 304 SE 3***	***Max. Marks: 100*** ***Min. Marks: 40*** ***External: 60*** ***Internal: 40***

- CO1: Understand the basics of computer networks, use of Information systems in Hotel & Tourism industry.
- CO2: Learning the usage of Software Packages through hands-on sessions and basics of Database management system.

- CO3: Learning the use of multimedia technology and related software.
- CO4: Demonstration and understanding of Ticketing and related software.
- CO5: Function as discerning students in an increasingly digital society

BBA (T&H) IV Semester ***TOURISM INTERPRENURESHIP*** ***PAPER CODE: 401 M4***	***Max. Marks: 100*** ***Min. Marks: 40*** ***External: 60*** ***Internal: 40***

- CO1: understanding the concept, theories, entrepreneurial competencies and processes of entrepreneurship in small scale enterprises and family business enterprises of tourism industry.
- CO2: analyzing business environment to start a new venture and orienting the learner toward entrepreneurship as a career option and creative thinking
- CO3: preparing business plan and assessing the financial, marketing and technical aspects of project report.
- CO4: measuring the performance of family owned enterprises
- CO5: To develop understanding marketing scanning and finding opportunities.

BBA (T&H) IV Semester ***TOURISM MARKETING*** ***PAPER CODE: 402 MN4***	***Max. Marks: 100*** ***Min. Marks: 40*** ***External: 60*** ***Internal: 40***

- CO1: Examine and discuss the key concepts and principles of marketing as applied to destinations and the tourism experience.
- CO2: Demonstrate an evaluative understanding of current issues associated with destination marketing.
- CO3: Access, examine and assess the effectiveness of marketing strategies applied to tourism.
- CO4: Engage in tourism and marketing research and inquiry to inform strategic decision making and problem solving.
- CO5: Demonstrate the application of tourism marketing strategies in practical scenario.

BBA (T&H) IV Semester ***COMMUNICATION SKILLS AND DEVELOPMENT*** ***PAPER CODE: 403 GE 4***	***Max. Marks: 100*** ***Min. Marks: 40*** ***External: 60*** ***Internal: 40***

- CO1: Students will understand the formal communication procedures.
- CO2: Students will know how to make formal written and verbal communication.
- CO3: This course aims at imparting the focused and specific skills related to the Tourism Industry.
- CO4: Understand the concept of inbound & outbound tourism.

- CO5: understand the concept of probability and its appreciation.

BBA (T&H) IV Semester ***EVENT MANAGEMENT*** ***PAPER CODE: 404 SE 4***	***Max. Marks: 100*** ***Min. Marks: 40*** ***External: 60*** ***Internal: 40***

- CO1: Exhibit the capability to organize a formal events.
- CO2: Analysis, interpret and present the learning lessons to organizing the event and critical Success Factors.
- CO3: Create, Organize, and manage team.
- CO4: Prepare and Present the promotional material.
- CO5: Recognize the key trends, developments, challenges, and opportunities affecting event industry.

M. A.(Ancient Indian History Culture& Archaeology)

Program - Program and Course Outcome 2021-2022

Attainment of outcomes involving Programme outcomes, Programme specific outcomes and Course outcomes

PROGRAMME OUTCOME

PO #	PROGRAMME OUTCOME
PO 1	**Critical Thinking**: Take informed actions after identifying the assumptions that frame our thinking and actions, check out the degree to which these assumptions are accurate and valid, and look at our ideas and decisions (intellectual, organizational, and personal) from different Perspectives.
PO 2	**Effective Communication**: Speak, read, write and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media and Technology.
PO 3	**Social Interaction**: Elicit views of others, mediate disagreements and help Reach conclusions in group settings.
PO 4	**Effective Citizenship**: Demonstrate empathetic social concern andequity-centered national development, and the ability to act with an informed awareness of issues and participate in civic life through Volunteering.
PO 5	**Ethics**: Recognize different value systems including your own, understand The moral dimensions of your decisions, and accept responsibility for them.
PO 6	**Environment and Sustainability**: Understand the issues of environmental Contexts and sustainable development.
PO 7	**Self-directed and Life-long Learning**: Acquire the ability to engage in Independent and life-long learning in the broadest context of socio-technological changes.

PROGRAMME SPECIFIC OUTCOME

M. A.(Ancient Indian History Culture& Archaeology)

PSO #	PROGRAMME SPECIFIC OUTCOME
PSO 1	To gain a functional knowledge of theoretical concepts and experimental Aspects of chemistry and their applications in the day-to-day life.
PSO 2	To integrate the gained knowledge with various contemporary and evolving areas in chemical sciences like inorganic, organic, physical, analytical, synthetic, instrumental etc.
PSO 3	To understand, analyze, plan and implement qualitative as well as quantitative analytical synthetic and phenomenon-based problems in Chemical sciences.
PSO 4	Provide opportunities to excel in academics, research or Industry.

Department of A.I.H.C. & Archaeology

A.P.S. University Rewa (M.P.)

SYLLABUS
M.A
(C.B.C.S. Pattern)
A.I.H.C. & Archaeology

M.A Ancient Indian History, Culture & Archaeology

(C.B.C.S. Pattern)

Semester – I

1. प्राचीन भारतीय इतिहास के स्रोत
   Sources of Ancient Indian History
2. भारतीय प्रागैतिहास
   Indian Pre History
3. उत्तर भारत का राजनीतिक इतिहास – प्रथम
   Political History of North India – I
4. भारत की कला विरासत
   Art Heritage of India
5. मौखिकी परीक्षा
   Viva-Voce

Semester – II

1. उत्तर भारत का राजनीतिक इतिहास – द्वितीय
   Political History of North India – II
2. दक्षिण भारत का राजनैतिक इतिहास
   Political History of South India
3. भारत का आद्य इतिहास
   Proto History of India
4. मूर्तिकला एवं प्रतिमा विज्ञान के मूलतत्व
   Elements of Sculptures and Iconography
5. मौखिकी परीक्षा
   Viva-Voce

Semester – III

1. भारतीय मुद्राशास्त्र
   Indian Numismatics
2. भारतीय अभिलेख एवं लिपिशास्त्र
   Indian Inscription and Scriptography
3. प्राचीन भारतीय धार्मिक परम्परायें
   Ancient Indian Religious Traditions
   OR
   प्राचीन भारतीय दार्शनिक परम्परायें
   Ancient Indian Philosophical Traditions
4. पुरातत्व की विधियाँ एवं ऐतिहासिक पुरातत्व
   Methods of Archaeology and Historial Archaeology
   OR
   पर्यावरणीय पुरातत्व
   Environmental Archaeology
5. मौखिकी परीक्षा
   Viva-Voce

Semester – IV

1. प्राचीन भारतीय राज्य एवं प्रशासन
   Ancient Indian State and Administration
2. प्राचीन भारत का सामाजिक और आर्थिक इतिहास
   Socio & Economic history of Ancient India
3. क्षेत्रीय पुरातत्व एवं प्रशिक्षण
   Field Archaeology and Training
   OR
   मानव मूल्य
   Human Value
4. विन्ध्य की कला एवं पुरातत्व
   Art and archaeology of Vindhyas
   OR
   संरक्षण, परिरक्षण एवं तिथि निर्धारण विधियाँ
   Conservation, Priservation and Dating Techniques
5. प्रायोगिक प्रशिक्षण (मौखिकी परीक्षा)
   Practical Training Viva-Voce
6. मौखिकी परीक्षा
   Viva-Voce

Department of A.I.H.C. & Archaeology

M.A. (A.I.H.C. & Archaeology) Scheme of Examination C.B.C.S. Pattern

	Nomenclature	Type of Course	Theory Assessment		Internal Assessment		Total	Credit Points
			Max.	Min	Max.	Min.		
Semester-I								
101	Sources of Ancient Indian History	CC	60	24	40	14	100	4
102	Indian Pre History	CC	60	24	40	14	100	4
103	Political History of North India – I	CC	60	24	40	14	100	4
104	Art Heritage of India	GE	60	24	40	14	100	4
105	Viva-Voce	-	-	-	-	-	100	4
Semester-II								
201	Political History of North India – II	CC	60	24	40	14	100	4
202	Political History of South India	CC	60	24	40	14	100	4
203	Proto History of India	CC	60	24	40	14	100	4
204	Elements of Sculptures and Iconography	GE	60	24	40	14	100	4
205	Viva-Voce	-	-	-	-	-	100	4
Semester-III								
301	Indian Numismatics	CC	60	24	40	14	100	4
302	Indian Inscription and Scriptography	CC	60	24	40	14	100	4
303	Ancient Indian Religious Traditions OR Ancient Indian Philosophical Traditions	DCE	60	24	40	14	100	4
304	Methods of Archaeology and Historical Archaeology OR Environmental Archaeology	GE	60	24	40	14	100	4
305	Viva-Voce	-	-	-	-	-	100	4
Semester-IV								
401	Ancient Indian State and Administration	CC	60	24	40	14	100	4
402	Socio & Economic History of Ancient India	CC	60	24	40	14	100	4
403	Field Archaeology & Training OR Human Values	DCE	60	24	40	14	100	4
404	Art and Archaeology of Vindhyas OR Conservation, Preservation and Dating Techniques	GE	60	24	40	14	100	4
405	Viva-Voce	-	-	-	-	-	100	4
406	Project Report and Practical (Viva-Voce)	-	-	-	-	-	100	8

CC – Core Course, GE – Generic Elective, DCE – Discipline Centric Elective

Paper-I

Sources of Ancient Indian History

Course Objective:

Purpose of this question paper, while introducing the student to the sources of ancient Indian history, will introduce the students to non-Brahminical literature, secular literature, archaeological sources and details of foreign travelers.

Unit- I

Study sources literary sources Vedic literature, Samhitas, Brahmin literation - Shatapatha and Aterey Brahmin Aranyaka and Upanishad literature,Sutra literature and Mahakavya (Ramayana, Mahabharata) Purana content

Unit-2

Post Brahmanical LiteratureBuddhirt Literature Tripitals, Mahavarna, DeepavarnaJain literature Bhagwati Sutra, Acharangastra

Unit III

Secular literature Kautilya's Arthashastra, Panini's Ashtadhyayi, Patanjali's Mahabhashya, Manusmriti Harshacharit Rajatarangini

Unit-IV

Archaeological sources Seals and their importance as sources - Seals as economic, religious and political sources architecture and sculpture Pottery and material obtained from excavation

Unit-V

Details of foreign travelers Megasthenes, Fa- hien, Hiuen- tsang

Outcome: Archaeological and literary sources of ancient history. . Studying Buddhist and Jain literature as sores materials providing information related .to ancient Indian rajshastra most excavation is used archaeological sources so the antiquities obtained from excavation will be studies Details of foreign traveler's sources of knowing ancient Indian history.

Redding Booke

1. Vachaspati Gairola Vedic Literature and Culture -
2. Satyaketu Vidyalankar Vedic Age of Indian History
3 Vachaspati Garola Economics
4. Vishudhanand Pathak - India of 5th-7th centuries (in the perspective of foreign travelers)-
5 Govind Chand Pandey - History of Buddhism
6. C.J. Shah-Jainism in Northern India 7. M.C. Krindley, J.W.- Ancient India age Discrived by Megsthanige and Arien

Paper-II

Indian Pre-History

Course Objective-The objective of this question paper is to make the student study the origin and development of man and the culture of stone tools and rock paintings made by him in chronological

Unit- I

Origin and development of humans Major theories on the origin of animals Origin of humans Early human species Australopithecus, Homo erectus, Homo sapiens Neanderthal, Homo sapiens, Homo sapiens sapiens

Unit-II

Prehistoric culture and its classification Lower Paleolithic, Middle Paleolithic, Upper Paleolithic, Spread chronogy Mesolithic Dissemination Tool Types, Culture, Chronology,Neolithic Dissemination, Culture, Chronology

Unit - III

Paleolithic tools, Pebble tools, Technique of making tools and types.

Unit- IV

History of Indian Rock Painting , Prehistoric Rock Paintings & Sites of Central India - Pachamarhi, Rock Painting Sites of Vindhya Region - Mirzapur, Gaddi, Deur Kothar and Dharkundi, Color-Combination, Illustration Style

Unit - V

Megalithic Tombs of India Meaning and Importance Classification of Indian Megalithic Cultures-Megalithic Tombs of South India, Megalithic Tombs of North India Megalithic Tombs Vindhyas, Types, Features, Chronology and Makers

Outcome:- Will be benefited by getting information related to the origin and development of human. New sites can be discovered by understanding the classification of prehistoric cultures.Types of Paleolithic tools and their making techniques Studying prehistoric rock paintings will prove helpful in understanding the cognitive development of human mind The social life of human will be understood by studying the megalithic cultures of India.

Redding Books

1. Radha Kant Verma Indian Prehistory
2. Shriram Goyal Prehistoric Man and Cultures
3. Prof Vidula Jaiswal Outline of the Early Phase of Indian History
4. Stuart Piggot-Prihistoric India 5. R.J. Braiweod- Prihistoric Man

Paper-III

Political History of North India Part-1

Cures Objective - The objective of this paper is to make the students study the systematic political history of North India from the 6th century BC to the Gupta period.

Unit-1

Political condition of 6th century B.C., Sixteen Mahajanapadas
Republican state

Unit-2

Haryanka dynasty- Bimbisama, Ajatashatru Nanda dynasty – Mahapulmonunda, Ghanananda
Alexander's Invasion and Impact

Unit-III

Maurya Dynasty-Origin, Chandragupta Maurya, Ashole and his Dhamma, Maurya Administration,cause of fall Sunga dynasty-Palyamit Sunga, Bugalladra Satavahana dynasty - Gautami's son Shatkarni Vashishthiputra Pulumavi, Satavahana Saka Struggle

Unit-IV

Saka Kshatrapa Nahapana of Western India, Rudradaman Kushan Dynasty Kulakadphises, Vimkadphises, Kanishka Gupta Empire - Origin Chandragupta 1, Samudragupta, Chandragupta Vileramaditya,

Unit-V

Kumaragupta, Skandagupta Gupta Vakataka relationship

Outcome:-To know the political history of 6th century BC, Dynasties by studying different dynasties understand the social, political and economic history before 6th century BC Rule of foreign dynasties in ancient India Importance of Gupta and Vakataka dynasties in the politics of North India

Subsidiary Books-

1. Vishudhanand Pathak Political History of North India - 2. R. N. Pandey Political History of North India
3 CV. Pandey -of the Andhra Sanvahana Empire
4. Shriram Goyal Gupta Empire
5. KC. Jain - Ancient Indian History
6. Romila Thoper - Ashok and the decline of the Mauryan Empaire
7. B. N. Puri India under the Kash
8. H.C.R. Chaudhary- Political History of Ancient India

Paper- IV

Art Heritage of India

Cures Objective-The objective of this question paper is to acquaint the student with ancient Indian arts such as town planning and various styles of cave and temple architecture and their importance.

Unit-1

Indus Architecture - Town Planning, Granary, Water Tank, Lothal's Dock and Major Features of Indus Architecture

Unit-2

Stupa and Cave Architecture- Origin, types and development of stupas, Bharhut, Sanchi and Amravati cave architecture Development of cave architecture Bhaja's chaityas and viharas, Karle chaityas and viharas

Unit-III

Temple Architecture - Origin, Gupta Temples, Architectural Features - Shiva Temple at Bhumra, Parvati Temple at Nachna Kothar, Dashavatar Temple at Deogarh,
Various styles of temple construction - Nagara, Vesar, Dravida, Bhumij

Unit-IV

Kalchuri Temple - Shiva Temple of Lilha and Virateshwar Temple of Sohagpur Chandela Temple- Chandela Temple Architecture and Features of Khajuraho

Unit-V

Specialties of Orissa Temples, Sun Temple and Lingaraja Temple of Konark Chola Architecture - Brihadeeswarar Temple at Tajour

Outcome The study of Indus civilization under the world's best urban system is helpful in discovering new sites. To know the stupa and cave architecture &importance to attain knowledge the temple architecture and its different styles.Studying the styles of regional temples Observation of the then political condition by studying some special temples of Orissa and South IIndi

Subsidiary Books

1. Kiran Kumar Thapallayal- Indus Civilization
2. Vasudev Upadhyay Ancient Indian Stupa Cave Temple
3. Prithvi Kumar Agarwal - Gupta Art and Architecture
4. Parameswirilal Gupta Indian Architecture
5. Ramnath Mishra - Bharhut
6. KK. D. Vajpayee History of Indian Architecture
7- Percy Brown- Indian Arhchitecture (Buddhist and Hindus)
8. M.S. Vats- The Gupta Temple at Devgrah
9. Boner sharma- New Lite on the Sun Temple of Konark
10. Krishna Dev- The Temple of North India

Semester-II
Paper-I
Political History of North India Part-II

Curse Objects:- Purpose The purpose of this question paper is to make the students aware of the political history of the later Gupta, Maukhari, Vardhan dynasties by explaining various theories related to the origin of Rajputs.

Unit--I

Later Gupta Dynasty, Maukhari Dynasty Vardhan Dynasty, Rajvardhan, Harshvardhan

Unit-2

Origin of Rajputs - Various Theories Gurjara Pratihara Dynasty-Nagabhatta-2, Mihir Bhoj Pala dynasty- Dharmapala, Devpala triangular conflict

Unit-III

Kalchuri Dynasty-Gangeyadeva, Lakshmikama Chandela Dynasty - Achievements of Yashovarman, Dhang Vidyadhara

Unit-IV

Parmar Dynasty- Kakshapaghat of Vakpatimunj, Sindhuraj, Bhojraj Gwalior General Introduction and Dubkund Branch

Unit-V

Gaharwal Dynasty-Govindachandra Vijayachandra Jayachandra Chauhan,Dynasty Vigraharaj IV Prithviraj III

Outcome:- To understand the later Gupta, Maukhari and Vardhan dynasty Rajput dynasty will be understood by various theory of origin of Rajputs The achievements of the Kalachuri and Chandella dynasties have been observed. Social and cultural aspects by studying paralysis of Parmar & Gwalior Social and cultural aspects by studying paralysis of Parmar & Gwalior

Subsidiary Books-

1. Rajwant Rao post-Gupta era India .political history of
2. Gaurishankar Chatterjee- Harshvardhan
3. W. Mirashi- The Kalachuri King and His Age
4 History of Prashant Kashyap Gahadwals
5. Vibhuti Bhushan Mishra - The History of the Gurjar Pratihar) 6. Shishir Kumar Mishra - The Erely Rulers of Khajuraho
7. Bhatiya Pratipal - The Parmaraj
8 RC. Majumdar The Age of Imperial Kannauj

Semester - II
Paper-II

Political History of South India

Curse Objective: - The objective of this question paper is to acquaint the students with the systematic political and cultural history of South India.

Unit-I
Sangam Age-Literature and Administration
Cheras, Cholas and Pandyas

Unit- II
Chalukya Dynasty - Chalukyas of Vatapi Pulakeshin-second Chalukyas of Kalyani - Someshvara first Vikramaditya shastham Chalukyas of Vengi – Vijayaditya-second

Unit III
Rashtrakuta Dynasty Dhruva, Govinda III, Amoghavarsha
Kadamba Dynasty, Chief Ruler

Unit-IV
Pallava Dynasty-Mahendravarman, Narasimhavarman 1, Narasimhavarman 11

Unit-V
Chola Dynasty - Rajaraja 1, Rajendra Chola, Chola-Chalukya conflict, Chola administration

Cures Outcome: - Various branches of Chalukya dynasty, student will get acquainted with the systematic political and cultural history of South India. The Rashtrakuta dynasty made a major contribution to the political history of South India. Pallava dynasty play an important role in the cultural landscape of South India Discuss conflict and administration as we understand it with the study of Chola dynasty Getting acquainted with the political and cultural history of South India by studying the Sangam literature .

Subsidary Books

1. Balram Srivastava South India
2. Shyam Manohar Mishra Political History of South India
3.G. Yajdani - History of the Deccan
4. H.N. dubey comprehensive history of south india
5. Vishudhanand Pathak History of South India
6. K.N. Shashtri The Cholas
7. A. S. Altekar- The Rashtrakutas and Their Times
8.K. Gopalan-Pallavaraj of the Kanchi
9.D. P. Dikshit Chalukyas of Vadami
10. KN. Shashtri - A History of South India

Paper-III

Proto History of India

Curse Objective :- The objective of this question paper is to acquaint the students with the development of different dimensions of Harappan culture, Chalcolithic cultures, pottery cultures as well as iron technology in India.to inform about the development and importance .

Unit-1

Origin and development of prehistoric culture Pre-Harappan farming community of India.Harappan city civilization, origin, expansion, main features, chronology, and disintegration (collapse) Later Harappan Culture

Unit-2

Chalcolithic Cultures of North India Kaytha, Malwa, Ahar, Jorwe
Origin, Extent, Area, Main Features, Chronology.

Unit-III

Pottery Culture in the context of India Garrick Ware Tradition Krishna Lohit Patra Tradition
Painted Gray Ware Tradition northern black glazed ware tradition.

Unit-IV

Copper funds
Place of copper deposits in Indian archeology Spread of copper deposits Equipment type, manufacturer, chronology.

Unit V

Iron Age in ancient india Antiquity of Iron in India Literary and Archaeological EvidenceArchaeological Basis of Iron Age Cultures in India Northern India, Eastern India Central India and South India importance of iron technology.

Cures Objective: - After studying the Harappan cultures, we can understand the protohistoric culture to understand the protohistoric culture with special reference to Harappa culture Gradual development of human beings after studying various Chalcolithic cultures of North India. The Iron Age is the most developed period of human beings, which is best known on the basis of archaeological evidence. The study of various pottery cultures gives information about the origin and development of pottery tradition. Study the copper deposits, and their importance in Indian archeology.

Subsidiary Books

1. VK Jain Prehistory and Protohistory of India
2 KK Thapalyal Indus Civilization
3. RP Pandey-Indian Archeology
4. D.P. Agrwal- The Copper and Bronze Age in India
5. Mortimer Wheeler- Early India and Pakistan
6. Vibha Tripathi- History of Iron Technology in India

Paper-IV
Elements of Sculptures and Iconography

Curse Objective: - The purpose of this question paper is to acquaint the students with the meaning and diversity of sculpture and statue and to introduce them to classical texts and their laws. To highlight the importance of idol art and idol art centers

Unit-I
Meaning of idol and statue and difference between the two. Antiquity, origin and development of idol worship

Unit-II
Salient Features of Indus Valley Sculpture Mauryan Sculpture Features of Shunga Sculpture Kushan period sculpture, major art centers Mathura and Gandhara

Unit-III
Sculpture and characteristics of Shreya era Centers of Gupta Art - Styles of Sculpture of Mathura, Sarnath

Unit-IV
Ioonographic Texts of Ancient India Matsya Purana, Vrihat Samhita, Rupapandan, Aparajitaprchha and the most Hindu idols - Shaiva, Vaishnava and Shalta

Unit V
Main idols of solar sect Buddhist statues Jain statues 24 Tirthankara, their Yakshas and Yakshis, Jain Devamandalas

Cures Objective:- Antiquity of Worship Study of sculptural arts of different periods to understand the gradual development. The importance of sculpture and idol art centers has to be exposed Pratima is to be introduced to the classical texts and their laws to study Buddhism and Jainism through sculpture.

Subsidiary Books
1. Vasudev Sharan Agarwal Indian Art-
2. Nihar Ranjan Roy-Mauryan and post-Mauryan art
3. Vrijabhushan Srivastava - Ancient Indian Sculpture and Iconography
4. Ramnath Mishra - Indian Sculpture
5. Shantilal Nagar Jain Sculpture
6. A.K. Kumaraswami- Early Indian Icnography
7. J.N. Benerjee- Development of Hindu Icnography
8. B.C. Bhattacharya- Indian Buddhist Icnography

Semester-III

Paper-I

Indian Numismatics

Curse Objective: - The purpose of this question paper is to explain the origin and development of currency to the student, by introducing the coins of Indian, Greek, Kushan, Gupta kings along with the coins of the Indian, Greek, Kushan, Gupta kings, by introducing the struck currencies, district and republican currencies, we will explain the importance of currency in the currency system. Will also describe and study the conditions before the origin.

Unit - I

Theory of Commodity Exchange market system Materials used as currency such as cowrie and cow Various Theories of the Origin of Money and Ancient Indian History Money as a Source.

Unit -II

Methods of making Punchmark coins Symbols and dates found on Punchmark coins Local and janpada coins Panchal, Kaushambi and Mathura Republic's currencies Malwa, Yaudheya

Unit-III

Coins of Indo-Greek kings - Demetrius and Menander, coins of Kushan kings, coins types of Kanishka and Huvishka and study of characteristics

Unit-IV

Coins of the Gupta kings-Gold and silver coins of Chandragupta Pratham, Samudragupta,

Unit-V

Chandragupta Duty, seals of Kumaragupta and Skandagupta Coins of early medieval kings Coins of Pratihara, Kalchuri, Chandela and Parmar kings

Cures Outcome: - Understand the origin of numismatics and as a source of Indian history the purpose of this course is to introduce the students to the sources of ancient indian history culture and archaeology. Various types of Indo-Greek, Kushan coins will be known To integrate the gained knowledge with various contemporary and evolving areas in Museology, Temple, Sculpture, Architecture and Monuments Understanding the coins of early medieval kings as a mirror their economic condition.

Subsidiary Books

1. Parameshwari Lal Gupta Indian Antiquarian Coins
2. Rajwant Rao - Ancient Indian Gurrencies
3. Onkar Nath Singh - Post-Gupta Period North Indian Coins
4. Sanjeev Vajpayee - Ancient Historical Coins
5. A. Cunnigham- Coins of Ancient India
6. A.S. Altekar-Coins Age of the Gupta Empire
7. A.K. Singh- Coins of the Great Kushana

Paper-II

Indian Inscription and Scriptography

Curse Objective:-The objective of this question paper is to tell the difference between Brahmi and Kharosthi scripts by giving a brief introduction to the student along with the origin and development of writing art in India. Along with describing the materials and dates of the art of writing, the importance of records as a source and their role in history writing by analyzing the material found in the records of different periods / dynasties.

Unit- I

Origin, development and antiquity of writing art Origin and development of Brahmi script Brief introduction of Kharosthi script

Unit-II

Materials used in writing such as palm leaves, birch leaves, stones and metals
Dates Introduction of Brahmi script of Ashoka period and records as a source of transliteration

Unit-III

Historical and Cultural Study of the Following Inscriptions Ashoka's - Second and Thirteenth Rock Inscriptions and Seventh Pillar Inscriptions Besnagar Garud Pillar of Heliodorus Elephant Cave Inscription of Kharavela Junagarh inscription of Rudradaman

Unit-IV

Historical and cultural importance of the following inscriptions Prayag (Allahabad) pillar inscription of Samudragupta, Mehrauli inscription of Chandra. Bhitari inscription of Skandagupta

Unit-V

Pulikeshin II Aihole inscription Khajuraho inscription of Chandela ruler Yashovarman andDhang, Inscription of- Rewa Supiya inscription, Allaghat inscription of Narasimha, Rewa inscription of Karn.

Cures Outcome: - Understand the origin and development of script and the origin of Brahmi script Provide opportunities to excel in academics, research or Heritage conservation. Importance of Indian inscriptions and cultural studies contribute to the reconstruction of history through various types of records from the study of inscriptions, description of some such kings was found.

Subsidiary Books

1. Gauri Shankar Hiralal Ojha Indian Scripts
2.K. D. Vajpayee Historical Indian Records
3. Vasudev Upadhyay Study of ancient Indian inscriptions
4.Shri Ram Goyal - Gupta inscriptions
5. D.C Sarkar - Indian Epigraphy
6. D.C. Sarkar- Select Inscriptions Vol. I&II
7. A.K. Singh Develovment of Nagri Script

Paper-III

Ancient Indian Religious Traditions

Curse Objective: - India is a religion dominated country. The existence of different religions is found here, that is why we will be able to acquaint the student with their importance by studying the traditions of development of those religions, importance of different religions, Vedic religion, Brahmin religion, Buddhism and Jainism (Atheist and Atheist religion).

Unit-I

Vedic and post-Vedic period Nature worship, cult, renunciation
Upanishadic philosophy

Unit II

conversion of vedic religion to brahminical religion Shiva-Rudra Shiva Linga Puja and Shaiv Sect -Pashupat, Kapalik ,Kalamukh Vaishnava- Narayana, Vasudeva and dasavatar Shakta religion-Shakti worship, Mahishamardini ,Saraswati and the seven matrikas Solar and Ganapati sects

Unit III

Origin and development of Buddhism Major Teachings The four Aryasatyas, the Ashtanga path and the Pratityasamutpad Sects of Buddhism Hinyana, Mahayana reasons for the decline of buddhism

Unit-IV

Origin and development of Jainism, Tirthankara tradition Major teachings of Jainism Chartuyoga, Panchamahavrata Svetambara Digambara Sect of Jainism

Unit III

Vaksha and naga tree and animal worship Mother Goddess and Tantra

Cures Outcome:- The objective of this course is to teach and train the students about Indian philosophy. Understand the importance of Charvak and Jain philosophy what is Buddhism and Mimansa in philosophy Understanding Samkhya Yoga and Nyaya in Religion and Philosophy

Subsidiary Book

1. PV Kane-History of Theology
2. Govind Chandra Pandey - Vedic Culture
3. Ram Kumar Ahirwar History of Buddhism
4. Hira Lal Jain - Contribution of Jainism in Indian Culture
5. D.C. Sarkar- Studies in the Religious life of Ancient India.
6. V.S. Pathak History of Saiva Cults in Northern India.
7. R.G. Bhandarkar- Vaishnavism. Shaivism and Minor Religious systems.

or

Ancient Indian Philosophical Traditions

Curse Objective:- Many philosophical traditions have existed in Indian culture of this question paper to introduce.

Unit- I
Indian philosophy Introduction to Indian Philosophy, orthodox, heterodox

Unit II
Charvaka and Jain philosophy

Unit-III
Buddhist and Mimamasa philosophy

Unit-IV
Samkhya, Yoga and Nyaya philosophy

Unit-V
Vaisheshika, Vedanta (Dvaita and Advaita) philosophy

Cures Outcome:- Many philosophical traditions have existed in Indian culture of this question paper to introduce.The objective of this course is to teach and train the students about Indian philosophy. Understand the importance of Charvak and Jain philosophy what is Buddhism and Mimansa in philosophy.

Subsidiary Books

1.Baldev Upadhyaya Outline of Indian Philosophy
2. S. Radhakrishnan - Indian Philosophy
3. Shiv Kumar Gupta History of Indian Thought
4. Chandra Dev Singh Ancient Indian Society and Thought
5. Vachaspati Gairola Vedic Literature and Culture
6. A.D. Macdonell- Vadic Mythology
7. Chandradhar Sharma- A Critical Survey of Indian Philosophy

Paper - IV

Methods of Archeology & Historical Archeology

Cures Objectives:- The main objective of this question paper will be given to the students for the information of the past and comparative study with the present, in which to obtain the antiquities from the stone age to the historical period, various methods of archeology will be used to reach the conclusion, so that the students can understand the different dimensions.

Unit - I

Definition, Scope and Objectives of Archeology History of Indian Archeology

Unit- II

Major Survey Methods: Major Methods of Excavation

Unit-III

Stratification, Excavation, tools and equipment
Identification of Stone Tools, pottery

Unit IV

Definition of historical archeology Origin and development of historical periods second Process of urbanization and formation of states

Unit-V

Study of important sites Bhimbetika , Adamgarh, Maihar, Patpara, Sihawal Didwana, Inamgaon, eran, Kayatha, Jorwe, Koldihwa, Mahgada, Unnur Sangalkullu, Taxila, Kaushambi, Hastinapur, Atarikheda, Itha, Deurkothar and Manaura.

Cures Outcome: - Understanding archeology and knowing the history of India to know the barrier Archaeological methods. The importance of survey and excavation in archaeological studies.the tools and stratification required for excavation to obtain archaeological evidence. Know the process of second urbanization Aware of the importance of ancient sites and their cultures.

Suggested Booker

1.J.N. Pandey Archaeological Discussion
2. Manmohan Singh - Profile of Archeology
3 Radhakant Verma Regional Archaeology
4. Radhakant Verma - Archaeological Research 5. B. Allchin and Raymond- Origions of Civiliztion
6. Martimer Wheeler-Archaeology from the Earth
7. Sushmita Panday- Archaeological Methods and Techniqes

Or

Environmental Archaeology

Curse Objective: - The objective of this question paper is to make the students aware of the climatic fauna, flora and human life as well as their fossils obtained from the Late Pleistocene to the Holocene period under environmental archaeology.

Unit- I

Definitions of Environmental Archeology Usefulness of environmental archeology in present day archaeology study of animal bones

Unit - II

Major causes of environmental change: Pliocene environment

Unit-III

General study of fossils of fauna and flora, fossils and formation process
Plant residues and biomarkers (biomarkers) in human and non-human hard tissue

Unit-IV

Analysis of human remains General knowledge of plants and animals in early human
History 3 D visualization, image analysis material investigation

Unit-V

Gradual impact from environment to human life Environmental background of Holocene Environmental movement and various changes in human life.

Cures Outcome: - Holocene period under environmental archaeology. The outcome of this question paper is to make the students aware of the climatic fauna, flora and human life as well as their fossils obtained from the Late Pleistocene.

Subsidiary Books

1. HD. Sankalia Indian Archeology
2. Ramprakash Ojha Archaeological Science
3. Umberto Albarella- Environmental Archaeology: Meaning and Purpose
4. Reitz Elizabeth- Case Studies in Environmental Archaeology
5. Johan G. Eavans- An Introduction to Environmental Archaeology

Semester-IV

Paper-I

Ancient Indian State and Administration

Cures Objective:-The objective of this question paper is to make the student aware of the concept of state and king, their different types, monarchical and republican system, Council of Ministers, Sap - tang theory and administration of various times. So that the students can assess the future administrative conditions in the sequence of ancient systems.

Unit - I

Origin of State in Ancient India Types of State Form, Objectives and Functions
Monarchical State and Republican State

Unit- II

The origin of the king and various theories coronation, divinity of the king
Council of Ministers, Sap - tang Doctrine

Unit-III

Village administration, city administration and judicial system

Unit-IV

Features of Mauryan Administration Features of Gupta Administration and Harsha's Administration

Unit- V

Administrative features of South Indian
Pallava era administration Chalukya administration Chola administration system

Cures Outcome:- Information about the origin of the state is found in ancient India king and its various theories the justice system with village and nagar administration, information is available.

Subsidiary Books

1. Kamlesh Bhardwaj Society and State in Ancient India
2. A.S. Altekar - Ancient Indian Polity
3 Dr. Ajay Singh Ancient Indian Governance and Law
4. Dr. Seema Mishra - Gupta-era Central Administration
5. Dr. Anuradha Singh - Rajshastra and Governance in Ancient India
6. Beni Prasad - The State in Ancient India
7. R.R. Dikshit Hindu Administrative Institutions

Paper-II

Socio and Economic History of Ancient India

Cures Objective:- The purpose of this question paper is to acquaint with the social and economic institutions of ancient India, in which to acquaint with Varna, Ashram, Purusharth, Sanskar, taxation system and business Efforts will have to be made to acquaint them with the development of social and economic institutions.

Unit - I

Literary Evidences of Social and Economic History Varna System, Theory of Varna Hybridity

Unit -II

Ashram system
Development of caste system

Unit - III

Importance of Samskaras in Ancient India Purusharth in ancient Indian society
Concept of family condition of women in society

Unit-IV

Centers of Education in Ancient India Buddhist Education, Nalanda Mahavihan and Vileramshila

Unit - V

Urbanization and Trade in Ancient India agriculture based economy land ownership and taxation Category, Cooperative Societies.

Cures Outcome:- Introduction to social and economic institutions of ancient India and Study of social system of 6th century BC, Family culture and role of women in ancient India, Study of different centers of learning in ancient India Urbanization and spread of trade in ancient India Agricultural economy.

Subsidiary Books

1. Om Prakash Social and Economic History of Ancient India
2 Romila Thapar Social History of Ancient India
3. Dr. Shiv Swaroop Sahay Social and Economic History of Ancient India
4. Ramsharan Sharma - Material Progress and Social Structures in Ancient India
5. A.S. Altekar- Education in Ancient India
6. R.C. Mazumdar- Corporate life in Ancient India
7. P.N. Prabhu- Hindu Social Orgnization

Paper-III

Field Archaeology and Training

Curse Objective:- In this question paper, the students will be informed about regional archeology survey, exploration and excavation methods and through photography and documentation work of archaeological sites.

Unit- I

Definition, Objectives and Scope of Regional Archeology The purpose of archaeological exploration Methods of exploration of archaeological sites, traditional and scientific methods Exploration team and equipment

Unit - II

Archaeological excavation stratification, objectives of excavation, development of excavation method, measurement necessary equipment and tools Excavation methods, vertical (vertical) and horizontal method, recording of excavation and map of excavation site, drawing of tools and Utensils items related to different types of production system

Unit - III

Excavation analysis Classification of objects obtained from excavation and their study Publication of report of photography and excavation Use of excavated materials in the reconstruction of the social and economic history

Unit IV

Brief report of excavated sites Bhimbetika, Maihar, Patpara, Khairadih, Didwana, Nagarjuni Konda, Kaytha, Inam village

Unit-V

Archaeological training Identification of stratification Identification of tools Identification of sculptures Identification of temple Educational Tour of Excavated Site straining on methods of making trench'

Cures Outcome:- Thorough knowledge of field archeology and Archaeological excavations learned scientifically learned to prepare photography work and report during archaeological excavation Preparation of documentation reports of excavated sites Surveying and identification of the area during archaeological training.

Subsidiary Books

1. Radhakant Verma Regional Archeology
2. Ramprakashak Ojha Archaeological Science
3. Parmeshwari Lal Gupta Introduction toArcheology
4. RP Pandey Indian Archeology
5. RJ.C. Alkison- Field Archaeology
6. Martimer Wheeler- Archaeology from the Earth
7. M.B. Cookmon- Arhaeological Photography Ancient India

or

Human Values

Cures Objective:- Indian culture is superior to other cultures of the world due to its characteristics, in which human values are predominant. Today, due to various reasons such as disintegration of family, industrialization, migration to cities, ancient values are declining. The main reason for this is also the inclusion of new values. Because of this, our identity is getting blurred in the global scenario. This question paper has been structured keeping in view the fulfillment of the objective of making the students familiar with the institutions related to human values in order to maintain their dignity. In which the students can be introduced to the thoughts of the past or ancient thinkers.

Unit-I

Human Values Concept, Meaning and Definitions Indian thought and institutions related to human values, ashram system and purusharth

Unit - II

Civilization and Culture, Definitions, Cultural Elements, Characteristics of Indian Culture, Vedic Maurya, Gupta and Early Medieval Culture

Unit-III

Human Values in Brahman Tradition –Human values in tri-rin Panchmahayagya, Upanayan, and Diksha Parva

Unit-IV

Human Values in Shamana Tradition Tri-Ratna in Buddhist and Jain tradition Panch Mahavrat of Mahavir the Four Noble Truths of the Buddha, the Eightfold Path

Unit - V

The contribution of institutions in the initiation, transmission and promotion of human values, Family education and learning center.

Cures Outcome:- Human values are predominant. Today, due to various reasons such as disintegration of family, industrialization, migration to cities, ancient values are declining. The main reason for this is also the inclusion of new values. Because of this, our identity is getting blurred in the global scenario. This question paper has been structured keeping in view the fulfillment of the objective of making the students familiar with the institutions related to human values in order to maintain their dignity.

Subsidiary Books

1. Singh, Chandradev Ancient Indians and thought-
2. Mishra, Jaishankar Social History of Ancient India
3. Kane, Pandurang Vaman - (Anu Arjun Choubey Kashyap) History of Dharma Shasta –
4.Vasudev Sharan Fundamental unity of India
5. Vedalankur Haridatta Hindu family demarcation
6. Upadhyay, Ramji Cultural Role of Ancient Indian Landscape
7. Gopal, Lallanji and Yadav B. ns indian cukure
8 Jain, Jagdish Chandra Jain Indian Society in Agama Literature -
9.Srivastav, Maheshchandra Jainism and Philosophy
10. Altekar, A.S.-Education in Ancient India

Paper-IV

Art and Archeology of Vindhyas Art

Cures Objective:- In this question paper, geographical and historical introduction of Vindhya region will be given to the students, including prehistoric cultures, rock paintings, megalithic tombs of Vindhya region, Buddhist and temple architecture.

Unit- I

Geographical introduction of Vindhya region: mountain range, rivers, vegetation soil
Flora and fauna

Unit - II

Prehistoric cultures and major sites of Vindhyas Palaeolithic period, Mesolithic period, Neolithic period Megalithic tombs of Vindhya region

Unit-III

Center for Buddhism and Art in the Vindhya Region Deur Kothar, Bharhut, Manpur, Boudhadal, Gurgi

Unit-IV

History of temple architecture in Vindhya region Ancient sites of temple architecture-Bhumra, Nachna, Bela, Khajuha, Chandreh Virateshwar,

Unit-V

Major archaeological sites of Vindhya region Maihar, Shihawal, Patpara, Bagor, Gaddi, Khando, Dharkundi, Machhi-Bichi

Cures Outcome:- Geographical introduction of Vindhya region: mountain range, rivers, vegetation soil ,Flora and fauna Prehistoric cultures major sites of Vindhyas Paleolithic period, Mesolithic period, Neolithic period Megalithic tombs of Vindhya region the students, including prehistoric cultures, rock paintings, and megalithic tombs of Vindhya region, Buddhist and temple architecture.

Subsidiary Books

1. Prof Nagesh Dubey and Prof. Mohan Lal Chadhar - Art, Culture and Archeology of Central India
2. Bal Chandra Jain - Ancient art centers and creations of Vindhya region.
3. Sudhir Trivedi Pratihara art and architecture of central India-
4. A.K. Singh- Temples of Kulchuri period
5. A. Cunnigham-Stup of Bharhut
6. S.N. Mishra- Gupta Art & Architecture
7. Rahman Ali-Temples of Madhya Pradesh

Or

Conservation, Preservation and Dating Techniques

Cures Objective:-The objective of this question paper is to make the students aware about the maintenance of antiquities obtained from excavation and their conservation and preservation, as well as to make them familiar with the various methods of dating.

Unit - I

Introduction to Antiquities – Importance and principles of preservation
History of Archaeological Conservation in India, General Rules and Regulations

Unit - II

Preservation of earthern objects, stone-made antiquities, metal remains, copper, iron, silver, gold, brass, glass items, lead, bone, ivory, wood, paper, food paper and cloth etc.

Unit - III

Rules of conservation and classification of antiquities Treatment or repair
Causes of corrosion of antiquities and their treatment

Unit-IV

Protection and preservation of temples and monuments Protection and preservation of idols

Unit-V

Chronology- Importance of chronology, major methods of chronology Relative method-stratification, typology, geomorphology, palaeobiology, fluorine-analysis, varve -analysis, absolute method- dendrochronology, radio carbon system, potassium argon method, thermo-radiation and neo-evolution Methods.

Cures Outcome:- Knowledge of Archaeological Remains How to preserve the archaeological remains of stone, soil metals Learned to classify archaeological evidence with conservation Protection and preservation of archaeological remains and antiquities

Subsidiary Books-

1. O.P. Agarwal - Preservation of library materials and art objects
2. O.P. Agarwal and Rashmi Pathak- Investigation and conservation of mural paintings
3. Dr. Usha Rani Tiwari -New Museum Science
4. Arvind Kumar Singh -Museum Science
5. S.K. Bhomik- Protection and conservation of Museum collection
6. O.P. Agrawal- An Introduction to the preservation of paintings
7. A.P. Singh-Conservation and its technique

STUDY CENTRE FOR TOURISM

M.B.A. (Tourism administration) Scheme of Examination C.B.C.S. Pattern

Paper Code	Nomenclature	Type of Course	Theory Assessment		Internal Assessment		Total	Credit Points
			Max.	Min	Max.	Min.		
Semester-I								
101	Concept and Principles of Tourism	CC	60	24	40	14	100	3
102	Principles and Practices of Management	CC	60	24	40	14	100	3
103	Tourism Products and Resources	CC	60	24	40	14	100	3
104	Policy & planning in Tourism	CC	60	24	40	14	100	3
105	Computer Application	CC	60	24	40	14	100	3
106	Communication Skill	CC	60	24	40	14	100	3
107	Indian Art & Culture	GE	60	24	40	14	100	3
108	Viva-Voce	-	-	-	-	-	100	4
Semester-II								
201	Travel Agency Management	CC	60	24	40	14	100	3
202	Research Methodology	CC	60	24	40	14	100	3
203	Organisational Behaviour	CC	60	24	40	14	100	3
204	Tourism Marketing	CC	60	24	40	14	100	3
205	Human Resource Management	CC	60	24	40	14	100	3
206	Financial Management	CC	60	24	40	14	100	3
207	Event Management & MICE	GE	60	24	40	14	100	3
208	Viva-Voce Comprehensive	-	-	-	-	-	100	4
Semester-III								
301	Hotel & Resort Management	CC	60	24	40	14	100	3
302	Service Marketing	CC	60	24	40	14	100	3
303	Consumer Behaviour OR Hospitality Management	DCE	60	24	40	14	100	3
304	Ethical Legal & Regulatory Aspects of Tourism	CC	60	24	40	14	100	3
305	Hotel Accounting	CC	60	24	40	14	100	3
306	Foreign Language Course (French) OR Foreign Language Course (German) OR Foreign Language Course (Japanese)	GE	60	24	40	14	100	3
307	Job Training Report	-	-	-	-	-	100	8
308	Viva-Voce (Comprehensive)	-	-	-	-	-	100	4

Semester-IV								
401	Strategic Management	CC	60	24	40	14	100	3
402	Heritage Management OR Rural Tourism	CC	60	24	40	14	100	3
403	Tour Operations Management	DCE	60	24	40	14	100	3
404	Eco Tourism	CC	60	24	40	14	100	3
405	Tourism Geography	CC	60	24	40	14	100	3
406	Advertising Management OR Retail Management	GE	60	24	40	14	100	3
407	Dissertation Report	-	-	-	-	-	100	8
408	Viva-Voce (Comptehensive)	-	-	-	-	-	100	4

CC – Core Course, GE – Generic Elective, DCE – Discipline Centric Elective

M.B.A. (Tourism Administration)

Semester – I

101 :- Concept and Principals of Tourism

Objective : This will introductory module giving the basis of tourism studies. This will give an overview of tourism industry and various organisations.

Course Contents :

Unit – I **Introduction** : What is Tourism? Definitions and Concepts, tourist destination, services and industry, definition and historical development, Past to 2nd world war, recent and current 1945-2002, Future from 2002 onwards. General Tourism Trends. Types of Tourists, Visitor, Traveler, and Excursionist – Definition and differentiation. Tourism, recreation and leisure, their inter – relationships.

Unit – II **Tourism Products & Attraction** : Nature, Characteristic and Components of Tourism Industry. Why it is different from other types of consumer product? Elements and characteristics of tourism products. Tourism product production system, Tourism Product Life Cycle, typology of tourism products.

Unit – III **Types and Forms of Tourism** : Inter- regional and intra-regional tourism, inbound and outbound tourism, domestic, international tourism. Forms of Tourism: religious, historical, social, adventure, health, business, conferences, conventions, incentives, sports and adventure, senior tourism, special interest tourism like culture or nature oriented, ethnic or 'roots' tourism and VFR.

Unit – IV **Tourist Transportation:**

Air transportation : The airline industry present policies, practices. Functioning of India carriers. Air Corporation Act, Air charters.

Surface Transport : Rent-a-car Scheme and Coach-Bus Tour, Fare Calculation. Transport & Insurance documents, All India Permits

Rail Transport : Major Railway systems of World, (Euro Rail and Amtrak) General information about Indian Railway, Types of rail tours in India:, Place-on-Wheels and Royal Orient, Deccan Odessy, Toy Trains. Indrail Pass.

Water Transport : Historical past, cruise ships, ferries, hovercrafts, river and canal boats, Fly-cruise.

Unit – V **A study of International Tourism Organisations** : Origin, location and functions of WTO, IATA, PATA, ASTA, UFTAA, and ICAO.

Suggested Readings :

- Mill and Morrison. (1992), The Tourism System: An Introductory Text, Prentice Hall.
- Cooper, Fletcher et al, (1993), Tourism Principles and Practices, Pitman.
- Burkart and Medlik, (1981), Tourism: Past, Present and Future, Heinemann, ELBS.
- Mill, R.C., (1990), Tourism: The International Business, Pretience Hall, New Jersey.
- Bhatia, A.K., - International Tourism
- Seth, P.N., (1999) Successful Tourism Management (Vol 1 & 2)

Semester – I

102 : PRINCIPLES AND PRACTICES OF MANAGEMENT

Objectives : This module explains meaning of management and analyses its process in modern organisations including tourism and travel.

Course Contents :

Unit – I **Management** : Concept, Nature, Process and significance of Management. Management as an art and science; Management as profession skill and roles of managers in organisation; Evaluation of management theory, schools of management thoughts.

Unit – II **Functions of Management** : An overview of functions of management; Concepts of POSDCORB Planning : Nature, purpose, types and process, Management By Objectives (MBO) Decision Making process, tools and techniques. Decision making components of effective decision making.

Unit – III **Organisaing** : Concept of organising and organisation. Line and Staff Authority and responsibility, span of control, Delegation of authroity, centralisation versus decentralisation. Organisation Structure and design. Staffing and Selection Process.

Unit – IV **Directing** : Communication – Process and Types; Barriers and principle of effective communication (Horizontal and Vertical communication), Motivation – theories and practices.

Unit – V **Leading** : Leadership – Concept, Theories of Ladership, styles, Successful effective leadership style in travel trade and hospitality organisations. Concept of Controlling.

Suggested Readings :

- Essential of Management – Harold Koontz & Heinsz Weirich.
- Management – H. Koontz & Cyrill O' Donnell.
- Management Theory – Jungle, H. Koontz.
- Principles of Management – Peter F. Drucker.
- Management Concept – V.S.P. Rao, Konark Publishers
- Principles & Practice of Management – L.M. Prasad, S. Chand.
- Organization & Management – R.D. Agrawal, Tata Mc Graw Hill.
- Modern Business Adminstration – R.C., Pitman.

  Human Resources Management _ Railey M., Butterworth Heinemann

Semester – I

103 : Tourism Products and Resources

Objective : The module gives information of countries tourist places of national and international importance and it helps students to know the background elements of tourism resources.

Course Contents :

Unit – I **Natural Resources** : Tourist products : desiuiton and disserentiation wildlife Sanctuaries, National Parks and Natural Reserves in India (Jim Corbett Tiger Reserve, Bharatpur Bird Sanctuary, Valley of Flowers, Kanha, Kaziranga, Sasan Gir, Dachigam, Ranthambhore and Keoladeo Ghana).

Hill Stations : Study of Hill Station attractions and their environs with case studies of Mussoorie, Naimtal, Munnar and Ooty.

Beaches and Isalands : Beaches in Goa, Kerala, Orissa, Andman Nicobar & Lakshdvipislands.

Unit – II **Popular Tourist Resources** : Delhi, Agra, Jaipur, Khajuraho, Varanasi, Mumbai, Kolkata, Chennai, Banglore, Hyderabad, Mahabalipuram, Madurai, Tanjore, Hampi, Ellora, Elephanta, Konark and Fatehpur Sikri

Monuments - Qutub Minar, Atala Mosque (Jaunpur), Kirtistambha (Chittor), Sher Shah Suri's Tomb, Sikandara, Red Fort (Delhi), Taj Mahal, Goldern Temple (Amritsar) Hawa Mahal (Jaipur), Bara Imambra (Lucknow).

Unit – III **Pilgrimage Destinations** : Hindu – Charo Dham Yatra, Jyotirlinga Yatral, Devi Yatra Vindhyachal (U.P.) Kamakhya (Assam), Vaishnodevi, Kashi, Pryag, Gaya, Ayodhya, Mathura- Vrindavana, Allahabad, Ujjain, Haridwar, Nasik, Gangasagar.

Buddhist : Lumbini, Bodhgaya, Sarnath, Kushinagar, Sharavasti, Sankisa, Vaishali, Rajgriha, Kapilvastu, Nalanda, Sanchi, Ajanta.

Jain : Kashi, Pavapuri, Shatrunjaya, Girnar, Mt. Abu, Sharavanbelgola, Palitana

Muslim : Ajmer Sharif, Nizamuddin (Delhi), Fatehpur Sikri, and some important Mazars.

Sikh : Patna, Nanded, Guru-ka-Tal (Agra), Amritsar.

Saint : Kabir, Tulasi, Raidas, Sankarcharya.'

Unit – IV **Fairs and Festivals** Musics Dance, Kumbha, Pushkar, Sonepur, Dadari, Tarnetar, Chhata, Pongal/Makar Sankranti, Baishakhi, Meenakshi Kalyanam, Holi, Gangaur, Onam, Durga Puja, Ramalila, Diwali, Kartik Purnima (Dev Deepawali, Guru Parb), Dashahara (Kullu), Rathyatra, Nag Nathaiya (Varanasi), Bhrawafat, ID-ul-Fitr, Easter, Christmas, Carnival (Goa), Burhawa Mangal (Varanssi), Ganga Mahotsava, Taj Mahotsava, Khajuraho Mahotsava and Desert Festival.

Unit – V **Souvenirs** - Handicrafts and Handlooms. History of Dance Style and main Gharanas of North Indian Music, History of Drama in India and its present scenario.

Suggested Readings :

- Gupta, SP, Lal, K, Bhattacharya, M. Cultural Tourism in India (DK Print – 2002)
- Dixit, M and Sheela, C. Tourism Products (New Royal Book, 2001)
- Oki Morihiro, Fairs and Festivals, World Friendship Association, Tokyo, 1988.

Semester – I

104 – Policy and planning in Tourism

Objective : The Module will expose the students about the tourism policy of India and of a few tourism states of the country.

Unit – I **Introduction** : Concept of Policy. Formulating tourism policy, Role of government, public and private sectors, Role of international multinational, state and local tourism organisations in carrying out tourism policies.

Unit – II **Tourism Policy** : Study of National Tourism Policy 1982 and 2002, National Action Plan on Tourism, 1992: Special Tourism Area Development Programme. The concept of National Tourism Board, National Committee on Tourism, Case study of tourism policies of a few state (Uttar Pradesh Rajasthan, Kerala, Madhya Pradesh.). Investment opportunities and government policy for investment in hotel/tourism industry. Sources of funding.

Unit – III **Understanding Tourism Planning** : Conceptual meaning of Tourism Planning, Evolution of Tourism Planning General Concepts of Planning, Level and Types of Tourism Planning, Background Approach and planning scale. Public and Private sectors role in Tourism Development. Analysis of an individual Tourism Project (development of the Buddhist circuit)

Unit – IV **International Agreements** : Chicago Convention, Warsaw Convention, Open Sky Policy, Bermuda Convention, Euro Agreement, Schengen Agreement,

Suggested Readings :

- New Inskeep, Edward, Tourism Planning : An Integrated and Sustainable Development Approach (1991) VNR, New York.
- Ashworth, G. J. (2000), The Tourist Historic City. Retrospect and Prospect of Managing the Heritage City. Pergamon, Oxford.
- Dept. of Tourism, GOI Investment Opportunities in Tourism (Brochure).
- Sharma, J.K. (2000), Tourism Development. Design for ecological sustainability, Kaniska Publication, New Delhi

Semester – I
105 – COMPUTER APPLICATION

Objectives : The Module is prescribed in the course to inform the students about the role of Computer Information systems in travel trade. The prescribed unit enhance the skills of students especially when they will be attached for practical.

Course Contents :

Unit – I **Basic Computing :** An appreciation of computer hardware and terminology, The use of an operating system, various programming language, A descriptive survey of some of the important application : communication, office systems, information storage and retrieval of Data.

Unit – II **Office Work :** The study and use of typical micro-computer storage software packages such as word processor, spreadsheet and MS Office (Word, Excel, Powerpoint, Access and Outlook Express)

Unit – III **Internet :-** Management information systems, Office automation, E-mail and electronic highway, Internet, Web Page Designing.

Unit – IV **Computer Networking :** What is CRS, How it functions, CRS for Rail Transport, Hotel Bookings Airlines: Different packages used : Abacus, Fantasia, Amadeus, Apollo-Galileo, Sabre etc. Use dummy of one for the CRS packages (if available). Practical of CRS.

Unit – V **Computer Presentation :** Introduction to a statistical package (SPSS), Presentation Graphic Tools, Multimedia technology, Role of Computers in Travel and Tourism.

Suggested Readings :

- Lucey T, Management Information Systems, DP Publications.
- Clark A, Small Business Computer Systems, Hodder & Stoughton, 1987.
- Parkinson LK & Parkinson ST, Using the Micro-computer in Marketing, McGraw Hill, 1987.
- Braham B, Computer System in Hotel & Catering Industry, Cassell, 1988.
- Basandra S.K., 'Compute Today', New Delhi : Galgotia Publications.
- Mehta Subhash, "Wordstar – 7", New Delhi : Comdex Computer Publishing, Pustak Mahal.

Semester – I
106 – Communication Skill

Objectives : The course is aimed at equipping the students with the necessary techniques and skills of communication to inform others, inspire them and enlist their activities and willing cooperation in the performance of their jobs..

Course Contents :

Unit – I **Introduction**: Definition and process of communication, Essentials of effective communication in organizational effectiveness, Use of grapevines.

Unit – II **Oral Communication** : Publication Speech-Composition, Priciples, Speech delivery and Speech Skills, Interview pre-planning for interview, facing the interview board, Group discussion – Qualities looked for in GD's, DO's & DOn't of GD's, Communication in communities, Seminars and Conferences.

Unit – III **Non-Verbal Communication:** Importance of non verbal communication, Facial Expressions, postures Body Movement, Gestures, Eye Control, Haptics etc. Listing Difference between Listing and Hearing. Listing Processes & Types.

Unit - IV **Report Writing and Job Application :** Structure of Reports, Preparatory steps in writing reports, use of illustrations and questions, process of writing the reports, Importance and functions of job application letters, Drafting the application, preparation of curriculum vitae.

Unit – V **Business Correspondence** : Essentials of effective business correspondence, Structure of a Business letter, Forms of letter layout, Types of business letters – Enquiries and replies, orders and their execution, complaint and response letter, sale letter, Thanks letter etc.

Suggested Readings :

- Bowman, Joel P. and Branchaw, Bernadine P. "Business Communication: From process to product" 1987, Dryden Press Chicago.
- Rodrigues, M.V., Effectives Business, Communication, 1992, Concept Publication Co. New Delhi
- Kothari, C.R., Research Methodology.

List of cases, recent articles and specific references will be announced in the Class-room at the time of launching of the course.

Semester – I
107 - Indian Art & Culture

Unit – I Structure of Indian Society – Varnasharm System, caste purshartha, samsakara.

Unit – II Comparative study of communication – Hindu, Sikh, Christion, Muslim and Tribals. Indian religion & philosophy – Vedic, Saivism, Vaishnavism, Buddhism & Jainism. Gita its importance and teaching.

Unit – III Sailent feature of ancient Indian Art, Main features of Harappan art, Origin and development of stupa architecture, Main features of Gupta art.

Unit - IV Ancient Indian paintings with special reference to Ajanta & Bagh, Temple architecture Khajuraho & Orrisa, Art and architecture under mugal rulers from Babav to Shahjahan.

Unit – V Painting – Mugal, Rajput and Kangra, Feature of Christian art.

Suggested Readings :

- Gupta, S.P. Lal, K. Bhattacharya, M. Cultural Tourism in India (D.K. Print- 2002).
- Dixit, M. & Sheela, C. Tourism Products (New Royal Book, 2001).
- Mitra, Devla, Buddhist Architecture, Culcutta.
- T.A. Gopinath Rao. Element of Indian Iconography.
- Subodh Kapoor, Indian God & Goddes.
- A.S. Altekar, Hindu Civilization.
- Joly, Hindu Law & Custom.

Semester – I
108 : Viva-Voce

Semester – IQ

201 : TRAVEL AGENCY MANAGEMENT

Objective : The students will understand the conceptual meaning and differentiation between Travel agency and Tour operation. Further they will understand formalities and documentation needed to set up the units.

Course Contents :

Unit – I **Travel formalities** : Travel Formalities : Passport, Visa, Health requirements, taxes, customs, currency, travel insurance, baggage and airport information. Travel Agency and Tour Operation Business : History, Growth, and present status of Travel Agency. Definition of Travel Agency and differentiation between Travel Agency and Tour Operation business. Travel Agency and Tour Operators: Linkages and arrangements with hotels, airlines and transport agencies and other segments of tourism sector.

Unit – II **Approval of Travel Agents and Tour Operators** : Approval by Department of Tourism, Government of India. IATA rules and regulations for approval of a travel agency, Approval by Airlines and Railways.
Study of various Fiscal and Non-Fiscal incentives available to Travel agencies and Tour Operations business.

Unit – III **Functions of a Travel Agent** : Understanding the functions of a travel agency – travel information and counselling to the tourists, Itinerary preparation, reservation, ticketing, preparation and marketing of Tour packages, handling business/corporate clients including conference and conventions. Sources of income: Commission, Service Charges. Travel Terminology : Current and popular travel trade abbreviations and other terms used in preparing itineraries.

Unit – IV **Functions of a Tour Operator** : Market research and tour package formulation, assembling, processing and disseminating information on destinations, Liasioning with principls, preparation of Itineraries, tour operation and post tour Management. Source of income for tour operation.

Unit – V **Public and Private sector in Travel Agency Business and Tour Operation Business:** Organisational Structure and various Departments of a Travel Agency. Case study of ITDC. Case study of SITA, Cox & Kings, TCI and Thomas Cook. The Indian Travel Agents and Tour Operators – and overview. National Trade Associations : IATO and TAAI.

Suggested Readings :

- Holloway, J.C., (1983), The Business of Tourism, McDonald and Evans, Plymounth.
- Syratt Gwenda, (1995). Manual of Travel Agency Practice, Butterworth Heinmann, London
- Stevens Laurence, (1990). Guide to Starting and Operating Successful Travel Agency, Delmar Publishers Inc., New York.

Semester – II

202 : RESEARCH MEATHODOLOGY

Objective : To equip the students with the basic understanding of the research methodology and to provide an in sight in to the application of modern analytical tools and techniques for the purpose of management decision making.

Course Content :

Unit – I **Introduction** : Nature and Scope of Research Methodology, Problem Formulation and Statement of Research Cost and Value of Information. Types of Research. Research objectives, Criteria for a good research, Research organisation in india.

Unit – II **Research Process** : Steps in the Process of Research Design – Exploratory, Descriptive and Experimental Research Designs. Sample Design – Steps in sampling criteria for selecting a sample procedure sampling method and sample size.

Unit – III **Methods of Data Collection** : Collection of Primary data : Observation interview Questionnaire Method, Questionnaire Design, Questionnaire vs Schedule, Attitude measurement techniques, motivational research techniques.

Unit – IV **Method of Data Representation and Analysis** : Use of graphs, Charts and maps in data representation, Measures of Central Tendency and dispersion measures of relationship. Statistical test. Advance Technique for data analysis ANOVA, multivariate Analysis.

Unit – V **Research Report Preparation** : Preparation of Research Report, Layout of Report, Preparatory steps in writing research. Use of computers in research. Statistical Software package.

Suggested Readings :

- Kothari C.R. , Research Methodology, Willy Eastern Limited, New Delhi 1994.
- Bennet, Roger : Management Research, ILO, 1983.
- Gupta S.P. Statistical Methods, 31th ed, Sultan Chand, New Delhi 2001.

The list of cases and specific references including recent articles will be announced in the class.

Semester – II

203 : ORGANISATIONAL BEHAVIOUR

Objectives : The module helps to understand the key dimensions, processes and influences upon human behaviours at the level of individual and the group in the context of work organisations.

Organisational Behaviour :

Unit – I **Meaning & Nature of Organisation** : system approach.

Unit – II **Groups dynamics**: Type of groups, process in group, Group bahaviour and Group think.

Unit – III **Organization Structure** : Types, differences, organizational chart & its use.

Unit – IV **Organisation, Effectivenss and Development** : Social responsibility of organization, consumer bahaviour.

Unit – V **Organisation Climate** : Organisational change, Conflicts and their Management.

Suggested Readings :

- Robbins, Stephens P, Organisational Behaviour
- Prasad LM, Organisational Behaviour
- Luthans, Fred, Organisational Behaviour
- Hersey and Balanchard, Management of Organisational Behaviour.
- Veechio RP, Organisational Behaviour, Dryden Press 1998.
- Invancevich JM and Mateson MT, Organisational Behaviour and Management.
- Hoyer, Consumer Behaviour, 1998.

Semester – II

204 : TOURISM MARKETING

Objectives : The course includes the operation techniques of tourism marketing. The students are expected to attain a basic knowledge of marketing principals, study to suitability of alternative promotional approaches to and formulate marketing plans and promotional approaches to tourism and other related organizntions.

Course Content :

Unit – I **Marketing** : Core concepts in marketing; Needs, Wants, Demands, Products markets. Marketing management philosophies-Production, Product, Selling, Marketing and societal perspectives. Economic importance of marketing.

Unit – II **Analysis and selection of market :** Measuring and forecasting tourism demand; Forecasting methods, Managing capacity and demand. Market segmentation and positioning (STP)

Unit – III **Marketing Strategies :** Developing marketing environment, Consumer buying behaviour, Competitive differentiation and competitive marketing strategies. New product development. product life cycle, Customer satisfaction and related strategies in internal and external marketing; Interactive and relationship marketing.

Unit – IV **Planning marketing programmes :** Produt and product strategies; Product line, Product mix Branding and packaging. Pricing considerations. Approaches and strategies. Distribution channels and strategies.

Unit – V **Tourism Marketing** : Service characteristics of tourism. Unique features of tourist demand and tourism product, Tourism marketing mix. Marketing of Tourism. Services : Marketing of Airlines, Hotel, Resort, Travel Agencies and other tourism related services-Challenges and strategies.

Suggested readings :

- Kotler, Philp : Marketing Management & Hospitality and Tourism Marketing
- Sinha, P.C. : Tourism marketing
- Vearne, Morrisson Alison : Hospitality marketing
- Kotler, Philip and ARmstrong Philip, Principle of Marketing, 1999, Prentice-Hall India. 1999
- Assael H., Consumer Behavior and Marketing Action (2nd edn. 1985) kent, Boston.
- Crough, Marketing Research for Managers.
- Singh Raghubir, Marketing and Consumer Behaviour.
- Patel, S.G. Modern Market Research, Himalays Publishing.

Semester – II

205 : HUMAN RESOURCE MANAGEMENT

Objectives : In a complex word of industry and business, organisational efficiency is largely dependent on the contribution made by the members of the organisation. The objectives of this course is to sensitize students to the various facets of managing people and to create an understanding of the various policies and practices of human resource management.

Course Content :

Unit – I **Introduction** : Concepts and Perspectives on Human Resource Management; Human Resource Management in a Changing Environment; Corporate Objectives and Human Resource Planning; Career and succession Planning; Job Analysis and Role Description;

Unit – II **Recruitment & Training** : Methods of Manpower search; Attracting and Selecting Human Resources: Induction an Socialisation; Manpower Training and Development; Performance Appraisal and Potential Evolution;

Unit – III **Compensation** : Job Evalution, Wages and Salary Administration, Employee's Benefit Programmes, Groups and Individual incentives and Fringe Benefits, Organisational Participation and Productivity sharing.

Unit – IV **Managerial Skills** : Introducing Change and its managerial problems, Discipline, Absenteeism and Employee Turnover, Conflict Management, Grievance Handling.

Unit – V **Industrial Relations** : Employee Welfare; industrial Relations & Trade Unions; Dispute Resolution & Grievance Resolution & Grievance Management; Employee Empowerment.

Suggested Reading :

- Aswathappa. K. Human Resource and Personnel Management Tata Mc Graw Hill, New Delhi, 1997
- De Cenzo, DA & Robins S.P. Human Resource Management 5th ed. New York. John Wiley, 1994.
- Monappa, A & Saiyadain M. Personnel Management 2nd ed. New Delhi, Tata Mc Graw Hill 1966.
- Mammoria C.B. Personnel Management, New Delhi, HPH, 1996.

The list of cases and specific references including recent articles will be announced in the class at the time of launching of the course.

Semester – II

206 : FINANCIAL MANAGEMENT

Objectives : The basic objectives are accountings finance management principles and to understand the basic techniques of preparing financial information.

Unit – I **Meaning, Role, Scope and Importance of Financial Management :** Job of the financial Manager, financial Goals, financial control, Organization and objective of financial function.

Unit – II **Financial Planning, Capitalisation and Capital Structure :** Meaning, concept of capital, Theories of capitalization, Over capitalization and under capitalization, optimum capital structure, Determinant of capital structure, Financial Leverage, Debt capacity of company Debt equity ratio.

Unit – III **Working Capital Management:** Concept, need, determinant of working capital, estimates of working capital and financial of current assets. Capital Budgeting and Capital Investment Decision: Management of Fixed Assets, Meaning, roles and analysis of capital investment in fixed assets:

Unit- IV **Financial Statements and Analysis:** Meaning, Analysis- Ratio, Fund flow, Cash flow, Cost volume Analysis. Tourism Finance Corporation of India TFCI: Aims, Objectives and Functions.

Unit – V Special Topics in Finance : International financial Management, Financial Planning & forecasting, Green Finance, Venture, Capital Finance, Financial Engineering. Case study related to the entire Syallbus.

Suggested Readings :

- Anthony and Reece, Management Accounting Principles: Text and Cases
- Pandey, L.M., Management Accounting: A Planning and Control Approach, Vikas Publication.
- Davis D., The Art of Managing Finance, Mc Graw Hill.
- Pandey, I.M., Financial Management, Vikas Publication
- Van Horne, Financial Management and Policy, Prentice Hall.
- Pandey, I.M. and Bhatt, Ramesh, Cases in Financial Management, TATA Magraw Hill.

Semester – II

207 : EVENT MANAGEMENT & MICE

Objective : As a result of participating in this module, students will understand the managerial and operational aspects pertaining to event and conference or Convention Management.

Course Contents :

Unit – I **Event Management :** Role of events for promotion of tourism, Types of Events – Cultural, festivals, religious, business etc. Need of event management, key factors for best event management. Case study of some cultural events (Ganga Mahotsava, Lucknow mahotsava and Taj Mahotsava)

Unit – II **Concept of MICE :** Introduction of meeting incentives, conference/conventions, and exhibitions. Definition of conference and the components of the conference market. The nature of conference markets and demand for conference facilities. The impact of conventions on local and national communities.

Unit – III Management of Conference at Site, Trade shows and exhibitions, principal purpose, types of shows, benefits, major participants, organisation and membership, evaluation of attendees. Convention/exhibition facilities; Benefits of conventions facilities, Inter-related venues, Project planning and development.

Unit – IV Budgeting a Conference Exhibition: Use of Budget preparation, Estimating fixed and variable costs, cash flow, sponsorship and subsidies. Registration, Seating Arrangements, Documentation, interpreting press relation, Computer Graphics, Teleconferencing, Recording and Publishing Proceedings; Interpretation and language.

Unit – V Role of travel Agency in the management of conferences. Hotel Convention Service Management : Human Resources Management Transportation. Group Fares, Airling Negotiation, Extra Services, Cargo Transportation. History and function of ICCA, Role of ICCA, Roles and function of ICIB.

Suggested Readings :

- Coleman, Lee & Frankle (1991), Powerhouse Conferences. Educational Institute of AH & MA.
- Hoyle, Dorf & Jones (1995), Meaning conventions & Group business. Educational institute of AH & MA.

Semester – II

208 : VIVA-VOCE

COMPREHENSIVE

Semester – III

301: HOTEL & RESORT MANAGEMENT

Objectives : This Module is prescribed to appraise students about the important departments of a classified hotel and to teach various aspects related to accommodation Industry.

Hotel Management :

Unit- I Origin and Expansion: Conversion of Tavern; Inns, Chalets and places into hotels, creation of private, Public and Multinational hotel chains in India. Regional, National and International Hotel Associations and their operation.

Unit –II Departments of hotel : Front Office, House Keeping, Food and Beverage, Personnel and Accounts, Role and Functions of different departments.

Unit- III Requirements and Procedure for Constructing Classified Hotel: Prescribed application form for approval of Hotel Projects. Regulatory conditions and Guide lines for approval of Hotel Projects. Star categorisation, sources of Finance, Incentives and subsidy extended to Hotels in Tourist areas, and Tourist Backward areas. Hotel Related technical words.

Resort Management :

Unit- IV Resort Concept : Characteristics of Resort Management as opposed to Hotel Management, Historical Perspective, Indian Scenario.

Unit – V Resort Planning : Preliminary Consideration in Resort Planning and Development and Phases of Resort Planning and Development. Trends and factors in Developed Tourist Markets leading to growth of Resort Concept. Factors affecting rate. Basic Elements of a Resort Complex: Loading facilities, landscaping, Dinning and drinking facilities, Family Oriented Services, shops and services, Entertainment; Use of Community Resources.

Unit- VI Resort Management: Resort Management and Sales Promotion: Research and Analysis: The environment, current market, properly analysis, Market segmentation and potential guest markets, Tools of marketing, Advertising, Promotion and Publicity.

Suggested Readings:

- Selected case studies from sterling. Delmia, Toshali and R.C.I. International will be managed from concerned organisations.
- Andrews, Sudhir: 1985, Hotel Front Office, Tata MC Graw- Hill, New Delhi.
- Andrews, Sudhir: Hotel House Keeping, Tata M C Graw- Hill, New Delhi.
- Andrews, Sudhir: Hotel House Keeping, Tata M.C. Graw-Hill, New Delhi.
- Andrews, Sudhir: (1991), Food and Beverage Service, Tata M C Graw- Hill, New Delhi.

Semester – III

302: SERVICE MARKETING

Objective – The objective of this course is to develop insight into emerging trends in the service sector in developing economy and tackle issues involved in the management of services on national basis.

Unit-I Introduction: Service Marketing – Origin, Concept and Growth, Service Marketing, Designing of Services strategy in context.

Unit-II Phases of Service Marketing: Emergence of service economuy: Nature of services, Goods and Services marketing, Marketing challenges in service business, Marketing Framework for service business.

Unit-III Classification of Service Marketing-I: Service classification, Banking – The concept of Bank and Insurance Marketing, Factors governing customers psychology, factors influencing the consumer behavior, Market segmentation, Marketing mix for banking and Insurance services.

Unit-IV Classification of Service Marketing-II: The concept of Transport, Tourism, Hotel and hospital services and their marketing patterns, The effecting issues of their customers and marketing mix and Segmentation.

Unit-V Marketing issues of Services Advertising – Issues involved the advertisement, Branding and Packaging of services, Relationship Marketing and CRM.

Suggested Readings:

- Jha S.M. : Services Marketing Himalaya Publishing House, 1994, Is ted.

The list of cases and specific references including recent articles will be announced in the class of the time of launching of the course.

Semester – III

303: CONSUMER BEHAVIOUR

OR

HOSPITATLITY MANAGEMENT

Objective : The basic objectives of the course is to develop and understanding about the consumer decision – marketing process and its applications in marketing function of firms.

Unit – I Introduction : Introduction to consumer Behaviour, Consumer Behaviour and Marketing strategy, Consumer Involvement and Decision Marketing, Information Search Process, Evaluation oriteria and Decision Rules.

Unit – II Motivation & Perception Consumer Motivation, Need and Goals, Positive & Negative motivation, Dynamic Nature of consumer motivation , Consumer Perception, Conceptual Framework, Dynamics of Perception, Consumer Imaging.

Unit-III Attitude & Personality, Consumer Attitude and attitude change, Influence of personality and self concept on Buying Behaviour, Psychographics and Lifesle, AIO & VALS Classification.

Unit-IV Influence on CB; Reference Group Influence; Diffusion of Innovation, Diffusion Process, Adoption Process, Profit of Consumer Innovent and Opinion Leadership Family Decision Marketing, Family Functions and Family life style.

Unit-V Models & Applications: Models of Consumer Behavious, Nicosia Model, Howard Sheth Model, Engle Balckwil Jullat Model, Industrial Buying Behaviour, Consumer Studies in India.

Suggested Readings:

- Schiffman, L>G< and Kanuk, LL – Copnsumer Behaviour New Delhi, PHI 1994.
- Mowen John C. – Consumer Berhaviour, New York, Mac Millan 1993.
- Engle JF etc. Copnsumer Behaviour in Marketing, Engle wood Cliffts, New Jersey, PHI

The list of cases and specific references including recent articles will be announced in the class at the time of launching of the course.

304 : ETHICAL, LEGAL AND REGULATORY ASPECTS OF TOURISM

Objective: The basic objective of this course understanding the ethical legal and regulatory aspect of tourism.

Unit 1: Principles and practices in Business Ethics.
Business Compulsions, Motivations and Ethical parameters.

Unit 2: Specific Acts and Provisions: Citicenship Act. Passport Act. Foreigners Foreigners Registration Act and Customs Act.

Unit 3: Foreigon Exchange Management Act- 1999. Motor Vehicles Act and Pollution Control Act, Wild life protection act 1972.

Unit 4: Need of Central Tourism Legislation in India. Measures of Safety and Security of Tourists.

Unit 5: Regulatory Role of the Department of Tourism.

Suggested Reading::

- J.S. Desai, Ethical aspects in India, Vikash Publications.
- Negi, Tourism Ethics, Mac Graw Hill, New Delhi
- Bare Acts.

SEMESTER –III

305: HOTEL ACCOUNTING

Objective: The objective of this course is to provide the basic knowledge of hotel Accounting.

Unit- I **Accounting Cycle and Financial Statement:** Introduction, Classification of Hotels, the Accounting Cycles, Types of Accounts, Accounting Information System (AIS), Accounting Software, Personal Accounting, Management Accounting.

Unit-II **Financial Accountancy:** Basic Accounting Concept, Forensic Accounting, Creative Accounting, Ledger, Ledger Postings, Payment Posting- Processing, General ledger, financial Statements.

Unit-III **Statement of Income and Balance Sheet of Hotel:** Meaning of Income, Balance Sheet, Current Liability, Asset, Classification of Assets, Classification of Liabilities, Payroll.

Unit-IV **Hotel Accounting and Revenue:** Accounting Methods, Hotel Revenue, Bookkeeping, Accounts Payable, Audit- Stages of An Audit, Annual Report.

Unit-V **Debit and Credit:** Credit Finance, Trade Credit, Petty case, Case flow Statement, Accounting method, Engagement Letter, Expenses
Debt- Types of Debt, Accounting Debt, Effects of Debt, Cost Accounting, Costing Methods.

Suggested Reading:

- Hotel Accounting- Metti M.C.
- Principles of Accounting - N. Vinayakan
- Advanced Accounting - Shukla - Grewal
- Double Entry Bookkeeping - T.S. Grewal

Semester – III

306 : Foreign Language Course (French)

OR

306 : Foreign Language Course (German)

OR

306 : Foreign Language Course (Japanese)

- Themes & Topics
- Alpha Beta, Different Sounds in Language, Modified Sounds/Compound Sounds.
- Basic Sounds in the Language, Counting Numbers, Days of the week, Months.
- Time (How to read time), Weather Conditions, Telephone Utilisation, Conversation-Introduction.
- Books, Newpapers, Magazines, Cigarettes, Match Box, Shopping facilities.
- Familiarisation with class room, items available in the room.
- Air Port, Air Lines, Customs, Immigration, Taxi Services, City Buses, Luggage directions Security Check Indications.
- Hotel/Motels/Guest/Houses – Type of Accommodation Available.
- Conversation between Receptionist and customer at Reception in the Hotel (Facilities available in the Hotel)
- Food Items – dishes – Tasty, Spicy, Chinese, Japanese, Indian, Continental
- Greetings
- Places of interest in Delhi and most important Tourist Places in India.
- Fair Structure – Charges Currency, Rupees, Coins.
- Singular – Plural, Masculine – Feminine, TV Set, VCR, Radio etc.
- Travel Agency/Tour Operator/Water Sorts/Adventure Sports/Lakshadweep Bhuddhist Circuits/etc.
- Interrogation?
  - Are You .....
  - Where do you stay ?
  - What is your name ?
- Chruch, Mosque, Temple and other Religious Places, Tea, Coffee, Juices, Soft drinks and other drinks.
- Vocabulary (Present-Past-Negative-Negative Past) 500 common use words. Adjectives in present & Past Tense.
- Expression Beauty, Dances, Dresses, Costumers Family Life, Marriages past Tense. Conjugations – Verb and Adjectives.
- Yoga-Naturopathy, Massage, Mediation, Beach Resort Facilities.
- Polices Station, Railway Station, Bus Stand, Mode of Conveyance.
- (A few songs – To be produced at the valedictory function) – by Participants
- Use of Present, Past & Future tense.
- Simple translation from and to English
- Making sentences & writing simple essays.
- Positive, negative and interrogative sentences.
- Letter writing – Business, Personal Letters.
- Writing of Application – Job, Leave, Complaints etc.

Semester – III

307 : JOB TRAINING REPORT

Semester – III

308 : VIVA-VOCE

(COMPREHENSIVE)

SEMESTER –IV

401: STRATEGIC MANAGEMENT

Objective: The objective of this course is to impart an understanding of the comprehensive process of top management of a business enterprise so as to develop the ability to analyse business problem and provide an opportunity to experience the process of decision making.

Unit- I **Introduction:** Business Policy Nature, Importance, Purpose and Objective. Concept of Strategy, Mission Policy, Purpose Objective, Goal & Tactices; Strategic Management and Overview.

Unit-II **Strategy Formulation:** Environmental Appraisal – Mega, Micro & Relevant, Organizational Appraisal, SWOT Analysis ETOP, OCP & SAP Profiles, Environment Scanning & Source of Information.

Unit-III **Strategic Alternative & Choice** Various Strategic Alternative – Grand Moderation, Diversification, Integration, Merger, Takeover, Joint Venture, Turn Around, Divestment & Liquisation, Strategic Choice and Its Process.

Unit-IV **Strategic Implementation:** Issues involved, Project & Procedural Implementation, Resources, Allocation, Structure Functional & Behavioral Implementation.

Unit-V **Strategic Evaluation & Control:** An Overview, Strategic and Operational Control, Techniques and Role of Organization System.

Suggested Reading:

- Kazmi Azhar, Business Policy, New Delhi, TMG, 1997.
- Drcker, P. Changing World of the Executive, New York, 1982.
- Prahalad, CK, Competing for Future, Boston, Harvard Business School Press, 1994.

The list of cases and specific references including recent articles will be announced in the class at the time of launching of the course.

SEMESTER –IV

402: HERITAGE MANAGEMENT

Objective: This module is important to study because of India is rich in heritage properties and its maintenance is necessary. This will help to understand the nature of heritage properties and conservation.

Unit- I **Indian Culture:** General Features, Sources, Components and Evaluation

Unit-II **What is Heritage?** Meaning and Concept, Criterions for selections as heritage sites, monuments and zone by UNESCO (WHC). Types of heritage properties. World famous heritage sites and monument in India and abroad.

Unit-III **Heritage Management:** Objectives and Strategies, Protection, Conservation and preservation, Case study of one destination. Heritage Marketing, Destination Development.

Unit-IV National and International Organizations engaged in Heritage (UNESCO, ICOMOS, ASI, INTACH AND NGOs)

Unit-V Museums, concept and classification. (National Museum New Delhi, Bharat kala Bhawan Varanasi, Archaeology Museum Sarnath etc.) Heritage Hotels and its Classification.

Suggested Reading:

- Allchin, B., Allchin, F.R. et al. (1989) Conservation of Indian Heritage, Cosmo Publishers, New Delhi.
- New Inskeep, Edward, Tourism Planning: An Inregrated and Sustainable Development Approach (1991) VNR, New York.
- Ashworth, G.J. (2000). The Tourist Historic City. Retrospect and prospect of Manageing the Heritage City, Pergamon, Oxford.
- UNESCO-IUCN (1992) Eds. Masterworkd of Man and Nature, Pantoga, Australia.

SEMESTER –IV

403: TOUR OPERATION MANAGEMENT

Objective: The Students will set practical knowledge relating to travel and tour operation.
Course Contents

Unit- I **Preparing for Work in Travel Operation:** Appearance of Staff, Working Area, Agencies internal environment, Checklist for display area, Health and Safety at work; Stationary, Printing and Office Supplies, Filing System in Travel Agency: Materials for filing Retrieving information, types of files e.g. Correspondence files, Client files, Computer and Data bases, Effective Communication in Travel Agency: Use of Telephone, Use of Telex & Fax, Special Handling of business correspondence, Method Of Taking Care of Customers.

Unit-II **Domestic Counter:** Service provided by Domestic counter: Tickets (Air & Railway), Car Hire and Surface Transport: Agencies for Domestic Car Hire/Surface Transportation: Their terms and condition, Procedure for Reservation; documents required, Billing and Payment Procedure, Commission Structure, Problem faced by clients with Domestic Airlines Railways, Hotels, Car Rental, Any other.

Unit-III **International Travel Counter;** Service provided by International Counter; Government rules on International Travels. Reservation procedure for International and other travel related Vouchers like MCO, PTA, PSR, etc. Procedure for lost ticket, Refund and cancellation charges.

Unit-IV Places of Tourist interest in various destinations in India, Types of Accommodation available, Modes of transporation and length Of stay. Concept of Tour Itinerary and Preparation of sample Itinerary with the timings and mode of Air/Train or by Surface and Details of sightseeing, types of Accommodations and other Services.

SEMESTER –IV

404: ECO TOURISM

Objective: The course is to provide basic knowledge of environment and ecology in Tourism to ware the natural resource for conservation.

Unit- I **Basic Ecology:** Ecosystem concept, Biogeo-chemical cycles, Energy flow and Accumulation of information in Ecological systems, laws governing Biogeochemical cycles, energy flow and information build up within ecosystems.

Unit-II Types of Systems for management purpose. Definition of nature, Culture and Artificial systems and their management principles.

Unit-III **Ecology of Population:** Allen's rule, Berg's rule and Golger's rule. Behaviors of zenstable and stable ecological system (R) and (K) strategies.

Unit-IV **Environment:** Cultural resources. Human geography of India, Recial and Ethnic composition, Bio-geographic agro-climatic and cultural divisions of India, Ecological context of cultural division of India, Ecological context of cultural Origins, Patterns of cultural differentiation and stabilization and role of Environment.

Unit-V Flora-Basic plant communities and vegetation types. Fauna- Wildlife resource of India, National parks and sanctuaries. Endangered species. Tourism development and resource conservation.

Suggested Reading:

- Maidula narayan: Ecology of Tourism.
- P.D. Sharma: Environment and Ecology.
- G. Mittal: Environmental Science

Journal suggested in class study.

SEMESTER –IV

405: TOURISM GEOGRAPHY

Objective: This paper is unique for the budding tourism professional to understand and to be familiar with the global geography with reference to tourism.

Unit- I **Introduction to Geography:** Elements of Geography, Branches of Geography, Importance of Geography in Tourism, World's Climatic Zones, Latitude & Longitude.

Unit-II **IATA Areas, Code and GMT Time:** Areas, Sub Areas and Sub-Regions As per International Air Transport Association (IATA), IATA Three Letter City code, Two Letter Airlines and Airport Code, International Date Line, Time Zones, Greenwich Mean Time, Calculation of local Time, Flying of Time, Grounding Time, Elapsed Time, Daylight Saving Time.

Unit-III **North & South America:** Physical Geography, Topography, Climatic Regions, Transport Network, Countries in the Continent.

Unit-IV **Europe & Africa:** Physical Geography, Topography, Climatic Regions, Transport **Network**, Countries in the Continent.

Unit-V **Asia & Australasia:** Physical Geography, Topography, Climatic Regions, Transport Network, Countries in the Continent. Case Study of USA, Brazil, UK, South Africa, China, India, Australia.

Suggested Reading:

- Burton, R. (1995). Travel Geography. Pitman Publishing, Marlow Essex.
- Boniface B. & Cooper, C. (2009). Worldwide Destinations: The Geograpghy of Travel & Tourism. Oxford Butterworth Heinemann, London

SEMESTER –IV

406: ADVERTISING MANAGEMENT

Objective: The aim of the paper is to acquaint the students with concept, techniques and Give experience in the application of concept for developing an effective advertising Programme.

Unit- I **Introduction:** Definition, Objectives, Functions and classification of advertising as a component of Marketing, Mix Stimulating of Primary demand and selective Demand, DAGMAR approach.

Unit-II **Advertising as Communication:** Process of marketing communication, advertising vs other forms of mass communication, Communication Mix, Determination of target Audience; Building of Advertising programme- message, Headlines, Copy, Logo, Illustration, Appeal, Layout; Compaogn planning; Copy testing; Pre test & post Test, Ad effectiveness.

Unit-III **Advertising Media:** General and special Character of different media, media Planning and media strategy, Media tactics Media Class, Vehicle, Option and timing Decision. Media Buying.

Unit-IV **Advertising Organization and Budgets:** Advertising Agency- Function of a Modern agency, function of the advertising department and advertising and Procedures for determining the size of the budgets, characters of items to be Charged to advertising.

Unit-V **Special & Economics Aspects of Advertising:** Productive of Advertising – Its Contribution to economic development and standard of living. Its economic and Social relevance Ethics and truth in Advertising. Public Service Advertising

Suggested Reading:

- Aaker, David; Advertising Management, 4th ed, PHI New Delhi,1985.
- Ogilvy, David; Igilvy on Advertising, London Lonfman, qq983.
- Sontakki Advertising Management.
- Mohan M.; Advertising Management.

The list of cases and specific references including recent articles will be announced in the class at the time of launching of the course.

SEMESTER –IV

407: Dissertation Report

- Tourism, Environment and Ecology
- Cultural Tourism
- Adventure Tourism and Wild life Tourism
- Travel Management
- Hotel Management
- Event Management

SEMESTER –IV

408: Viva-Voce (Comprehensive)

MBA (T.A.) PROGRAM-PROGRAM AND COURSE OUTCOMES- 2022-2023

No.	Program outcome
PO1	Knowledge about the hospitality and tourism industry practices.
PO2	Ability to understand the process and apply specific practices to improve effectiveness and productivity in tourism operations.
PO3	Ability to develop a framework for research in the tourism domain.
PO4	The capability to hypothesize and test specific tourism related concepts using statistical tools.
PO5	Ability to update to current practices followed globally in hospitality and tourism and to customize the same to the Indian context.
PO6	Ability to derive visions of business from the social needs.
PO7	Ability to understand one's own ability to set achievable targets and complete them.

Program Specific Outcome

Masters degree in Business Administration (Tourism Administration) is designed to facilitate the prospective managers to effectively manage the hospitality and tourism operations.

- To have an overview about the hospitality and tourism industry globally and gain insights about the tourism practices in India.
- To learn the qualitative and quantitative tools and techniques for effective managerial decision making.
- To have real time industry orientation and practice.
- To sharpen soft and hard skills among the students for being better professionals.

Course Outcomes

MBA (T.A.) I Semester *CONCEPT AND PRINCIPLES OF TOURISM* *PAPER CODE: 101*	*Max. Marks: 100* *Min. Marks: 40* *External: 60* *Internal: 40*

- CO1: To learn about the basic concepts of tourism and travel.
- CO2: To learn about the tourism product & attraction.
- CO3: Understand the various Types and forms of tourism and its demand.
- CO4: To understand the role of tourist transportation in tourism sector.
- CO5: Understand the various organizations involved in tourism.

MBA (T.A.) I Semester *PRINCIPLES AND PRACTICES OF MANAGEMENT* *PAPER CODE: 102*	*Max. Marks: 100* *Min. Marks: 40* *External: 60* *Internal: 40*

- CO1: Understanding of various management concepts and skills required in the business world
- CO2: In-depth knowledge of various functions of management in a real time management context
- CO3: Develop the skill set to have managed in Organizations.
- CO4: To understand the role of management in decision making process.
- CO5: Interpret the need and importance of the leadership

MBA (T.A.) I Semester ***TOURISM PRODUCTS AND RESOURCES*** ***PAPER CODE: 103***	***Max. Marks: 100*** ***Min. Marks: 40*** ***External: 60*** ***Internal: 40***

- CO1: To understand the concept of tourism product and basic tourism resources of India.
- CO2. To identify and manage emerging tourist destinations.
- CO3. Understand the major Pilgrimage resources of India.
- CO4. Understand the major fair and festivals attractions of India.
- CO5. Understand the richness of culture and souvenirs of India.

MBA (T.A.) I Semester ***POLICY AND PLANNING IN TOURISM*** ***PAPER CODE: 104***	***Max. Marks: 100*** ***Min. Marks: 40*** ***External: 60*** ***Internal: 40***

- CO1: To understand about the Tourism Policy & its salient features.
- CO2: To know about the relevance of tourism policy.
- CO3: To get acquainted with tourism planning process, strategy, and policies.
- CO4: To understand planning and its importance or need.
- CO5: To know about the various International Agreements of tourism policy and planning.

MBA (T.A.) I Semester ***COMPUTER APPLICATION*** ***PAPER CODE: 105***	***Max. Marks: 100*** ***Min. Marks: 40*** ***External: 60*** ***Internal: 40***

- CO1: Apply a particular computer and information technology and tool to a problem in the tourism industry.
- CO2: Familiarize with role of MS- Office in everyone life.
- CO3: Compare the interrelationship between internet and network.
- CO4: Explain the usage of the network computers.
- CO5: Adapt the holistic knowledge about business computers and its usages.

MBA (T.A.) I Semester ***COMMUNICATION SKILLS*** ***PAPER CODE: 106***	***Max. Marks: 100*** ***Min. Marks: 40*** ***External: 60*** ***Internal: 40***

- CO1: To understand the fundamentals of communications.
- CO2: Ability to excel in different forms of Oral communication required in a business context
- CO3: To understand the importance of non verbal communication in professional setup.
- CO4: Ability to prepare Business reports.
- CO5: To understand the essentials of effective business correspondence.

MBA (T.A.) I Semester ***INDIAN ART & CULTURE*** ***PAPER CODE: 107***	***Max. Marks: 100*** ***Min. Marks: 40*** ***External: 60*** ***Internal: 40***

- CO1: Students will get familiarize with the places of cultural tourism interest.
- CO2: Students will understand the significance of cultural tourism resources of India.
- CO3: Students will understand the importance of old civilizations of world.
- CO4: Students will get knowledge of Indian ancient art and craft.
- CO5: Students will know architecture significance of Indian culture.

MBA (T.A.) I Semester ***COMPREHENSIVE VIVA-VOCE*** ***PAPER CODE: 108***	***Max. Marks: 100*** ***Min. Marks: 40*** ***External: 60*** ***Internal: 40***

- CO1: Students know to all 07 theory papers practical aspects and thro knowledge of these subjects.

MBA (T.A.) II Semester ***TRAVEL AGENCY MANAGEMENT*** ***PAPER CODE: 201***	***Max. Marks: 100*** ***Min. Marks: 40*** ***External: 60*** ***Internal: 40***

- CO1: Examine various types of documents required for travel purposes
- CO2: To get familiar with the Techniques and strategies required for successful handling of Travel Agency & Tour Operation Business.
- CO3: To Develop adequate knowledge and skills applicable to travel industry.
- CO4: Classify various functions of the travel agencies & tour operator
- CO5: To Understand the public and private sectors in travel & tour business.

MBA (T.A.) II Semester ***RESEARCH METHODOLOGY*** ***PAPER CODE: 202***	***Max. Marks: 100*** ***Min. Marks: 40*** ***External: 60*** ***Internal: 40***

- CO1: Students will understand and appreciate scientific inquiry
- CO2: Students would know to write research proposals
- CO3: The students would be able to undertake a systematic outlook towards business situations for the purpose of objective decision making, and the method of conducting scientific inquiry to solve organizational problems

- CO4: Students would be able to analyze data and find solutions to the problems.
- CO5: Students could prepare research reports.

MBA (T.A.) II Semester ORGANISATIONAL BEHAVIOUR PAPER CODE: 203	Max. Marks: 100 Min. Marks: 40 External: 60 Internal: 40

- CO1: Spell out the basic concept and significance of OB.
- CO2: Analyze the group dynamics.
- CO3: Illustrate about Organizational Structure.
- CO4: To understand the social responsibility of organization.
- CO5: Analyze the organizational change & conflicts.

MBA (T.A.) II Semester TOURISM MARKETING PAPER CODE: 204	Max. Marks: 100 Min. Marks: 40 External: 60 Internal: 40

- CO1: To understand the fundamentals of Marketing.
- CO2: To learn marketing approaches and strategies.
- CO3: To understand marketing planning programs.
- CO4: To learn contemporary skills for tourism related activities.
- CO5: Understand tourism marketing and contemporary marketing practices,

MBA (T.A.) II Semester HUMEN RESOURCE MANAGEMENT PAPER CODE: 205	Max. Marks: 100 Min. Marks: 40 External: 60 Internal: 40

- CO1: To understand basic concepts of human resource management
- CO2: To familiarize students with the human resource management practices in tourism industry.
- CO3: To help students to build up and refine decision making skills for HR Selection, Management and Retention
- CO4: Students would have gained knowledge on the various aspects of HRM.
- CO5: Students will gain knowledge needed for success as a human resources professional.

MBA (T.A.) II Semester FINANCIAL MANAGEMENT PAPER CODE: 206	Max. Marks: 100 Min. Marks: 40 External: 60 Internal: 40

- CO1: Students will gain an understanding of the financial markets and instruments in India .
- CO2: Recognize the time value of money
- CO3: Assess and evaluate various long-term sources of finance.
- CO4: Ability to comprehend the technique of making decisions relating to investment and finance functions.

- CO5: Gain an in-depth knowledge about the funding and appraisal of tourism projects in India.

MBA (T.A.) II Semester ***EVENT MANAGEMENT*** ***PAPER CODE: 207***	***Max. Marks: 100*** ***Min. Marks: 40*** ***External: 60*** ***Internal: 40***

- CO1: To acquire the knowledge and gain competencies required to promote, conduct and implement the successful corporate event.
- CO2: To acquire the knowledge about the MICE tourism as an important sector of corporate travel.
- CO3: To understand the different techniques and strategies required to plan a successful corporate event.
- CO4: To learn about the special corporate events and gain professional skills for holding such events.
- CO5: To know the various responsibilities of an Event Manager.

MBA (T.A.) II Semester ***COMPREHENSIVE VIVA-VOCE*** ***PAPER CODE: 208***	***Max. Marks: 100*** ***Min. Marks: 40*** ***External: 60*** ***Internal: 40***

- CO1: Students know to all 07 theory papers practical aspects and thro knowledge of these subjects.

MBA (T.A.) III Semester ***HOTEL & RESORT MANAGEMENT*** ***PAPER CODE: 301***	***Max. Marks: 100*** ***Min. Marks: 40*** ***External: 60*** ***Internal: 40***

- CO1: Students will get innovation and history of hotel & resorts.
- CO2: Students will understand classification of hotel and resorts.
- CO3: Students will know to hotel planning and resort planning.
- CO4: Students will understand the hotel and resort Marketing, HRM & Finance Management
- CO5: Students know the safety and security majors & standard.

MBA (T.A.) III Semester ***SERVICE MARKETING*** ***PAPER CODE: 302***	***Max. Marks: 100*** ***Min. Marks: 40*** ***External: 60*** ***Internal: 40***

- CO1: Appreciation of nature of service operations.
- CO2: Students know to introduction of service marketing & origin.
- CO3: Students will know to Emergence of service economy.
- CO4: Students will understand the classification of service marketing
- CO5: Students will get knowledge of marketing issues of services advertising.

MBA (T.A.) III Semester	***Max. Marks: 100***

CONSUMER BEHAVIOUR PAPER CODE: 303	Min. Marks: 40 External: 60 Internal: 40

- CO1: To understand the fundamental of Consumer Behavior.
- CO2: To understand Individual as a consumer.
- CO3: To learn more about influence of society and culture on consumer behavior
- CO4: To understand the customer decision making process.
- CO5: To understand models of consumer behaviors.

OR (Opt.)

MBA (T.A.) III Semester HOSPITALITY MANAGEMENT PAPER CODE: 303	Max. Marks: 100 Min. Marks: 40 External: 60 Internal: 40

- CO1: To understand the Structure, History and Characteristics of Hospitality Industry.
- CO2: To understand the development and growth of hotel Industry.
- CO3: To know the Functions of various Departments in Hotels.
- CO4: To know the various Facilities provided in hotels.
- CO5: Understand why service has become such an important facet of the hospitality industry.

MBA (T.A.) III Semester ETHICAL, LEGAL AND REGULATORY ASPECTS OF TOURISM PAPER CODE: 304	Max. Marks: 100 Min. Marks: 40 External: 60 Internal: 40

- CO1: Understanding the ethical, legal and regulatory aspects of tourism.
- CO2: Students will get to know business ethics.
- CO3: Students understand the specific Acts and Provisions.
- CO4: Students will get knowledge of FEMA & other Tourism Laws.
- CO5: To understand the central Tourism legislation in India.

MBA (T.A.) III Semester HOTEL ACCONTING PAPER CODE: 305	Max. Marks: 100 Min. Marks: 40 External: 60 Internal: 40

- CO1: Preparation of accounting cycle and financial statement analysis
- CO2: To understand basics of financial accountancy.
- CO3: To understand the statement of Income and balance sheet of hotel.
- CO4: Understand the management and hotel accounting techniques
- CO5: Assess the accountancy standards of practices in India

MBA (T.A.) III Semester FOREIGN LANGUAGE COURSE (FRENCH)/ (GERMAN) / (JAPANESE) (Opt. any one)	Max. Marks: 100 Min. Marks: 40 External: 60

PAPER CODE: 306	Internal: 40

- CO1: The students will be understanding the basic concepts of French/ German/ Japanese language and its importance in today's time
- CO2: The learner will be analyzing the basic visuals, auditory of French/ German/ Japanese.
- CO3: The students will be familiarizing with the Francophone (German/ Japanese) cultures.
- CO4: The students will be comparing and contrasting the similarities and differences between his/her own culture and those of various French-speaking cultures
- CO5: The students will be combining sentences and phrases to express opinions on topics related to the self, personal interest, and everyday life.

MBA (T.A.) III Semester JOB TRAINING REPORT PAPER CODE: 307	Max. Marks: 100 Min. Marks: 40 External: 60 Internal: 40

- CO1: The Students will be able to learn the skills needed for on the job.
- CO2: To gain deeper understanding about the functional areas of travel and tourism sector.
- CO3: To help students develop an appreciation for the linkages among different functions and to develop a realistic managerial perspective about Service sector.
- CO4: Students know to travel agency, tour operating company, hotel & resort and event company practical aspects.
- CO5: Summer training understand the travel trade business with emerging trends

MBA (T.A.) III Semester COPREHENSIVE VIVA-VOCE PAPER CODE: 308	Max. Marks: 100 Min. Marks: 40 External: 60 Internal: 40

- CO1: Students know to all 06 theory papers practical aspects and thro knowledge of these subjects with the industrial experience on during job training.

MBA (T.A.) IV Semester STRATEGIC MANAGEMENT PAPER CODE: 401	Max. Marks: 100 Min. Marks: 40 External: 60 Internal: 40

- CO1: Ability to understand the Strategic management process and social responsibility of business organizations
- CO2: In-depth understanding about the need for developing competitive advantage for organizations
- CO3: Provides insights into various corporate and business level strategies
- CO4: Facilitates to identify the various control systems required for organizational strategy implementation process
- CO5: Enhances the cognitive knowledge about various strategic issues and development of new business models

MBA (T.A.) IV Semester HERITAGE MANAGEMENT PAPER CODE: 402	Max. Marks: 100 Min. Marks: 40 External: 60 Internal: 40

- CO1: To know about the heritage tourism as a domain of tourism and travel studies.
- CO2: To learn about the different organizations associated with heritage tourism.
- CO3: The students will know about the preservation as well as conservation strategies for the protection and promotion of country's rich cultural resources.
- CO4: To understand the national and international organizations engaged in heritage.
- CO5: To be acquainted with the emerging trends and importance of heritage tourism.

OR (Opt.)

MBA (T.A.) IV Semester RURAL TOURISM PAPER CODE: 402	Max. Marks: 100 Min. Marks: 40 External: 60 Internal: 40

- CO1: Understanding the concept of rural tourism and its relevance in employment generation.
- CO2: Determining the Characteristics and classifications of rural tourism.
- CO3: Knowing the significance of rural tourism for social structure, quality of life and livelihood.
- CO4: Understanding the strategies and government policies to promote rural tourism.
- CO5: Knowing the rural tourism destinations in Madhya Pradesh.

MBA (T.A.) IV Semester TOUR OPERATION MANAGEMENT PAPER CODE: 403	Max. Marks: 100 Min. Marks: 40 External: 60 Internal: 40

- CO1: Understanding of tour industry
- CO2: Ability to prepare tour itinerary
- CO3: Awareness of rules and regulations in booking tours
- CO4: Ability to market and promote tours
- CO5: Appreciate the importance of guides and tour escorts

MBA (T.A.) IV Semester ECO TOURISM PAPER CODE: 404	Max. Marks: 100 Min. Marks: 40 External: 60 Internal: 40

- CO1: Students will get basic knowledge of environment and ecology in Tourism
- CO2: To lean and understand the ecotourism theory and principals of applications.
- CO3: To be familiarized about ecotourism and community engagement.
- CO4: Students understand the human geography of India.
- CO5: Students know the significance of Ecological context of Cultural division of India.

MBA (T.A.) IV Semester TOURISM GEOGRAPHY PAPER CODE: 405	Max. Marks: 100 Min. Marks: 40 External: 60 Internal: 40

- CO1: General knowledge of worldwide tourism flows
- CO2: Ability to Plan a trip to a tourism destination
- CO3: Awareness of the physical and political features of global locations
- CO4: Knowledge of the climatic conditions and best time to travel.
- CO5: Awareness of global position systems and the time zones.

MBA (T.A.) IV Semester ADVERTISING MANAGEMENT PAPER CODE: 406	Max. Marks: 100 Min. Marks: 40 External: 60 Internal: 40

- CO1: Students will be aware of developing and managing the techniques and effective advertising program.
- CO2: Students will be groomed with customer centric creative thinking and strong communication.
- CO3: Students will know to advertising media, planning and media strategies.
- CO4: Students will understand the significance of function of a modern advertising agency.
- CO5: Students know to special and economic aspects of advertising.

OR (Opt.)

MBA (T.A.) IV Semester RETAIL MANAGEMENT PAPER CODE: 406	Max. Marks: 100 Min. Marks: 40 External: 60 Internal: 40

- CO1: Students will know to fundamental of retail management.
- CO2: Students will get retail banking.
- CO3: Students know to significance of entrepreneurship in retail business.
- CO4: Students will get knowledge of E-Retailing.
- CO5: Students know to significance of retail franchising.

MBA (T.A.) IV Semester DISSERTATION REPORT PAPER CODE: 407	Max. Marks: 100 Min. Marks: 40 External: 60 Internal: 40

- CO1: To learn about the basics of doing research.
- CO2: To implement the practical knowledge in the practical-life situations.
- CO3: To understand the importance of test base research.
- CO4: To get to know the research methodology and data analyses.
- CO5: Students know the significance of trade & business research.

MBA (T.A.) IV Semester ***VIVA- VOCE (COMPREHENSIVE)*** ***PAPER CODE: 408***	***Max. Marks: 100*** ***Min. Marks: 40*** ***External: 60*** ***Internal: 40***

- CO1: Students know to all 06 theory papers practical aspects and thro knowledge of these subjects with specific knowledge during dissertation report work of particular trade, filed, event & destination.

AWADHESH PRATAP SINGH UNIVERSITY

REWA (M.P.)

(Ordinance No. – 11, Ph.D.)

Ph.D. Degree Course Work Regulations 2016

Syllabus of

Ancient Indian History, Culture & Archaeology

2018-19

DEPARTMENT OF ANCIENT INDIAN HISTORY, CULTURE & ARCHAEOLOGY

Awadhesh Pratap Singh University, Rewa (M.P.)

AWADHESH PRATAP SINGH UNIVERSITY

REWA (M.P.)

(ORDINANCE NO. – 11, Ph.D.)

Ph.D. Degree Course Work Syllabus

Paper Code	Paper Name	Credit	Maximum Marks Internal/External	Minimum Passing Marks
Ph.D.- 101	Research Methodology	04	100 (80+20)	55
Ph.D.- 102	Review of Published research in the relevant field	03	100	55
Ph.D.-103	Computer Application	03	100 (80+20)	55
Ph.D.-104	Special Subject (AIH,C&A)	03	100 (80+20)	55
Ph.D.-105	Viva	03	100	55
	Total Credit	16		

Paper Code – 101

Research Methodology

Unit- I : Fundamentals of Research :

Meaning of research, definition Importance and scope. Nature and Techniques. Step in research planning of research, type of research and its significance.

Historical and Scientific methods in social science. (AIHCA) step in research .

Unit- II : Methods, Tools and Techniques-

Library work, Field survey, Exploration, Excavation, Photographs, Laboratory work, Observation. Schedule and questionnaire. Characteristics of good Researched, Data Analysis. Methods of data collection

Unit-III : Methods of Research-

Hypothesis :- Concept select of universe .problem of formulation .design and project .scientific ,historical and comparative method is social science . plagiarism preparation of synopsis

Unit-IV : Documentation

Quotations and citations .Foot notes ,back notes ,Bibliography, Research book ,Research paper, Abstract, Review of relevant literature .

Unit-V :Report writing

Research Report- Type of Report – steps styles. Structure and contents, chapterization, reporting writing. Editing and Evaluating the final Thesis.

Recommended Books:

1. Kothari C.R., Research Methodology, Willy Eastern Limited, New Delhi 1994.
2. Bennet, Rogar, Management Research, ILO, 1983
3. Gupta S.P., Statistical Methods, 30th ed., Sultan Chand, New Delhi 2001.

Paper Code – 102

Review of Published Research in the Relevant Field

Paper Code – 103

Computer Application

Unit – I – Introduction to computer

History, Characteristics of computer, Classification : Digital, Analog, Hybrid, Micro, Mini, Main and Super, Components of computer, Block diagram, software, hardware, low level and high level language, Compiler and interpreter.

Unit – II – Introduction to Operating System

Need, function & programs. (MS office : MS word, Power Point, Excel) computer modelling, computer application in social sciences. Introduction to DOS, Internal commands, external commands.

Unit – III – Introduction to Windows

Type of window, Programme manager, file manager, customizing windows with control panel, Print Manager, The PIF editors, sharing information among application (OLE – object Linking and Embedding).

Unit – IV – Introduction to Statistics (Frequency)

Distribution – mean, mode, median, variance, regression correlation) with special emphasis using MS – Excel/ Social Science Packages).

Unit – V – Modern Technique

Management information systems, Office automation, E-mail and electronic highway, Internet, Web Page Designing.

Recommended Books:

1. Braham B, Computer System in Hotel & Catering industry, Cassell, 1988.
2. Clark A. Small Business Computer Systems, Hodder & Stoughton, 1987.
3. Parkinson LK & Parkinson ST, Using the Micro-computer in Marketing, Mcgraw Hill, 1987.

Paper Code – 104
Ancient History & Archaeology

Unit – I : Sources of Ancient History

Literary Sources – Ved, Puran, epics etc.

Historical Sources –Arthasharta, harshcharit, rajtanrangni, astadhyai etc.

Archaeological Sources –Inscriptions, coins and monuments.

Unit – II : Indian Pre-History

General introduction of Stone age (Palaeolithic, Mesolithic and Neolithic), tools techniques and Exploration & excavation.

Unit –III : Main feature of Harappan Civilization

Origin, extent, other importance sites of Harappan Civilization.

Unit – IV: Main feature of Vedic Culture

Vedic Culture, Beginning of iron Age in India and Characteristic of 600 B.C.

Unit – V : Architecture & sculpture

Origin and development of Temple architecture, Stupa architecture, General feature of sculpture.

Recommended Books:

1. Rice D. Talbet Carticle on History of Arts.
2. Shastri, P. Panchapagesa : Philosophy of Aesthetic Pleasure.
3. Gupta J., B.

AWADHESH PRATAP SINGH UNIVERSITY

REWA (M.P.)

Ph.D. COURSE WORK STRUCTURE

HISTORY

2018-2019

AWADHESH PRATAP SINGH UNIVERSITY

REWA (M.P.)

(ORDINANCE NO. – 11, Ph.D.)

Ph.D. Degree Course Work Syllabus

Paper Code	Paper Name	Credit	Maximum Marks Internal/External	Minimum Passing Marks
Ph.D.- 101	Research Methodology	04	100 (80+20)	55
Ph.D.- 102	Review of Published research in the relevant field	03	100	55
Ph.D.-103	Computer Application	03	100 (80+20)	55
Ph.D.-104	Special Subject (History)	03	100 (80+20)	55
Ph.D.-105	Viva	03	100	55
	Total Credit	16		

Awadhesh Pratap Singh University, Rewa
Syllabus of Ph.D. Course Work
PAPER-I (Paper Code-101)
SUBJECT – RESEARCH METHODOLOGY

Objective of the paper : To impart a thorough knowledge on the philosophical basis and methods of conducting research in sociology and by thus enable the student to carry out high quality research for Ph.D. degree.

UNIT-I : FUNDAMENTALS OF RESEACH

Basic principles of research, concept, constructs and definitions. Theory building . Type of research. Planning of research, variable, Major research designs, Type and steps in sampling design. Hypothesis (Formation, Types and Testing) Objectivity in research, Ethics in research.

UNIT-II: MAJOR APPROACHES

Comparative, Historical, Ethnographical, Phenomenological, Participatory, Case study approaches.

Study of Historical Source – Literary, Historical & archaeological.

UNIT-III : METHODS, TOOLS AND TECHNIQUES & QUALITATIVE

Methods of primary data collection. Observation, Case study, Social survey, Interview, Concept analysis. Interview schedule, questionnaire. Collection of secondary data, use of library, (research books, monograph, periodicals, abstracts, documents) review of relevant literature, Research report writing.

UNIT-IV : QUANTITATIVE METHODS

Use of quantitative methods in research, Type and sources of data, Data analysis, Tabulation and graphical presentation. Central tendency, Correlation and regression analysis. Use of chi square.

UNIT-V : ADVANCE RESEACH

Writing of good research proposal, Report and research paper. Stages in preparation, structure, documentation, foot notes, references and Bibliography. Use of Statistical approaches in research.

Recommended Books:

1. Black Thomas (2001), Understanding Social Science Research, Sage Publication, India Ltd. New Delhi
2. Black, James, A. and Champion, Dean, J. (1976), Methods and issues in Social Research, John Wiley.
3. Coburn Peter and Others (1982), Practical guide to Computer in Education, Addison Wesley Publication Company, California.

Paper – II (Paper Code -102)

Review of Published Research in the Relevant Field

PAPER- III (Paper Code – 103)

SUBJECT – COMPUTER APPLICATION

UNIT-I

Introduction to computer: History, Characteristics of Computer, classification : Digital, Analog, Hybrid, Micro, Mini and Super, Components of computer system, block diagram, I/Q and auxiliary storage devices only preliminary concepts (definition) of software, hardware, low-level language, computer and interprets.

UNIT-II

Introduction to operating system: Need, functions, control programs, so supervisor, Job control programs, concurrent, C.S; Popular Os for PC's Introduction to DOS, Internal commands, External Commands (TRKEE, UNDELETE, CHKDSK, FDISK, FC, BACKUP, RESTORE, FORMAT, UNFORMAT, JOIN, XCOPY) concept of batch and configufiles, filtering, piping and redirecting.

UNIT-III

Introduction to windows: Programme manager, file manager, customizing windows with control panel, Print Manager, The P/F editors, sharing Introduction among applications (OLE Object Linking and Embedding)

UNIT-IV

Introduction to Microsoft office: The office Manager, Sharing Information, Editing embedded objects, components of Microsoft Office-word, Excel, Power point, Word processing with word, word basic, undo, Redo), Repeal, Insert, Text, Replace Text, Formatting Text, Copying from one word document to other, printing, Auto formation, Auto correct.

UNIT-V

Introduction to statistical Analysis (Frequency Distribution-Mean, Mode, Median, Variance, Regression, Correlation with Special using MS- Excel/Social Science Packages.

Recommended Books:

1. B. Narayan (1999), Computer Management, APH Publishing Corporation New Delhi.
2. P. Tiwari (2007), Digital Library, APH Publishing Corporation New Delhi.
3. Pankaj Sharma (2004), Electronic Governance, APH Publishing Corporation New Delhi.

PAPER – IV (Paper Code – 104)

SUBJECT – THEORETICAL APPROACHES IN HISTORY

UNIT-I

General Introduction of Ancient Indian History – Harrapan Civilization, Vedic Culture, Mauryan Period, Gupta's & Rajput Era.

UNIT-II

Medieval India – Sultanate Period

i) Gulam Dynasty
ii) Khilji Dynasty
iii) Tughlaq Dynasty
iv) Sayyid Dynasty
v) Lodi Dynasty

UNIT-III

Mughals – Shershaah, Akbar, Aurangzeb and Shivaji

UNIT-IV

Modern India – Establishment of East India Company.

UNIT-V

Main Indian Freedom Movements, British Economic Policy

Recommended Books:

1. Gupta Deepankar (2000), Mistaken Modernity, Harper Collins Publishers, New Delhi.
2. Gideen Anthony (2005) Sociology, Cambridge (Polity)
3. Mead George Herbert (1934)Mind Self And Society, Chicago University of Chicago.

DEPARTMENT OF BUSINESS ADMINISTRATION
AWADHESH PRATAP SINGH UNIVERSITY
REWA (MP)

Bachelor of Business Administration (BBA)
Full-Time Eight Semester Programme

Choice Based Credit System (CBCS)

SYLLABUS

Session: 2021-22

Bachelor of Business Administration (BBA)
Full-Time Eight Semester Programme

Choice Based Credit System (CBCS)

PROGRAMME OUTCOME (CBCS)

PO#	**PROGRAMME OUTCOME**
PO1	**Critical Thinking**: This program places a strong emphasis on the value of being conscious of our presumptions, challenging their accuracy, and approaching concepts and choices from several angles. It entails having the capacity to recognize, assess, and make sensible choices based on logical reasoning.
PO2	**Effective Communication:** This program helps participants improve their communication skills and makes sure they can express themselves accurately in written, spoken, and technological mediums. It also encompasses the capacity to link individuals, concepts, literature, media, and technology, as well as the capacity to communicate effectively and interpret the world.
PO3	**Social Interaction:** It emphasizes on the capacity to solicit the opinions of others, resolve conflicts, and aid in reaching decisions in group settings. It entails having the capacity to collaborate with others, forge agreement, and settle disputes.
PO4	**Effective Citizenship:** The necessity of sympathetic social concern and equity-focused national development is emphasized. It entails being aware of the problems that society faces, being involved in civic affairs via volunteering, and behaving in a way that reflects a thorough understanding of these problems.
PO5	**Ethics:** It emphasizes the significance of appreciating many value systems, comprehending the moral implications of choices, and taking accountability for them. It entails being conscious of ethical concerns and basing judgments on ethical principles.

PO6	**Environment and Sustainability:** Understanding environmental surroundings and sustainable development are the main objectives. It entails being conscious of how human behavior affects the environment and acting to advance sustainability.
PO 7	**Self-directed and Life-long Learning:** gaining the capacity to participate in independent, ongoing learning in light of socio-technical developments. It entails having the capacity to learn on one's own, adjust to new technology, and consistently acquire new abilities and information.

PROGRAMME SPECIFIC OUTCOME (BBA)

PSO#	PROGRAMME SPECIFIC OUTCOME
PSO1	Graduates will possess a solid foundation of knowledge and skills in various areas of business, including management, marketing, finance, accounting, economics, and business law.
PSO2	Graduates will have a comprehensive understanding of financial management principles, including financial analysis, budgeting, financial reporting, and investment decision-making.
PSO3	Graduates will have an entrepreneurial mindset, including the ability to identify and evaluate business opportunities, develop business plans, and understand the basics of starting and managing a business.
PSO4	Provide opportunities to excel in Business, academics, research Industry.

Course Outcome (COs) (BBA)

S.No.	Course Name	Course Code
	Semester-I	
101	**MANAGEMENT PROCESS & ORGANISATIONAL BEHAVIOUR**	BBA 101
	Course Outcome	
CO1	This course will give an understanding of the basic concepts, principles and process of management.	
CO2	Participants will be acquainted with the functions, responsibilities of managers.	
CO3	Understanding of how people behave under different conditions.	
CO4	Integrate the learning in handling managerial jobs at several levels in the organisation.	
CO5	Understanding on the complexities associated with management of group behaviour in the organisation.	
102	**BASICS OF ECONOMICS**	BBA 102
	Course Outcome	
CO1	Participants will be acquainted with role of economics in business management.	
CO2	Understanding of concepts of various market structures.	
CO3	Understanding of demand and supply functions, Demand forecasting.	
CO4	Different pricing techniques	
CO5	The participants will be expected to take optimum decisions in their business under different market conditions.	
103	**BUSINESS ENVIRONMENT**	BBA 103
	Course Outcome	
CO1	Acquaint the participants with different constituents of environment	
CO 2	Environment and their impact on the business operations	
CO 3	Gain an understanding of various micro and macro factors in the environment	
CO 4	This will enable the participants to communicate effectively in a business context, both internally and externally.	
CO 5	This will enable the participants to Integrate sustainability, mitigate risks, comply with regulations, and create positive impacts.	
104	**ENGLISH LANGUAGE**	BBA 104
	Course Outcome	

CO 1	Hone reading, writing and over all communication skills of the participants	
CO 2	Understand the process of communicating.	
CO 3	Expand their vocabulary and develop better grammar and sentence structure	
CO 4	Develop critical thinking skills through reading and analyzing English texts	
CO 5	Gain confidence in using English in various real-life situations.	
	Semester-II	
201	**FINANACIAL MANAGEMENT**	BBA 201
	Course Outcome	
CO 1	Understanding of the fundamental concepts of financial management.	
CO 2	Learn techniques for capital budgeting, such as net present value (NPV), internal rate of return (IRR), and payback period.	
CO 3	Including financial statements, time value of money, risk and return, and capital budgeting.	
CO 4	The participants will be able to analyze and interpret financial ratios.	
CO 5	they are expected to appropriately apply financial management principles to real-world scenarios.	
202	**QUANTITATIVE TECHNIQUES**	BBA 202
	Course Outcome	
CO 1	This course will enable participants to understand and apply statistical and mathematical methods for data analysis and problem solving.	
CO 2	Use quantitative techniques to analyze and interpret data for making informed decisions.	
CO 3	Gain proficiency in using statistical software and tools for data analysis.	
CO 4	Apply mathematical modelling techniques to optimize outcomes and solve complex problems.	
CO 5	Develop critical thinking skills in evaluating the limitations and assumptions of quantitative techniques.	
203	**STARTUPS & ENTREPRENEURSHIP**	BBA 203
	Course Outcome	
CO 1	Understanding related to the tools necessary to create sustainable and viable businesses.	
CO 2	Understand the fundamental concepts of start-ups and entrepreneurship.	
CO 3	Understanding idea generation, business planning, and market analysis.	
CO 4	Generate innovative ideas and exploit market opportunities by turning them into a feasible business plan.	

CO 5	Foster an entrepreneurial mindset, including creativity, innovation, resilience, and adaptability, for successful startup ventures.	
204	**ENVIRONMENTAL STUDIES**	BBA 204
	Course Outcome	
CO 1	Install an in-depth knowledge on natural process essential to sustain life and govern economy	
CO 2	This will develop the critical thinking and analytical ability among the participants to strategize for environmental protection	
CO 3	Develop skills in environmental assessment, monitoring, and reporting.	
CO 4	Gain awareness of global environmental issues, such as climate change, deforestation.	
CO 5	Participants would be able to understand the principles of environmental management and sustainable development.	
	Semester-III	
301	**MARKETING MANAGEMENT**	BBA 301
	Course Outcome	
CO 1	This course will help participants to understand the basic concepts and principles of marketing.	
CO 2	Understand the basic concepts the marketing mix (product, price, place, promotion), behavior, and market segmentation.	
CO 3	Develop skills in pricing strategies.	
CO 4	Develop critical thinking skills in adapting marketing strategies to changing market condition.	
CO 5	Learn how to analyze and respond to market competition, market trends, and changes in consumer behavior.	
302	**FINANCIAL ACCOUNTING & TALLY**	BBA 302
	Course Outcome	
CO 1	Participants will understand the basic principles of financial accounting, including the preparation and interpretation of financial statements.	
CO 2	Learn how to create and manage accounts, ledgers, and financial reports using Tally.	
CO 3	Generate accounting and inventory masters, vouchers and basic reports in tally.	
CO 4	Develop skills in bookkeeping, financial reporting, and financial analysis.	
CO 5	Apply financial accounting principles and Tally skills to real-world business scenarios for effective financial management and decision making.	
303	**INDIAN ETHOS FOR EFFECTIVE MANAGEMENT**	BBA 303

	Course Outcome	
CO 1	Participants will understand the fundamental principles of Indian ethos, values, and ethics in the context of effective management.	
CO 2	Learn how to apply Indian ethos in organizational management, including leadership, decision making, and team management.	
CO 3	Gain awareness of Indian cultural diversity, traditions, and customs, and their implications for effective management.	
CO 4	Display ethical business behaviour and promote good to the society along with improving profitability.	
CO 5	They will be expected to apply Indian ethos principles to real-world management scenarios for effective leadership.	
304	**COMPUTERS FOR MANAGEMENT**	BBA 304
	Course Outcome	
CO 1	This will develop skills in using popular software tools, such as Microsoft Office suite (Word, Excel, PowerPoint) and other relevant business applications.	
CO 2	Learn how to effectively use digital tools and platforms for communication, collaboration, and project management in a business environment.	
CO 3	Understand the basics of database management, data analysis, and data visualization using relevant software applications.	
CO 4	Apply computer skills and technology knowledge to real-world business scenarios for improved productivity, efficiency, and decision making in a management context.	
CO 5	Understanding of basics of computers, software, operating systems and emerging technologies	
	Semester-IV	
401	**HUMAN RESOURCE MANAGEMENT**	BBA 401
	Course Outcome	
CO 1	Understand the principles and practices of human resource management.	
CO 2	understand recruitment, selection, training, compensation, performance management, and employee relations.	
CO 3	Understand the importance of talent acquisition, development, and retention in organizational success.	
CO 4	Learn how to effectively communicate and negotiate with employees, managers, and other stakeholders.	

CO 5	Learn how to develop and implement human resource policies and procedures.	
402	**BUSINESS LAW**	BBA 402
	Course Outcome	
CO 1	This course will help participants to understand the basic principles of business law, including legal concepts, contracts, torts, and business ethics.	
CO 2	Gain awareness of legal risks and liabilities in business operations and develop strategies to mitigate them.	
CO 3	Develop skills in dispute resolution and alternative methods of resolving business-related legal conflicts.	
CO 4	Enable graduates to take appropriate routine as well as non-routine decisions for their business.	
CO 5	The participants will learn about ethical considerations in corporate social responsibility, sustainability and ethical decision making.	
403	**DIGITAL MARKETING**	BBA 403
	Course Outcome	
CO 1	The course will develop understanding of underpinning principles and concepts of digital marketing.	
CO 2	Participants will be able to explore digital future and looking at trends that shape the use of technology.	
CO 3	A thorough understanding of the creative process from proposition to promotional delivery of online contents.	
CO 4	Apply digital marketing concepts and strategies to real-world business scenarios.	
CO 5	Develop skills in creating and managing engaging digital content, including website content, social media posts, blogs, and email campaigns.	
404	**COMMUNICATION SKILLS**	BBA 404
	Course Outcome	
CO 1	Understand the fundamental principles and components of effective communication, including verbal, nonverbal, and written communication.	
CO 2	Develop skills in active listening, empathy, and feedback to enhance communication effectiveness.	
CO 3	Develop skills in effective presentation and public speaking, including organizing ideas, using visual aids, and engaging an audience.	
CO 4	Apply effective communication skills to real-world scenarios, such as job interviews, customer interactions, and team collaborations, for personal and professional success.	
CO 5	Gain awareness of different communication styles and cultural differences, and how to adapt communication for diverse audiences.	

	Sememter-V	
501	**PRODUCTION MANAGEMENT**	BBA 501
	Course Outcome	
CO 1	This course will ensure comprehensive understanding of the principles, concepts, and techniques related to production management	
CO 2	Learn about the role of production in organizations, production planning and control, production systems, and production process design.	
CO 3	Learn about forecasting, capacity planning, production scheduling, inventory management, and quality management and importance of quality in production management.	
CO 4	Understanding of supply chain management and its relevance to production management.	
CO 5	Making informed operations decisions, including production planning and control	
502 F	**WORKING CAPITAL MANAGEMENT**	BBA 502 F
	Course Outcome	
CO 1	This will equip participants with the knowledge and skills to effectively manage a company's short-term assets and liabilities	
CO 2	Optimize its operational efficiency, liquidity, and profitability.	
CO 3	Understanding key concepts such as cash flow management, inventory management, accounts receivable and payable management, and financial analysis techniques.	
CO 4	The participants will be able to appropriately able to manage & support its day-to-day operations and achieve their organization's financial goals.	
CO 5	The participants would be able to take optimal decisions and efficiently manage their company's working capital	
502 M	**CONSUMER BEHAVIOUR**	BBA 502 M
	Course Outcome	
CO 1	Students will gain a deep understanding of the factors that influence consumer decision-making,	
CO 2	Students will learn how to analyze consumer behavior through the application of theories, models, and research methods	
CO 3	Students will learn how to apply consumer behavior concepts and insights to develop effective marketing strategies.	
CO 4	Students will develop effective communication skills to communicate consumer behaviour insights	
CO 5	Interpret consumer data, and make informed decisions based on consumer insights.	
502 H	**HUMAN RESOURCES DEVELOPMENT**	BBA 502

		H
	Course Outcome	
CO 1	Participants will learn how to design, implement, and evaluate HRD programs and initiatives	
CO 2	This course will develop an understanding of the role of HRD in aligning human resources with organizational goals	
CO 3	Understanding of the key concepts, theories, and models related to human resource development	
CO 4	Develop leadership and change management skills to effectively lead and manage HRD initiatives in organizations.	
CO 5	The impact of HRD initiatives on organizational performance.	
503	**PERSONALITY DEVELOPMENT & CHARACTER BUILDING**	BBA 503
	Course Outcome	
CO 1	Participants will develop an understanding of their own personality traits, strengths, weaknesses, values, beliefs, and emotions through self-awareness exercises and self-reflection activities.	
CO 2	Learn strategies and techniques for personal growth and development.	
CO 3	Developing resilience, improving communication skills, and enhancing emotional intelligence.	
CO 4	Learn effective interpersonal skills, including active listening, empathy, conflict resolution, negotiation, and assertiveness.	
CO 5	Develop a personal code of ethics that aligns with their values and character.	
504	**FIELD PROJECT**	BBA 504
	Course Outcome	
CO 1	This course offers an opportunity to apply the theoretical knowledge and skills they have gained in the course to a real-world field project.	
CO 2	Gain practical experience in the field by working on a real-world project	
CO 3	Develop practical skills, such as data collection, data analysis, problem-solving, critical thinking, and project management, which are valuable in their future careers.	
CO 4	Develop and enhance their professional skills, such as communication, teamwork, time management, and presentation skills,	
CO 5	Develop skills in identifying and analyzing problems, generating solutions, and making informed decisions based on real-world data and information.	

	Semester-VI	
601	**MANAGEMENT INFORMATION SYSTEM**	BBA 601
	Course Outcome	
CO 1	This course will provide comprehensive understanding of the principles, concepts, and techniques related to management information systems.	
CO 2	Components of IT infrastructure and the architecture of information systems, including hardware, software, networks, databases, and other technological	

	components.	
CO 3	Learn about business process modeling, analysis, and improvement using Information systems, decision support systems and their applications in organizations	
CO 4	The graduates are expected to apply the understanding of various information systems to meet the information requirements of the organization	
CO 5	Competency in MIS will help graduates to ensure better communication and connectivity throughout the organization across all levels of management.	
602 F	**FINANCIAL CONTROL SYSTEM**	BBA 602 F
	Course Outcome	
CO 1	The Participants will learn about the importance of financial control in managing organizational resources,ensuring financial stability, and achieving financial goals	
CO 2	The process of financial planning and budgeting, including the development, implementation, and monitoring of financial plans and budgets	
CO 3	Learn about tools used in financial control to assess the financial performance of organizations.	
CO 4	Learn how to analyze financial statements, including balance sheets, income statements, and cash flow statements, to assess the financial health of organizations and make informed financial decisions.	
CO 5	The graduates are expected to ensure financial discipline and optimal utilisation of resources in the organisation	
602 M	**SALES MANAGEMENT**	BBA 602 M
	Course Outcome	
CO 1	The participants will learn about the sales process, sales strategies, sales techniques, and sales team management to achieve sales targets and goals.	
CO 2	they will learn the importance of sales planning and forecasting in organizations.	
CO 3	Learn about the different stages of the sales process, including prospecting, qualifying, presenting, negotiating, and closing.	
CO 4	This course will promote the knowledge and skills necessary to attract and retain the customers and thus helping the business to grow	
CO 5	The graduates are expected to develop responsiveness towards challenges of increasing competition in the business world by resorting to improved methods of sales &distribution aimed at reducing cost, increasing profits and fulfilling the customers' expectations.	
602 H	**WAGES AND SALARY ADMINISTRATION**	BBA 602 H
	Course Outcome	
CO 1	Participants will learn about different types of wages, compensation systems, and factors affecting wages, including legal and regulatory considerations.	

CO 2	Wage surveys, benchmarking, and market pricing to determine competitive wages for different job roles.	
CO 3	The legal and regulatory framework governing wages and compensation, including minimum wages, overtime, equal pay, pay equity, and other relevant laws and regulations	
CO 4	Learn about techniques and tools used in wage and compensation analysis, such as job evaluation, salary surveys, pay gap analysis, and pay equity analysis.	
CO 5	The graduates will be able to analyse, integrate and use this knowledge in solving compensation related problems in the organisation.	
603 F	**E-ACCOUNTING & TAXATION WITH GST**	BBA 603 F
	Course Outcome	
CO 1	This course gives comprehensive understanding of accounting principles, concepts, and practices used in modern organizations.	
CO 2	Learn how to effectively use e-accounting tools and software to manage accounting processes, taxation laws and regulations, including direct and indirect taxes, such as income tax, goods and services tax (GST), and other applicable taxes.	
CO 3	The graduates will elicit knowledge about tax structures and tax planning.	
CO 4	It also promotes critical thinking, analytical thinking and problem solving. This can be of great help if they wish to specialize in taxation.	
CO 5	Developing financial literacy skills that are essential for managing their personal finances.	
603 M	**ADVERTISING & SALES PROMOTION**	BBA 603 M
	Course Outcome	
CO 1	This course will give an understanding of advertising principles, concepts, and practices used in marketing and promotion	
CO 2	The role of advertising in the marketing mix, advertising strategies and tactics, advertising campaigns, and the creative process in advertising.	
CO 3	Learn how to plan, develop, and implement effective advertising campaigns.	
CO 4	Gain knowledge of sales promotion strategies and techniques, such as discounts, coupons, loyalty programs, contests, sweepstakes, and other promotional tools.	
CO 5	The participants will be able to understand the complexities involved in targeting and positioning decisions. The graduates are expected to take appropriate decisions for launching their new products.	
603 H	**INDUSTRIAL & LABOUR LAWS**	BBA 603 H
	Course Outcome	
CO 1	This course is an attempt to appreciate the conceptual and practical aspects of industrial relation at both macro and the micro levels.	
CO 2	Gain knowledge of the legal aspects of workplace safety and health, including occupational safety and health regulations	

CO 3	The participants will learn role of trade unions, social and political influences of labour relations on business	
CO 4	It will help them to deal with the realities of managing a business in the complex world within the boundaries of defined legislations.	
CO 5	Understanding comprehensive framework for occupational safety, health, and working conditions.	
604	**INTERNSHIP**	BBA 604
	Course Outcome	
CO 1	This will give participants the hands-on experience and develop practical skills related to their field of study or career interests.	
CO 2	Interns build professional networks by connecting with professionals in their field,including mentors, supervisors, and colleagues.	
CO 3	Gain a deeper understanding of their industry or field of interest by observing and participating in real-world work environments	
CO 4	This will enable personal growth by challenging interns to step out of their comfort zones, adapt to new environments	
CO 5	This will also expose interns to professional etiquette and workplace norms, including communication protocols, dress code, and workplace etiquette.	
	Semester-VII	
701	**STRATEGIC MANAGEMENT**	
	Course Outcome	
CO 1	Participants will gain knowledge and understanding of the principles, concepts, and frameworks of strategic management.	
CO 2	Learn about the strategic management process, strategic planning, and strategic decision-making.	
CO 3	Learn how to analyze the internal and external environments of organizations to identify opportunities and threats	
CO 4	The participants will learn conceptual, diagnostic and analytical skills in strategy formulation and execution	
CO 5	Learn about the challenges and opportunities of strategic management in a global and international context.	
702 F	**PROJECT MANAGEMENT**	BBA 702 F
	Course Outcome	
CO 1	This course enables to understand the framework for evaluating Capital expenditure Proposals, their planning & management in the review of the projects undertaken	
CO 2	Participants will learn risk management, quality control, and project monitoring and control.	
CO 3	Learn how to effectively identify, analyze, and manage project stakeholders, including understanding their needs	
CO 4	Learn how to efficiently execute project plans.	

CO 5	Learn how to efficiently managing tasks, resources, budgets, and timelines, and making informed decisions to keep projects on track	
702 M	**RETAIL MANAGEMENT**	BBA 702 M
	Course Outcome	
CO 1	Participants will gain knowledge and understanding of the principles, concepts, and theories of retail management	
CO 2	Learn about the retail industry, retail formats, and the retail marketing mix, including product assortment, pricing, promotion, and store layout.	
CO 3	Effectively plan and manage retail buying and merchandising activities.	
CO 4	Learn how to analyze consumer behavior, market trends, and competition to make informed buying and merchandising decisions.	
CO 5	Learn about sales techniques, customer relationship management, and customer retention strategies.	
702 H	**ORGANISATIONAL DEVELOPMENT**	BBA 702 H
	Course Outcome	
CO 1	Participants will gain knowledge and understanding of the principles, concepts, and theories of organizational development	
CO 2	Learn about the history, evolution, and current trends in OD, and the various approaches and models used in organizational development interventions.	
CO 3	Learn how to diagnose and assess organizational issues, problems, and needs using appropriate diagnostic tools, methods, and techniques.	
CO 4	Learn how to collect, analyze, and interpret data related to organizational culture, structure, systems, processes, and performance to identify areas for improvement and change.	
CO 5	Learn about various organizational development intervention strategies, such as team building, organizational culture change, process improvement, and leadership development.	
703	**RESEARCH METHODOLOGY**	BBA 703
	Course Outcome	
CO 1	This course will acquaint the participants with the fundamentals of research before they go to the corporate world for their project	
CO 2	The participants will learn various components of research framework like problem identification, research design, data collection, analysis, report writing and presentation.	
CO 3	This will also cultivate critical thinking, analytical skills and problem solving skills in the participants.	
CO 4	The graduates are expected to conduct disciplined research in the area of their specialisation to meet the organisational requirements and objectives.	
CO 5	Understanding utility of statistics in research as well as in informed decision-making.	
801	**INTERNATIONAL BUSINESS**	BBA 801
	Course Outcome	
CO 1	This course facilitates the students in understanding International	

	Business in a multi- cultural world.	
CO 2	The participants will learn various aspects of international business and role of political, social, cultural variables in influencing the business.	
CO 3	Understand the concepts of comparative advantage, trade barriers, trade agreements, foreign direct investment, and multinational corporations, and their implications for international business operations.	
CO 4	Understand the challenges and opportunities of managing global supply chains, including coordination, collaboration, and risk management across borders.	
CO 5	The graduates are expected to formulate and execute appropriate strategies and plans essential to succeed in global business world.	
802	**OPERATION RESEARCH**	BBA 802
	Course Outcome	
CO 1	This course develops an understanding of basic management science techniques and their role in managerial decision making essential to succeed in global business world.	
CO 2	Decision-making in different domains, such as logistics, supply chain management, transportation, manufacturing, and service operations.	
CO 3	Understanding of as mathematical modeling, optimization, simulation, decision analysis queuing theory, and forecasting.	
CO 4	Develop problem-solving skills through the application of Operations Research techniques to real-world problems.	
CO 5	This course will hone the critical thinking, analytical skills and problem solving ability of the participants and will enable them to propose, communicate and implement action plan that addresses opportunities and issues related to optimum allocation of resources in the business world.	

BACHELOR OF BUSINESS ADMINISTRATION (BBA)

PROGRAMME STRUCTURE
(As per NEP 2020 & CBCS Ordinance 14 A)

1st Year

SEMESTER – I					
Course Code & Name	**Course Type**	**Theory Paper**	**Internal Assessment**	**Maximum Marks**	**Credits**
101 Management Process & Organisation Behaviour	Major Core	60	40	100	6
102 Basics of Economics	Minor Core	60	40	100	6
103 Business Environment*	GE	60	40	100	4
104 English Language	AE	60	40	100	4
SEMESTER TOTAL				**400**	**20**
CUMULATIVE TOTAL				**400**	**20**

SEMESTER – II					
Course Code & Name	**Course Type**	**Theory Paper**	**Internal Assessment**	**Maximum Marks**	**Credits**
201 Financial Management	Major Core	60	40	100	6
202 Quantitative Techniques	Minor Core	60	40	100	6
203 Start-ups & Entrepreneurship*	GE	60	40	100	4
204 Environmental Studies	AE	60	40	100	4
SEMESTER TOTAL				**400**	**20**
CUMULATIVE TOTAL				**800**	**40**

GE: Generic Elective **AE: Ability Enhancement**

*Students may choose this course as a **Generic Elective** or may choose a Generic Elective Course offered in other UTDs at the same level or may choose a Course offered by MOOCs through SWAYAM.

The student will be awarded Certificate in Business Administration (CBA) on successful completion of first year.

2nd Year

SEMESTER – III					
Course Code & Name	**Course Type**	**Theory Paper**	**Internal Assessment**	**Maximum Marks**	**Credits**
301 Marketing Management	Major Core	60	40	100	6
302 Financial Accounting & Tally	Minor Core	60	40	100	6
303 Indian Ethos for Effective Management	GE	60	40	100	4
304 Computers for Management	SE	60	40	100	4
SEMESTER TOTAL				**400**	**20**
CUMULATIVE TOTAL				**1200**	**60**

SEMESTER – IV					
Course Code & Name	**Course Type**	**Theory Paper**	**Internal Assessment**	**Maximum Marks**	**Credits**
401 Human Resources Management	Major Core	60	40	100	6
402 Business Laws	Minor Core	60	40	100	6
403 Digital Marketing*	GE	60	40	100	4
404 Communication Skills	SE	60	40	100	4
SEMESTER TOTAL				**400**	**20**
CUMULATIVE TOTAL				**1600**	**80**

GE: Generic Elective **SE: Skill Enhancement**

*Students may choose this course as a **Generic Elective** or may choose a Generic Elective Course offered in other UTDs at the same level or may choose a Course offered by MOOCs through SWAYAM.

The student will be awarded Diploma in Business Administration (DBA) on successful completion of second year.

3rd Year

SEMESTER – V					
Course Code & Name	**Course Type**	**Theory Paper**	**Internal Assessment**	**Maximum Marks**	**Credits**
501 Production Management	Major Core	60	40	100	6
502 F Working Capital Management** 502 M Consumer Behaviour** 502 H Human Resources Development**	DSE	60	40	100	4
503 Personality Development & Character Building	SE	60	40	100	4
504 Field Project	Core			100	6
SEMESTER TOTAL				400	**20**
CUMULATIVE TOTAL				**2000**	**100**

SEMESTER – VI					
Course Code & Name	**Course Type**	**Theory Paper**	**Internal Assessment**	**Maximum Marks**	**Credits**
601 Management Information System	Major Core	60	40	100	6
602 F Financial Control System** 602 M Sales Management ** 602 H Wages And Salary Administration**	DSE	60	40	100	4
603 F E-Accounting & Taxation with GST** 603 M Advertising & Sales Promotion** 603 H Industrial & Labour Laws**	DSE	60	40	100	4
604 Internship	Core			100	6
SEMESTER TOTAL				**400**	**20**
CUMULATIVE TOTAL				**2400**	**120**

SE: Skill Enhancement DSE: Discipline Specific Elective
******Student may choose any one set of specialization Course; Finance, Marketing or HRM (Group F or M or H) as **Discipline Specific Electives**.

The student will be awarded Bachelor Degree in Business Administration (BBA) on successful completion of third year.

4th Year

SEMESTER – VII					
Course Code & Name	**Course Type**	**Theory Paper**	**Internal Assessment**	**Maximum Marks**	**Credits**
701 Strategic Management	Major Core	60	40	100	6
702 F. Project Management** 702 M. Retail Management** 702 H. Organisational Development	DSE	60	40	100	4
703 Research Methodology	Minor Core	60	40	100	4
704 Research Project	Core			100	6
SEMESTER TOTAL				**400**	**20**
CUMULATIVE TOTAL				**2800**	**140**

SEMESTER – VIII					
Course Code & Name	**Course Type**	**Theory Paper**	**Internal Assessment**	**Maximum Marks**	**Credits**
801 International Business	Major Core	60	40	100	6
802 Operations Research	Minor Core	60	40	100	4
803 Internship & Dissertation	Core			100	10
SEMESTER TOTAL				**300**	**20**
CUMULATIVE TOTAL				**3200**	**160**

DSE: Discipline Specific Elective
******Student may choose any one set of specialization Course; Finance, Marketing or HRM (Group F or M or H) as **Discipline Specific Electives**.

The student will be awarded Honors Bachelor Degree in Business Administration (BBA Honors) on successful completion of fourth year.

Credit Distribution as per the Ordinance 14 A

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		Main Faculty (as per prerequisite)			Any Faculty	Skill Enhancement Course (SEC)	Ability Enhancement Course (AEC)	Field Projects/ internship/ apprenticeship /community engagement & service	Credits	Qualification Title (Credits Requirements)
		Subject I		Subject II	Subject III					
Level	Sem	Major		Minor	Generic Elective Course	Vocational Course		#Inter/Intra Faculty		
		Core	DSE							
Level 5	1	6		6	4	-	4	-	6+6+4+4 =20	(40) Undergraduate Certificate in Main Faculty
	2	6		6	4	-	4	-	6+6+4+4 =20	
Level 6	3	6		6	4	4	-	-	6+6+4+4 =20	(80) Undergraduate Diploma in Main Faculty
	4	6		6	4	4	-	-	6+6+4+4 =20	
Level 7	5	6	4	-	-	4	-	6	6+4+4+6 =20	(120) Bachelor Degree in Main Faculty
	6	6	4+4	-	-	-	-	6	6+4+4+6 =20	
Level 8	7	6	4	4 Research Methodology	-	-	-	6	4+4+4+6 =20	(160) Bachelor Degree (Honours/Research) in Main Faculty
	8	6	-	4	-	-	-	10	6+4+10 = 20	
Total		48	16	32	16	12	8	28	160 Credits	

101: MANAGEMENT PROCESS & ORGANISATIONAL BEHAVIOUR

Course Objective:
To help the students to acquire basic knowledge in concepts and theory of Principles of Management and to familiarize the students with basic management concepts and behavioural processes in the organization.

Course Contents:

UNIT - I Principles of Management, Management School & Thoughts, Functions and Responsibilities of management, Management in Indian Culture and tradition.

UNIT - II Planning: Process, types and Significance, Objective, strategies and Policies, MBO. Planning for start –ups, Organizing: nature and purpose of organizing, Concepts of departments, line and staff relationship, Types of organisational structures.

UNIT - III Direction: Principles and techniques. Leadership: Concept, Theories and Styles; Qualities of a good leader. Motivation: Types & Significance. Controlling: the system and process of controlling, Control techniques. Coordination as an essence of management;

UNIT - IV Concept of Organisational Behaviour, Contributing Disciplines to organisational Behaviour. Perception- Perceptual selectivity, Perceptual organisation, Attitudes and Values.

UNIT - V Group Dynamics- Group Formation, Nature of groups, Reasons for joining Groups, Functions of group within organisation, Stress Management- Meaning, Cause, Effect and Coping Strategies for Stress

Outcome:
Business Environment and Domain Knowledge
This course will enable participants to understand the basic concepts, principles and process of management. They will be acquainted with the functions, responsibilities of managers along with understanding of how people behave under different conditions and why they behave as they do. Participants would be able to integrate the learning in handling managerial jobs at several levels in the organisation and evaluate most optimal solution to the problems by gaining better understanding on the complexities associated with management of group behaviour in the organisation.

Suggested Readings:
1. Rovwer J.C. & Daniel L., Management principles & Practice, John Wile & Sons.
2. Koontz D and Welhrich, Management, International Student Edition, Tokyo 1980.
3. Agrawal R.D., Organisation & Management MC Graw Hill, New Delhi 1982.
4. Newman and Warran, The Process of Management: Concepts, Behaviour and Practices, PHI.
5. Shekcharan Uma, Organisational Behaviour, Text & Cases, New Delhi THM, 1989.

List of Cases, Recent Articles and Specific References will be announced in the Class Room at the time of launching of the course.

102: BASICS OF ECONOMICS

Course Objective:

The course aims to acquaint students with basic fundamentals of microeconomic theory. It will enhance the skills of students in tabular and graphic interpretation of the economic concepts and theory in decision making of a firm and its application in management.

Course Contents:

UNIT - I Introduction to Economics, Nature and Scope of Economics, Methods of Economics. Managerial Economics: Meaning and Scope, Relationship with Other Disciplines. Factors of Production: Theories of Rent, Interest and Profit.

UNIT - II Concept of Demand & supply, Concept of Market Equilibrium, Elasticity Of Demand & supply**,** Shift in demand& supply curve. Utility Analysis, Marginal Concept Of Utility. Indifference Curve Analysis: Assumptions, Properties Of IC. Consumer's Equilibrium: Maximising Satisfaction**.**

UNIT - III National Income: Estimates and analysis, Measures of National Income, GNP, NNP, GDP, DPI and HDI. Business Cycles: Phases, Govt. Policies and Impact on Society.

UNIT - IV Market: Different Types Of Market, Market Structure: Main Features, Perfect Competitions: Main Features, Price Determination in Perfectly Competitive Firm

UNIT - V Theory of firm: Profit maximization and Sales maximization; Balance of trade and Balance of payment; Production Theory: Short term and long term production functions.

Outcome:

Business Environment and Domain Knowledge

This course will acquaint the participants with role of economics in business management. Their understands of concepts of various market structures, demand and supply functions, demand forecasting and different pricing techniques will enable them to take optimum decisions in their business under different market conditions.

Suggested Readings:

1. Adhikary M., Business Economics, New Delhi, Excel Books, 2000.
2. Chopra O P, Managerial Economics, New Delhi, TMH, 1985.
3. Koutsoyiannis A., Modern Micro Economics, New York Mac Millian, 1991.
4. Keat, Paul G & Philips K. Y. Young, managerial Economics, Prentice hall, New Jeresy, 199

List of Cases, Recent Articles and Specific References will be announced in the Class Room at the time of launching of the course.

103: BUSINESS ENVIRONMENT

Course Objectives:
The aim of this paper is to acquaint students with environmental factors and their relevance in the business and to expose them to the latest changes in the economic scene of the country as well as the global business scenario.

Course Contents:

UNIT - I Introduction to Business Environment, Classification of Business Environment, Factors Affecting Business, Role of Environment in Business, Strategy to Change Environment

UNIT - II Economic & Political Environment: Economic Environment of Business, Economic Policies: Old & New, Five Year Plans, Political Environment & Economic System, Indian Constitution & Business, Changing Profile Of Indian Economy, Business Risk Posed by Indian Political System

UNIT - III Technological Environment: Introduction, Level of Technology, Research & Development, Impact of Technology in Business, Relationship Between Business & Technology, Human Factor & Technology, Industrial Policy

UNIT - IV Culture Environment: Introduction, Role & Effect of Culture on Business, Social Responsibility of Business Organizations. Material & Non–Material Culture. VUCA (Volatility Un-Certainty Complexity and Ambiguity)

UNIT - V Global market, pros & cons of global market, world trade organization, joint ventures, and international trade barriers

Outcome:
Business Environment and Domain Knowledge
This course will acquaint the participants with different constituents of environment and their impact on the business operations. The participants will be able to gain an understanding of various micro and macro factors in the environment and how an entity works in a business environment.

Suggested Readings:
1. Aswathappa, K Business Environment for Strategic Management
2. Duttand Sundaram, Indian Economy
3. Mishra and Puri, Indian Economy
4. Cherunilam Francis, Business Environment

List of Cases, Recent Articles and Specific References will be announced in the Class Room at the time of launching of the course.

104: ENGLISH LANGUAGE

Course Objective: The objectives of the course are to improve the competence of the student's basic language skills and to acquaint student with working official English Language.

Course Contents:

I. ***Language content:***

A. Structural Items:
i. Simple, Compound and Complex Sentences.
ii. Co-ordinate clauses (with, but or, neither-no, Otherwise or else)
iii. Sub-ordinate clauses- Noun clauses- as subject object and complement. Relative clauses, (restrictive and non-restrictive clauses) Adverb Clauses (open and hypothetical, conditional: with because, though, where, so, that, as long as, as soon as)
iv. Comparative clauses (as+ adjective / adverb + as no sooner ....that)

B. Tense:
i. Simple present, Progressive and present perfect
ii. Simple past, progressive and past perfect
iii. Indication of futurity

C. The passive (Simple present and past, Present and perfect and to infinitive structure)

D. Reported speech
i. Declarative sentences
ii. Imperatives
iii. Interrogative-wh-questions, yes/no questions
iv. Exclamatory sentences.

E. Modals (Will, shall, would, ought, to have to/have got to, can-could, may-might and need)

F. Verb Structures (infinitive and gerundial)

G. Linking devices

Note: The above language item will be introduced to express the following communicative functions:

a. Seeking and imparting information
b. Expressing attitudes-intellectual and emotional
c. Persuasion and discussion etc.

II ***Reading Comprehension***: Adequate practice should be provided in reading with understanding through graded materials prescribed in the text book. Attempt should also be made to expand the learner's vocabulary.

III ***Writing Skills***: Graded practice should be provided in the basic skills of composition. The following forms of composition should be practiced.

a) Paragraph writing (150 words)
b) Letter Writing (both formal and informal)

IV ***Speaking:*** Contextualized vocabulary teaching and oral work should be used to strengthen the learner's acquirement of the sound distinction, stress and intonation in English.

Outcome: This course will hone reading, writing and over all communication skills of the participants which is very basic and imperative for almost all kind of management jobs in the organisation. The graduates are expected to understand the process of communicating and interpreting the human experiences through literary representation using historical context and disciplinary methodologies.

201: FINANACIAL MANAGEMENT

Course Objective:

The objective is to enable students to understand the basic concepts of Financial Management and the role of Financial Management in decision-making.

Course Contents:

UNIT - I Introduction, Meaning of Finance, Business Finance, Finance Function, Aims of Finance Function, Organization structure of finance, Financial Management – Goals of Financial Management, Financial Decisions, Role of a Financial Manager.

UNIT - II Ratio analysis, Meaning Interpretations of ratios, classification of ratio, funds flow and cash flow analysis.

UNIT - III Capital structure, source of capital, leverage: financial and operating, optimum Capital structure, Theories of Capital structure, Factors influencing Capital structure. Capitalization: over capitalization analysis, under capitalization.

UNIT - IV Concept of time value of money, Capital budgeting, methods of investments evaluation, payback period and accounting rate of return, discounted cash flow method and internal rate of return.

UNIT - V Dividend decision of the firm, dividend payment and valuation of Firm's dividend policy, Determinants of dividend policy & Types of dividend policy.

Outcome:

Business Environment and Domain Knowledge

The Graduates will acquire the knowledge on allocation and management of financial resources which will help them to deal with day to day working capital decisions, major capital investment decisions and raising long term finances.

Suggested Readings:

1. Van Horne, James C, Financial Decision Making Engle Cliffs, New Jersey, Prentice Hall Inc.
2. Bhalla V.K., Financial Management and Policy, New Delhi.

List of Cases, Recent Articles and Specific References will be announced in the Class Room at the time of launching of the course.

202: QUANTITATIVE TECHNIQUES

Course Objective:
The objective of the course is to provide elementary knowledge of the concepts of Quantitative Techniques and their application in business field.

Course Contents:

UNIT - I Linear Equation and Calculus: Equation in two variable, solution to Linear Equation, Linear Equalities and Inequalities, Graphical solution; Differential Calculus and Integral Calculus: Optimization using calculus, logarithms

UNIT - II Matrices: Introduction, Types and Properties of matrices: Addition, subtraction and multiplication, Cofactor, Ad joint, Transpose, Inverse
.
UNIT - III Introduction to Statistics: Definition of statistics, scope of statistics, limitations of statistics, Types of data: Primary and Secondary data, Methods of collecting primary data, Construction of frequency distribution

UNIT - IV Measures of central tendency: Measures of central tendency: Mean Median Mode (all for grouped and ungrouped data). Mean deviation, Standard Deviation, Skewness.

UNIT - V Correlation and Regression Analysis: Correlation, Karl Pearson coefficient of Correlation, Spearman's Rank Correlation, Regression analysis.

Outcome:
Critical thinking, Business Analysis, Problem Solving and Innovative Solutions
The participants will be able to learn basics of mathematics and statistics applicable in business which will help them to translate a problem in the real business into simple mathematical model to allow easier understanding and aid in problem solving. This will also hone the critical thinking, analytical skills and problem solving ability of the graduates.

Suggested Readings:

1.	Levin Rechard I	:	Statistics for Management
2.	Gupta, C.B.	:	An Introduction to Statistics.
3.	Gupta. S.C	:	Fundamentals of Statistics.
4.	Elhance, D.N	:	Fundamentals of Statistics.
5.	Ray & Sharma	:	Statistics.
6.	Raghavchari, C.	:	Business Mathematics.

List of Cases, Recent Articles and Specific References will be announced in the Class Room at the time of launching of the course.

203: STARTUPS & ENTREPRENEURSHIP

Course Objective:
The objective of the course is to familiarize participants with various concepts used in the process of entrepreneurship and start ups.

Course Contents:

UNIT - I Concept and Nature of Entrepreneurship, Entrepreneurial Trait, Types and Significance, Role and Importance of entrepreneur in economic growth.

UNIT - II Entrepreneurial Development programmes in India, History, Support, Objectives, Stages of Performance, Entrepreneurial Environment, EDP and their valuation.

UNIT - III Entrepreneurial Behaviour and entrepreneurial Motivation, N- Achievement and Management success. Innovation and Entrepreneur, Entrepreneurial Success in Rural Areas.

UNIT - IV Establishing Entrepreneur System, Search for Business Idea, Sources of Ideas, Idea Processing, Input requirement.

UNIT - V Sources and Criteria of Financing, fixed and Working capital assessment, technical assistance, Marketing assistance, Sickness of units and Remedial assistance.

Outcome:
Developing Social Responsiveness and Leadership-
This course will create an understanding related to the tools necessary to create sustainable and viable businesses. The graduates will be able to generate innovative ideas and exploit market opportunities by turning them into a feasible business plan. They are expected to reciprocate to the requirements of the society by creating unique solutions to the market problems.

Suggested Readings:
1. Desai Vasant, Small Scale Industrial Industries & Entrepreneurship
2. Shukla M.B., Entrepreneurship & Business Management
3. Gupta C.B., Entrepreneurship Development in India

List of Cases, Recent Articles and Specific References will be announced in the Class Room at the time of launching of the course.

204: ENVIRONMENTAL STUDIES

Course Objective:
The aim of this course is to provide basic knowledge of environment and familiarize them with its management.

Course Contents:

UNIT - I Introduction to environmental studies-Multidisciplinary nature of environmental studies; Scope and importance; the need for environmental education. Concept of sustainability and sustainable development.

UNIT - II Ecosystem-What is an ecosystem? Structure: food chains, food webs and function of ecosystem: Energy flow in an ecosystem, nutrient cycle and ecological succession, Ecological Interactions.

UNIT - III Biodiversity - a. Levels of biological diversity: genetic, species and ecosystem diversity; Bio geographic zones of India; Biodiversity patterns and global biodiversity hot spots b. India as a mega-biodiversity nation; Endangered and endemic species of India c. Threats to biodiversity: Habitat loss, poaching of wildlife, man-wildlife conflicts, biological invasions;

UNIT - IV Environmental Pollution and Global Environmental Issues:- a. Environmental pollution, b. Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture c. Nuclear hazards and human health risks (Chernobyl, 3 mile Island, Daiichi-Fukushima) d. Solid waste management; Pollution Tragedies: Love canal, Bhopal Gas, Endosulfan, Minamata and Flint water

UNIT - V Environmental Management: Policies & Practices-Environmental ethics: Role of Indian and other religions and cultures in environmental conservation. Green Politics, Earth Hour, Green Option Technologies. Environmental communication and public awareness, Role of National Green Tribunal.

Outcome:
The course will install an in-depth knowledge on natural process essential to sustain life and govern economy. This will develop the critical thinking and analytical ability among the participants to strategize for environmental protection and conservation of biodiversity. The graduates are expected to develop empathy for different life forms and appreciate the ecological linkages within web of life.

Suggested Readings:
1. Basu, M. and Xavier, S., Fundamentals of Environmental Studies, Cambridge University Press.
2. Mitra, A. K and Chakraborty, R., Introduction to Environmental Studies, Book Syndicate.
3. Enger E. and Smith B., Environmental Science: A Study of Interrelationships, McGraw-Hill Higher Education.
4. Basu, R.N, Environment, University of Calcutta.

List of Cases, Recent Articles and Specific References will be announced in the Class Room at the time of launching of the course.

301: MARKETING MANAGEMENT

Course Objective:

The objective of the paper is to familiarize the student with modern marketing concepts, tools and techniques to develop their skills required for the performance of marketing function.

Course Contents:

Unit- I Nature and scope of marketing, Selling Vs Marketing, basic concepts and approaches, Marketing management philosophies.

Unit- II Market segmentation, Marketing Mix, Marketing Environment, Marketing System, Marketing research.

Unit- III Product Classification & Product mix, branding and packaging decision, promotion mix: Advertising, Selling and Sales promotion.

Unit- IV Pricing decision, methods of setting prices, pricing strategies product promotion, Consumer Behaviour and Decision Making.

Unit- V Channel of distribution, Factors affecting choice of channel, Types of intermediaries and their roles.

Outcome:
Business Environment and Domain Knowledge
This course will demonstrate strong conceptual knowledge in functional areas of marketing management and its application. The understanding of impact of economic, political and technological factors on activities pertaining to market will help graduates in identification and resolution of their problems related to marketing management.

Suggested Reading:
1. Philip Kotler, Principles of Marketing, Prentice Hall of India.
2. William J. Stanton, Fundamentals of Marketing, Mc Graw, New Delhi.

The list of cases and specific references including recent articles will be announced in the class at the time of launching of the course.

302: FINANCIAL ACCOUNTING & TALLY

Course Objective: The basic purpose of this course is to develop an insight of postulates, principles, and techniques of accounting and utilisation of financial and accounting information for planning, decision making, and control.

Course Contents:

UNIT- I Accounting and its place in business and relationship with other financial areas, Double entry system. Book Keeping: Meaning, Advantages, Concepts and Conventions.

UNIT- II Type of books of accounts and their Preparation. Journal, Ledger, Trial balance, Depreciation.

UNIT- III Preparation of Final Account: Trading Account, Profit & Loss Account, Balance Sheet.

UNIT-IV Hire Purchase Accounts: Accounting record in the book of purchase and vendor

UNIT- V Computerized Accounting / Accounting Software: Introduction to tally, Safety of accounts or password, characteristics, making ledger accounts, writing voucher, voucher entry and making different types of voucher, correcting sundry debtors and sundry creditor's accounts, preparation of trial balance, accounts books, cash books, bank books, ledger account, group summary, sales register and purchase register, journal register, statements of accounts and balance-sheet.

Outcome:
Business Environment and Domain Knowledge
This course will acquaint the participants with the basics of accountancy concepts and principles. The participants will be able to generate accounting and inventory masters, vouchers and basic reports in tally.

Suggested Readings:

1. Grewal, T.S. , Double Entry Book Keeping Accountancy Principles, Sultanchand& Sons, New Delhi
2. Gupta, R L. Advanced Accounting, Sultanchand& Sons, New Delhi
3. Anthony R N and Reece, J S , Accounting Principles, 6th ed., Homewood, Illinois, Richard D Irwin, 1995

List of Cases, Recent Articles and Specific References will be announced in the Class Room at the time of launching of the course.

303: INDIAN ETHOS FOR EFFECTIVE MANAGEMENT

Course Objective: This is a value based course. The objective of this course is to acquaint the students with the moral values and traditional wisdom inherent in our Indian mythology and literature.

Course Contents:

UNIT- I: Introduction

Principles Practiced by Indian Companies, Role of Indian Ethos in Managerial Practices. Managerial lessons from Vedas, Ramayan, Mahabharat, Bible and Quran.

UNIT- II: Indian Values

Indian Heritage in Management. Impact of Value on Stakeholders, Trans-Cultural Human Values, Secular v/s Spiritual Values, Value System in Work Culture. Meditation, Mental Health and Yoga. Gurukul System of Learning. Gandhian Approach in Management & Trusteeship. Importance of Trusteeship Principles in Business Management.

UNIT- III: Ethos& Laws

Ethics v/s Ethos, Indian v/s Western Management, Work Ethos and Values for Indian Managers. Relevance of value based management in Global Change. Nishkama Karma, Law of Karma, Law of Creation, Law of Humility, Law of Growth, Law of Responsibility, Law of Connection and Corporate Karma Leadership.

UNIT- IV: Understanding Ethics

Need for Ethics, Ethical Values, Myths and Ambiguity, Ethical Codes, Ethical Principles in Business. Theories of Ethics, Absolutism v/s Relativism. Kohlberg's six stages of Moral Development (CMD).

UNIT- V: Managing Ethical Dilemma

Ethical Decision Making, Ethical Reasoning, Dilemma Resolution Process. Ethical Dilemma in different business areas of Finance, HRM, Marketing and International Business. Ethics and Value Based Leadership. Traditional Indian Wisdom towards Business Ethics.

Outcome: Value based learning & Leadership

The participants of this course will be able to learn values from Indian mythology and use them in sustainable growth of business organisations. The graduates are expected to integrate the lessons from the mythology with business behaviour. This will enable graduates to display ethical business behaviour and promote good to the society along with improving profitability.

Suggested Readings:

K.C. R. Raja	:	Ethics, Indian Ethos & Management
Bishwanath Ghosh	:	Ethic in Management & Indian Ethos
R. Nandgopal&AjithSankar R. N.	:	Indian Ethos & Values in Management
G. D. Sharma	:	Management & Indian Ethos
S. K. Chakraborty	:	Ethics in Management :Vedantic Perspective

List of Cases, Recent Articles and Specific References will be announced in the Class Room at the time of launching of the course.

304: COMPUTERS FOR MANAGEMENT

Course Objective:
To help the students to learn computer application skills in the major areas.

Course Contents:

UNIT- I Introduction to computers, Components of computer system, CPU, input output devices, Storage media. Importance of Computer as data storage for Business and Management.

UNIT- II Generation of computers and programming language, Flow chart, Flow Symbols, Advantages. Importance and application of cloud storage, Artificial intelligence in management.

UNIT- III Number system: binary, octal, hexadecimal applications and inter conversions, Computer arithmetic.

UNIT- IV Computer software and operating system, Computer Networks, Transmission Medium: Introduction: Transmission medium; Guided & Unguided Transmission medium, Twisted pair, Coaxial cable, Optical fiber, Comparison of fiber optics and copper wire: Wireless transmission; Electromagnetic spectrum, Radio transmission, Microwave transmission:

UNIT-V Personnel computer and its use in business: application packages, introduction to spread sheet, word processing.Data base management system- Roles, Types, Functions, Current Practice and Future.

Outcome:
Critical Thinking, Business Analysis, Problem Solving and Innovative Solutions
The course will hone the critical thinking, analytical ability and problem solving skills of the participants. They will gain an understanding of basics of computers, software, operating systems and emerging technologies essential to manage operations in the organisation with high end automated systems.

Suggested Readings:
1. Sinha . P. K Computers Fundamentals
2. Taxali PC Software made Easy

List of Cases, Recent Articles and Specific References will be announced in the Class Room at the time of launching of the course.

401: HUMAN RESOURCE MANAGEMENT

Course Objective: The Objective of this course is to familiarize participants with the dimensions of Human Resource Management in emerging India Context.

Course Contents:

UNIT- I Concept and functions of Human Resource management, Role of Human Resource management in an Organisation, Human Resource policy.

UNIT- II Staffing Policy and process; Human Resource Planning, Job Analysis, Job description, Job Specification, recruitment, Selection, Induction, Placement, promotion.

UNIT- III Manpower Training & Development: Employment training and Development, Employee Training, performance Appraisal and Potential Appraisal.

UNIT- IV Wage & Salary Administration, Job Evaluation importance, process and methods, Strategic Human Resource Management: objective of SHRM, Strategic HR Choices, SHRM Barriers.

UNIT- V Industrial disputes and participative Management, Grievance Vs Dispute Grievance Handling Procedure, Disciplinary Action.

Outcome:
Business Environment and Domain Knowledge
This course will enable the participants to understand various aspects related to managing human resources and ensuring their optimal utilisation at different levels in the organisation. They will learn the influence of external environment forces on human resource management and will be able integrate this knowledge to take correct business decisions.

Suggested Readings:
1. Rustoms Daver, Personnel management & Industrial relations, Vani Books, New Delhi
2. Edwin Philip, Principles of Personnel Management, Mc Graw Hill, International Book Co., New Delhi
3. M.S. Saiyedhir, Personnel management, Tata McGraw Hill, New delhi
4. Onkar R.M, Personality management and Career management, S Chand Publications.

List of Cases, Recent Articles and Specific References will be announced in the Class Room at the time of launching of the course.

402: BUSINESS LAW

Course Objective:

The course is designed to assist the students in understanding basic laws affecting the operations of a business enterprise.

Course Contents:

UNIT-I: Contract Act: essentials of valid contract, capacity to contract, free consent, unlawful & void agreements, discharge of contract, remedies for breach of contract

Unit- II: Consumer Protection Act 1986, rights & responsibilities, consumer protection council, consumer disputes redressal agencies, bailment & pledge

Unit-III: Companies Act 1956: nature & types of companies, formation of companies, memorandum & articles of association prospectus, share capital, membership, meetings & winding up

Unit-IV: Law of Sales of Goods: conditions & warranties, transfer of property & title, performance of contract, rights of an unpaid seller, suits for breach of contract

Unit -IV: Negotiable Instruments Act 1881: nature & types of negotiable instrument, negotiation & assignment, holder-in-due course, dishonour & discharge of negotiable instrument: arbitration

Outcome:

Business Environment, Domain Knowledge, Critical Thinking & Problem Solving

The graduates will be able to learn about functioning of legal business environment and its applicability in business operations. This will enable graduates to take appropriate routine as well as non-routine decisions for their business. They will be able to critically evaluate the situation and generate solutions in the business thereby responsibly handling leadership roles.

Suggested Readings:

1. K.Aswathappa: Principles of Business Law (Himalaya)
2. Bulchandani K.R.: Business Laws (Himalaya, Bombay
3. Maheswari R.P.: Business Law (National Pub., New Delhi)
4. Reddy P.N.: Essentials of Company Law (Himalaya Bombay)
5. Sharma N.K.: Company Law & Secretarial Practice Sahitya Bhavan, Agra)
6. B.K. Acharya: Company Law & Secretarial Practices (Himalaya, Bombay)

List of Cases, Recent Articles and Specific References will be announced in the Class Room at the time of launching of the course.

403: DIGITAL MARKETING

Course Objective:

This course aims to familiarize students with insights of digital marketing. The Course provides students with the effective and emerging trends of digital marketing and online advertising.

Course Contents:

UNIT- I: Introduction to Digital Marketing (DM)- Introduction to Digital marketing and its Evolution, Concept and fundamentals of Digital Marketing, Importance and scope of digital marketing, , digital marketing applications and benefits.

UNIT- II : Digital marketing framework- Digital marketing channels: types and business models, Trends in digital marketing, Types of digital marketing – Business models in digital marketing Business to Business (B2B), Business to Customer (B2C), Customer to Customer (C2C), Business to Employees (B2E), Business to Government (B2G) –

UNIT- III: Digital Marketing Management- Types of online advertisements: Video ads, Text ads, Image ads, Local ads, Content network ads, Role of web marketing manager, Web marketing department structure, Digital Marketing Plan: Goals, objectives, KPI's, Market research, Value creation process.

UNIT-IV: **Introduction to social media marketing**-meaning-definition-types of social media websites, mobile apps, email, Blogging platforms, Book marking websites. Social Media Management-Social Media Target Audience, Sharing content on Social Media,; DO's and Don'ts of Social media.

Unit-V: Digital marketing strategy development: marketing mix analysis, copy writing in digital marketing, Social Media Promotion-paid advertising and other methods, Web Analysis: Google analytics & data collection for web analytics, Search engine Analytics – search engine ads

Course Outcome:

After completion of the course students should be able to understand underpinning principles and concepts of digital marketing. Students will also be able to Explore digital future and looking at trends that shape the use of technology. Gain a thorough understanding of the creative process from proposition to promotional delivery of online contents.

Suggested Readings:

1. Dave Evans., Susan Bratton, (2010). Social Media Marketing: The Next Generation of Business Engagement. Wiley

2. Digital Marketing: Seema Gupta-Mcgraw hill

3. Chaffey, Dave. and Chadwick, Fiona Ellis.,(2012), Digital Marketing: Strategy, Implementation and Practice, Pearson Education.

4. Bhatia Puneet, Fundamentals of Digital Marketing ,Pearson

List of Cases, Recent Articles and Specific References will be announced in the Class Room at the time of launching of the course.

404: COMMUNICATION SKILLS

Course Objective:

This Course is aimed at equipping the students with necessary techniques and skills of communicating individually and in a group. Oral, written and non-verbal communication skills are considered important in accomplishing the organisational goals and maintaining harmony.

Course Contents:

UNIT- I Introduction: Definition and Process of Communication, Essentials of Effective Communication, Barriers to Communication, Role of Communication in Organizational Effectiveness.

UNIT- II Public Speech: Composition, Principles, Speech Delivering Skills, Group Discussion Do's and Don'ts of GD's Communication in Committees, Seminars and Conference.

UNIT-III Non Verbal Communication: Meaning and Importance. Listening: Difference between Listening and Hearing.

UNIT- IV Drafting Of Notices, Agendas, Minutes, Job Application Letters, Preparation of Curricular Vitae.

UNIT- V Business Correspondence: Essentials of Effective Business Correspondence, Structure of Business Letter, Types of Business Letter – Enquiry Reply Orders Complaints Circular Letter.

Outcome:
Effective Communication
The graduates will learn several aspects of verbal, non-verbal communication and barriers of communication through presentations that would certainly help them in the initial years of their career. This course will also incorporate correct practices of effective business writing among the participants who will help them in future while drafting business correspondence with brevity and clarity.

Suggested Readings:
1. Rodriges M V Effective Business Communication, Concept Pub. Co. New Delhi, 1992
2. Sharma R C & Mohankrishna Business correspondence & Report Writing , TMH, New Delhi , 1996
3. Treece, Maira, Successful Business communications, 3rd ed., 1987, Allyn and Bacon Boston

List of Cases, Recent Articles and Specific References will be announced in the Class Room at the time of launching of the course.

501: PRODUCTION MANAGEMENT

Course Objective:

The course is designed to acquaint the students with decision making in production and operation functions in both manufacturing and services.

Course Contents:

UNIT- I Introduction – Nature and Scope of Production Management, Production Planning and Control Product.

UNIT- II Plant Location – Facility Location, Plant Layout – Layout Planning and Analysis. Productivity, Production Order and Work Study.

UNIT- III Replacement, Purchase Management, Store Management.

UNIT- IV Material Management: An Overview of Material Management, Material Planning and Inventory Control, Concept of JIT.

UNIT- V Quality Control: Total Quality Management ISO 9000 & 14000, Safety Management.

Outcome:

Business Environment and Domain Knowledge

This course will demonstrate various aspects related to manufacturing operations in the organisation. The graduates will be able to analyse facility alternatives and their capacity decisions, implement suitable material handling practices, adapt appropriate quality control measures and thus ensuring optimum production in the organisation and improved competitiveness in the market.

Suggested Readings:

1. Chary, S.N. Production and Operation Management, New Delhi, Tata McGraw Hills
2. Chunawalla, Patel : Production and Operation Management Himalaya Publications

List of Cases, Recent Articles and Specific References will be announced in the Class Room at the time of launching of the course.

502 F: WORKING CAPITAL MANAGEMENT

Course Objective:

The course is aimed at equipping the students with incepted knowledge of managing current assets and raising short-term finance.

Course Contents:

UNIT- I Working Capital Management: Concepts of working capital and its determinants, Risk-returns trade-off.

UNIT- II Cash Management and Marketable Securities, Cash Planning.

UNIT- III Credit Management, Optimum Credit Policy.

UNIT- IV Inventory Management: Need and Objectives of Inventory Management, Inventory Management Techniques, Selective Inventory Control.

UNIT- V Short term financing, money market in India, monetary system, debt financing, bank financing.

Outcome:

This course will provide in-depth knowledge and skills on management of current assets and current liabilities in the organisation. The graduates are expected to evaluate working capital management policies and their impact on liquidity, profitability risk and operating flexibility of the firm, thus helping the organisation in meeting its strategic objectives.

Suggested Readings:

1. S.C. Kuchal: Financial management, Chataniya publishing House, Allahabad.
2. Khan and Jain: Financial Management, Tata McGraw Hill New Delhi.
3. I.M. Pandey: Financial Management, Vikas Publishing House, New Delhi.
4. Basant Raj: Corporate Financial Management, Tata McGraw Hill, New Delhi.

List of Cases, Recent Articles and Specific References will be announced in the Class Room at the time of launching of the course.

502 M: CONSUMER BEHAVIOUR

Course Objectives:

The basic objective of this course is to develop an understanding about the Consumer Decision Making Process and its application in marketing function.

Course Contents:

UNIT- I Introduction to Consumer Behaviour, Concept, Scope and their applications. Information search Process, Evaluative Criteria and Decision Rules.

UNIT- II Consumer Decision Making Process, Four views of Consumer decision rules- Economic man, Passive man, Emotional man, Cognitive man. Models of Consumer Decision making, Nicosia Model.

UNIT - III Consumer Motivation, needs and goals, Positive and Negative Motivation, Dynamic nature of Motivation, Consumer Perception, Conceptual Frame Work.

UNIT- IV Consumer attitude and change. Influence of personality and self concept on buying behaviour. Diffusion of Innovations, Diffusion Process, The adoption Process.

UNIT- V Reference group influence, profile of consumer's opinion, Leadership. Industrial buying.

Outcome:
Business Environment, Domain Knowledge, Social Responsiveness & Ethics
This course gives an understanding of consumer behaviour by highlighting personal, socio-cultural and environmental dimensions that influence decision making of consumers. The graduates will be able to identify opportunities in the market and make utmost of them by adapting smarter marketing strategies. The participants will gain an understanding of social issues & problems in the society and will be able to explore solutions to it within ethical boundaries which would further affect consumer judgment and buying decision positively**.**

Suggested Readings:

1. Schiffman L.G. , Kanuk, ll Consumer Behaviour, PHI, New Delhi.

List of Cases, Recent Articles and Specific References will be announced in the Class Room at the time of launching of the course.

502 H: HUMAN RESOURCES DEVELOPMENT

Course Objectives: The objective of this course is to help the students gain understanding of the need and methods of Management Development.

Course Contents:

UNIT- I HRD – goals, Concepts and importance, HRD Climate and Practices in India, HRD Functions and Strategies.

UNIT- II Manpower Planning Training and Development, Assessment of Training need, Training Effectiveness, designing and Administrating Training, Feedback.

UNIT- III Performance Appraisal – Concept, Need and Methods, Differentiate between Performance Appraisal and Potential Appraisal, career Planning and Management.

UNIT- IV Organisation Change and Development: organisation change overview, levels of organisation change and its management, organization Development process and techniques.

UNIT- V HR report, Audit and research, Quality of Work Life, TQM, Human Resource Information System.

Outcome:
Business Environment and Domain Knowledge& Social Responsiveness and Ethics
The course will create an understanding of various subsets pertaining to the development of human resources in the organisation. The graduates will be able to integrate the concepts of HR with domain concept in order to take correct business decisions. They are expected to learn skills of planning, designing and administering various developmental activities aimed at up scaling the performance of the employees.

Suggested Readings:

1. Rao, TV Alternative approaches & Strategies of Human Resources Development, Jaipur, Rawat,1988.
2. Pareek, U. Managing Transitions, The HRD Response. New Delhi,Tata Mcgraw Hill, 1992.
3. Dayal, Ishwar. Successful Applications of HRD, New Delhi, NewConcepts,1996.
4. Tripathi PC Personnel Management & IR.

List of Cases, Recent Articles and Specific References will be announced in the Class Room at the time of launching of the course.

503: PERSONALITY DEVELOPMENT & CHARACTER BUILDING

Course Objective:
The objective of this course is to impart students an understanding of different dimensions of personality and ways to rebuild their image and character.

Course Contents:

UNIT- I: **Personality Development:** Introduction to personality and its determinants, Types of personalities, personality traits, developing effective habits, emotional intelligence, manners and etiquettes.

UNIT- II: Attitude: Define attitude, factors affecting attitudes, positive attitudes and advantages, ways to develop positive attitude.

UNIT- III: Communication Skills: Self Confidence, effective reading/writing/listening/ Communication skills, overcoming stage fear, art of professional presentation, role of body language, use of audio visuals in presentations, negotiation skills.

UNIT- IV: Habits: guiding principles, identifying good and bad habits, breaking bad habits, Time Management, Importance of time management, Techniques of time management.

UNIT- V: Stress Management: Introduction to stress, types and causes of stress, strategies for stress reduction.

Outcome:
This course will improve confidence, self esteem of the participants and will cause an overall impact on communication skills and the way one sees the world. They will be able to shape their inner and outer being with organised pattern of behaviour that will make them distinctive. The graduates are expected to develop an outgoing and impressive personality and character that will be reflected in their work behaviour.

Suggested Readings:

1. Hurlock Elizabath B, Personality Development, Tata McGraw Hill, New Delhi.
2. Stephen Covey, Seven habbits of highly effective people
3. Petes S. J., Francis, Soft skills and Professional Communication. New Delhi: Tata Mc graw-Hill Education.
4. Claus Peggy, Jane Rohman and Molly Hamaker, The Hard truth about soft skills. London:Harper Collins.

List of Cases, Recent Articles and Specific References will be announced in the Class Room at the time of launching of the course.

601: MANAGEMENT INFORMATION SYSTEM

Course Objectives: The objective of the course to develop the basic understanding of the decision support system of artificial intelligence for business organisation.

Course Contents:

UNIT- I Managerial information system definition basic concepts frame work, major trends in technology application of information technology.

UNIT- II Systems approach to MIS, operating elements of MIS. MIS and decision making.

UNIT-III MIS structures on the basis of management activity and organisational functions. Synthesis of MIS structure and its evaluation, role of MIS, at various levels viz operational, planning and control.

UNIT-IV Need of information, levels of information handling, characteristics of information at various control levels advantages of computerization.

UNIT- V Data flow diagram, data dictionary, data base management system, and word processing, electronic spread sheet and managerial application. Use of computer in managerial operations.

Outcome:
Critical thinking, Business Analysis, Problem Solving and Effective Communication
This course will acquaint the participants with role of information technology, decision support system at various levels in business. This will improve problem solving capacity, critical thinking and analytical skills and thereby innovative solutions to the problem of bulk data processing will be generated. The graduates are expected to apply the understanding of various information systems to meet the information requirements of the organisation. Competency in MIS will help graduates to ensure better communication and connectivity throughout the organization across all levels of management.

Suggested Readings:

1.Olson Davis Management Information System
2.Laudon & Laudon Management Information System

List of Cases, Recent Articles and Specific References will be announced in the Class Room at the time of launching of the course.

602 F: FINANCIAL CONTROL SYSTEM

Course Objective:

The aim of this course is to draw the attention on financial control system for achieving financial goals of the organisation.

Course Contents:

UNIT- I Financial Planning, Steps in Financial Planning, Principles of a Sound Financial Planning, Financial forecasting.

UNIT- II C-V-P Analysis- assumptions, inter relationships of cost, volume and profits, constructing the breakeven (graphical approach).

UNIT- III Absorption and Marginal costing

UNIT-IV Responsibility centres: Objectives and determinant; Cost Center Profit centers and Investment centres.

UNIT- V Offering Audit and management Audit.

Outcome:
The course will impart knowledge and skills related to various aspects of financial control system like ensuring compliance with defined accounting standards, reducing accounting errors and maintaining audit trails. The graduates are expected to ensure financial discipline and optimal utilisation of resources in the organisation.

Suggested Readings:
1. J.Batty: Corporate Planning and Budgeting control, Mcdonald and Evans Ltd.
2. A Withismove: Acenting for Management Control, Opitman Publishing.

List of Cases, Recent Articles and Specific References will be announced in the Class Room at the time of launching of the course.

602 M: SALES MANAGEMENT

Course Objective:

The objective of this course is to expose the students with Modern sales management concept and techniques and help them to develop abilities and skills required for effective Sales management.

Course Contents:

UNIT- I Nature and Scope of Sales Management, Setting and Formulating, Personnel Selling objectives, Sales theories.

UNIT- II Selection, Training, Compensation and Motivation of sales force, Evaluation and Control of Sales, Compensating Sales Personnel, Evaluating and Supervising Salesman.

UNIT- III Sales planning and Sales Budgeting Methods, Importance and Limitation of sales forecasting.

UNIT- IV Sales Organisation, Purpose, Principles and Policies of Sales Organisation, Setting up of sales Organisation, Typical Sales Organisation Structure.

UNIT- V Evaluation and control of sales efforts, Objectives and quotes for Sales Personnel.

Outcome:
Business Environment and Domain Knowledge
This course will promote the knowledge and skills necessary to attract and retain the customers and thus helping the business to grow. The graduates are expected to develop responsiveness towards challenges of increasing competition in the business world by resorting to improved methods of sales &distribution aimed at reducing cost, increasing profits and fulfilling the customers' expectations.

Suggested Readings:

1. Stanton, William J. Management of Sales Force. Chicago, Irwin, 1995.
2. Johnson, EM etc. sales management: Concepts, Practices and Cases. NewYouk, John Wiley,1989. 3. Anderson, R. Professional Sales Management; Englewood Cliffs, New Jersey, PHInc. 1992.

List of Cases, Recent Articles and Specific References will be announced in the Class Room at the time of launching of the course.

602 H: WAGES AND SALARY ADMINISTRATION

Course Objectives: The course is designed to promote understanding of issue related to the compensation or rewarding Human Resources in corporate sector and import skills in designing, analysing, and restructuring reward management system, Policies and strategies.

Course Contents:

UNIT- I Job Evaluation, Wages and Salary Administration, Method of wages Administration, Factor affecting wages administration, Importance of Wage administration in Indian Context, Wage theories.

UNIT- II Wage Differentials – Concept and its determinants, Internal and external equity in wages differentials, understanding different components of wage packages.

UNIT- III Compensation Design for Specific Type of Human Resources like Compensation of Chief Executives Senior Managers, R&D Staff etc. Different Components of Compensation Packages like Fringe Benefits, Incentives nature and importance.

UNIT- IV Working of different Institution related to reward system – Wage board, Pay commissions.

UNIT- V Wage and Salary Administration Act – The Payment of wages act 1936, Minimum Wages act 1948.

Outcome:
Domain Knowledge, Critical Thinking and Problem Solving
This course will acquaint the participants with how wage and salary are administered and how various internal as well as external factors influence them. The graduates will be able to analyse, integrate and use this knowledge in solving compensation related problems in the organisation. This will hone their critical thinking& problem solving skills.

Suggested Readings:

1. Srivastava S.C. Industrial Relations and Labour Laws. NewDelhi, Vikas, 1994.
2. Malhotra OP The Law of Industrial disputes. Vol. I & II Bombay. N.M.tripathi,1985.
3. Seth DD, Industrial Disputes Act 1947m Vol. I&II Bombay, 1995.

List of Cases, Recent Articles and Specific References will be announced in the Class Room at the time of launching of the course.

603 F: E-ACCOUNTING & TAXATION WITH GST

Course Objective:
The objective of the course is to acquaint the participant with the implication of tax structure and to provide working knowledge of principles and provisions of GST and Customs

Course Contents:
UNIT-I: Golden Rule of Accounts; Transaction convert into Journal with the help of Golden Rule, Concept of Ledger, Trial Balance and Final Accounts. Introduction of Tally ERP 9 Creation of Company & ledgers, Balance Sheet, Various vouchers making (as for example – receipts, payments, etc); Monthly Bank Reconciliation in TALLY; 20. Various report generation & key functions in TALLY

UNIT-II: GST Introduction Constitutional framework of Indirect Taxes before GST (Taxation Powers of Union & State Government); Major Defects in the structure of Indirect Taxes prior to GST; Overview of GST; Structure of GST (SGST, CGST, UTGST & IGST); GST Council, GST Mechanism, Registration.

UNIT-III : Valuation for GST Levy and collection of GST Taxable event- "Supply" of Goods and Services; Place of Supply: Within state, Interstate, Import and Export; Time of supply; Valuation for GST- Valuation rules, taxability of reimbursement of expenses; Exemption from GST: Small supplies and Composition Scheme; Classification of Goods and Services: Composite and Mixed Supplies.

UNIT-IV : Tax Credit Input Tax Credit Eligible and Ineligible Input Tax Credit; Apportionments of Credit and Blocked Credits; Tax Credit in respect of Capital Goods; Recovery of Excess Tax Credit; Availability of Tax Credit in special circumstances; Transfer of Input Credit (Input Service Distribution); Payment of Taxes; Refund; Doctrine of unjust enrichment; TDS, TCS. Reverse Charge Mechanism, Job work.

UNIT-V: Tax Invoice
Procedures Tax Invoice, Credit and Debit Notes, Returns, Audit in GST, Assessment: Self-Assessment, Summary and Scrutiny.

Outcome:
Domain Knowledge, Critical thinking, Business Analysis and Problem Solving
The course will develop the foundation of participants in e-accounting and tax related concepts like conducting & recording business transactions online, filing income tax return and computing the tax liability of the individuals. The graduates will elicit knowledge about tax structures and tax planning. It also promotes critical thinking, analytical thinking and problem solving. This can be of great help if they wish to specialize in taxation.

Suggested Readings:

1. Ahuja, GK & Gupta, Ravi Systematic Approach to Income Tax, Allahabad, Bharat Law House..
2. Singhania, VK Direct Taxes: Law and Practices, Delhi, Taxman.
3. Shrinivas, EA, Handbook of Corporate Tax Planning, New Delhi, TMH.

603 M: ADVERTISING & SALES PROMOTION

Course Objective:
The purpose of this paper is to acquaint the students with the concepts which are helpful in developing a sound advertising, sales and distribution policy in organisation.

Course Contents:

UNIT- I Definition, Objectives, Functions and classification of advertisement, Advertising as a component of marketing mix, Advertising as a marketing communication process, Use of marketing for stimulating primary and secondary demand.

UNIT- II Advertising Vs other forms of mass communication, Communication mix, DAGMAR approach, Determination of target audience, building of advertising programme – Message, Headlines, Copy, Logo, Illustration, Appeal, Layout.

UNIT-III Media Planning – Media characteristics, Media Selection, Media Scheduling.Social and economic relevance of advertising, ethics and truth in Advertising.

UNIT- IV Sales promotion- Meaning and Importance of sales promotion, Objective and strategies for sales promotion, Consumer oriented sales promotion, Trade oriented coupons, Deals, Premiums, Contest etc.

UNIT- V Trade oriented sales promotion- Allowance and Discount, Training of distributors, Sales force contest and rewards.

Outcome:
The course will acquaint the participants with different tools of advertising and sales promotion. The participants will be able to understand the complexities involved in targeting and positioning decisions. The graduates are expected to take appropriate decisions for launching their new products.

Suggested Readings:
1. Aaker David a. Advertising Management, 4th ed,. PHI NewDelhi, 1985.
2. Ogilvy, David,nlgilvy on Advertising London,Lonfman, 1983.
3. Sontakki Advertisingn Management
4. Mohan M Advertising Management

List of Cases, Recent Articles and Specific References will be announced in the Class Room at the time of launching of the course.

603 H: INDUSTRIAL & LABOUR LAWS

Course Objectives:

Organizational efficiency and performance are interlinked with industrial relations. This course is an attempt to appreciate the conceptual and practical aspects of industrial relation at both macro and the micro levels.

Course Contents:

UNIT- I Industrial Relation: Historical evaluation of I.R. Concept, Scope and Objectives of IR, Emerging Trends in IR. Trade Unions: Concept, Objectives and Functions.

UNIT- II Industrial unrest in India, ILO, Worker's participation in Management (WPM), Collective Bargaining: concept, function and importance.

UNIT- III Grievance; Nature and course, Difference between grievance and dispute, Resolution method of Grievance, Strikes, Lock Outs, Layoff and Retrenchment, negotiation and settlement.

UNIT- IV Labour Legislation, factors influencing labour legislations, Industrial disputes act, 1947, contract labour Act 1970, Factory Act 1948.

UNIT- V Trade Union Act 1926 Definition & Scope, Registration of Trade Union, rights and liabilities of registered trade union, Industrial employment (standing order) Act 1946.

Outcome:
Business Environment and Domain Knowledge
The participants will learn role of trade unions, social and political influences of labour relations on business and thereby it will help them to deal with the realities of managing a business in the complex world within the boundaries of defined legislations.

Suggested Readings:

1. Das R.P. Management of Industrial Relations, Varanasi, Kkrishna Trading Corp. 2001.
2. Agrawal SN Labour Relations Law in India.
3. Taxmann Lsnpit Lsed. 1999.
4. Monal Arora Industrial Relations, Exel Books.1997
5. Maheswari Industrial Law
6. Pylee Industria Relations & Personnel Management
7.Chawla R.C. Mercantile Law

List of Cases, Recent Articles and Specific References will be announced in the Class Room at the time of launching of the course.

701: STRATEGIC MANAGEMENT

Course Objective:
To equip students with the necessary insight into designing strategies for an organisation and linking the organisations strategies with the changing environment. The course will focus on Indian cases, approaches and experiences.

Course contents:
UNIT –I Nature & importance of business policy & strategy: Introduction to the strategic management process and related concepts; Characteristics of corporate, business & functional level strategic management decisions.

UNIT –II Strategy Formulation
Environmental Appraisal: Mega, Micro & Relevant, Organisational Appraisal, SWOT Analysis, ETOP, OCP, & SAP Profiles, Environment Scanning & Sources of Information.

UNIT –III Strategic Alternative & Choice
Various Strategic Alternative, Grand Modernisation, Diversification, Integration, Merger, Takeover, Joint Venture, Turn Around, Divestment & Liquidation, Strategic Choice and Process.

UNIT –IV Strategic Implementation
Issues involved, Project & Procedural Implementation, Resources Allocation, Structural, and Functional &Behavioural Implementation.

UNIT –V Strategic Evaluation & Control
An overview, nature and importance of Strategic Evaluation. Participant and Barriers in Strategic Evaluation. Requirements for Effective Evaluation.

Outcome:
Domain Knowledge, Global Approach, Social Responsiveness and Ethics
The course gives a holistic picture of how companies determine their long term goals and adapt course of action by appropriately allocating the resources. The participants will learn conceptual, diagnostic and analytical skills in strategy formulation and execution. The graduates are expected to identify and interpret critical challenges and opportunities and strategize business decisions in dynamic business landscape.

Suggested Readings:
1.J.A. Pearce & R.B. Robinson : Strategic Management formulation implementation and control, TMH
2.Arthur A. Thompson Jr. & A.J Strickland III : Crafting and executing strategy, TMH
3.Gerry Johnson & Kevan Scholes, Exploring corporate strategies, PHI
4.Lawrence R. Jauch & William F. Glueck: Business Policy and Strategic Management (Mcgraw Hill Series in Management).
5. Kazmi Azhar: Strategic Management and Business Policy, (Mcgraw Hill Series in Management).
6. Bhattacharya S. C.: Strategic Management: Concepts and cases, A. H. Wheeler Publishing Co. Ltd.

List of Cases, Recent Articles and Specific References will be announced in the Class Room at the time of launching of the course.

702 F: PROJECT MANAGEMENT

Course Objective:
The basic purpose of this course is to understand the framework for evaluating Capital expenditure Proposals, their planning & management in the review of the projects undertaken.

Course contents:
UNIT- I Project Management: Meaning of project - concepts - categories - project life cycle phases - characteristics of a project – project manager - role and responsibilities of project manager.Generation and Screening of Project idea;

UNIT- II Capital Expenditure; Importance & Difficulties. Market demand & situational analysis; technical analysis; analysis of project risk; social cost benefit analysis.

UNIT- III Project identification - selection - project formulation – contents of a project report - planning commission guidelines for formulating a project - specimen of a project report.

UNIT- IV Multiple projects & constraints; Network Techniques for Project management, Project Review &Administrative Aspects.Project Financing in India; problem of time & cost overrun in public sector enterprises in India.

UNIT- V Project Appraisal,Environmental appraisal ofprojects- Financial & Technical Environment.Project Report Preparation, Specimen of a Project Report;

Outcome:
This course covers some of the issues related to managing projects in organizations, and students will be expected to get insight on project management applied in business courses.This course also impart the students about latest and relevant knowledge from the field of projectmanagement theory and practice.

Suggested Readings:
1.Chandra, Prasanna, Projects: Preparation, Appraisal, Budgeting & Implementation.
2.Ahuja, G. K.& Gupta, Ravi, Systematic Approach to Income Tax, Allahabad, BharatLaw House, 1997.
3.Bhalla V. K. Modern Working Capital Management, New Delhi, Anmol, 1997.
4. Chaturvedi & Jauhari-Project Management(Himalaya Publishing House)

List of Cases, Recent Articles and Specific References will be announced in the Class Room at the time of launching of the course.

702 M: RETAIL MANAGEMENT

Course Objective:

The objective of this course is to give an understanding of different aspects of retailing and impart skills to the students required for marketing jobs or to start retail business of their own.

Course Contents:

UNIT I: Introduction to Retailing: Concept of retailing, Functions of retailing, Retailing channels, importance of retailing, Retail industry in India/Emerging trends in retailing.

UNIT II: Understanding the Retail Consumer**:** Retail consumer behaviour, factors influencing the retail consumer, consumer decision making process.

UNIT III: Retail Market segmentation and strategies: Market segmentation, kinds of markets, strategies for effective market segmentation, Growth strategies, Retail value chain.

UNITIV: Retail Location Selection: Types of retail locations, factors determining the location decisions, Retail operations and retail pricing: store management, inventory management, retail pricing factors, pricing strategies.

UNIT V: Merchandise Management: Meaning of merchandising, factors influencing merchandising, functions of merchandising manager, merchandise planning and buying.

Outcome:
The participants will learn different aspects related to retailing and thereby they will be able to take appropriate decisions on how to satisfy growing customer needs in rapidly changing and competitive business environment.

Suggested Readings:

1. Levi Michael, Weitz Barton- Retailing Management, Tata Mc Graw Hill, New Delhi.
2. Berman Berry, Evans J.R. – Retail Management- A strategic Management Approach, Pearson Education, New York.

List of Cases, Recent Articles and Specific References will be announced in the Class Room at the time of launching of the course.

702 H: ORGANISATIONAL DEVELOPMENT

Course Objective:
The objective of this paper is to prepare students as organizational change facilitator using knowledge and techniques of behavioural science.

Course Contents:

UNIT- I: Introduction Organization Change- An overview, Approaches to problem Diagnosis, some major technique of Planned Change, Steps in OD, general OD Competencies, OD skills.

UNIT- II: O.D. Intervention-I An overview of OD Intervention, Classification of OD, Team Interventions, Inter-Group and the Party Peace Making Interventions. Training Experiences; Behaviour Modelling and Life.

UNIT- III: O.D. Intervention-II Comprehensive Intervention; Confrontation Meeting, Survey Feedback, Strategic Management Activities and Grid OD, Structure Interventions- Job Design, Job Enrichment, MBO, Quality Circle, QWL, TQM, Parallel Learning Structure.

UNIT- IV: Key Consideration & Issue on OD Issue in Consultant- Client Relationship, Power and Politics in OD, System Ramification Resistance to Change, leadership and Labour Relations.

UNIT- V: Research on OD Assessing effect of OD, Recent Development in research on OD, Future of OD, Condition optimal success of OD.

Outcome:
The graduates will elicit knowledge about different types of change and ways to manage that change in the organization. They are expected to develop responsiveness towards the changeby exploring the opportunities and strategizing decisions in the favour of organization.

Suggested Readings

1. French WH and Bell CH, Organizational Development, New Delhi, PHI, 1991
2. Bennies WG : Organizational Development
3. Pareek U : Managing Organization Change.

The list of cases and specific references including recent articles will be announced in the class at the time of launching of the courses.

703 : RESEARCH METHODOLOGY

Course Objectives:

To equip the students with the basic understanding of the research methodology and to provide an insight into the application of modern analytical tools and techniques for the purpose of management decision making.

Course Contents:

UNIT- I Nature and scope of research methodology, Problem formulation and statement of research, objectives cost and value of information, Bayesian Decision theory.

UNIT- II Research process, research design – exploratory research, descriptive research and experimental research designs

UNIT- III Methods of data collection – observational and survey methods. Questionnaire Design attitude measurement techniques

UNIT- IV Administration of surveys, sample design, selecting an appropriate statistical technique.

UNIT-V Field work and tabulation of data, analysis of data, scaling and clustering method research applications

Suggested Readings:

1. Bennet, Roger, Management Research, ILO, 1983
2. Kothari, C R , Research Methodology, Kalyani Publications, 2001
3. Fowler, Floyd J Jr, Survey Methods, 2nd ed., Sage pub, 1983

Outcome:

Critical thinking, Business Analysis, Problem Solving and Innovative Solutions

This course will acquaint the participants with the fundamentals of research before they go to the corporate world for their project. The participants will learn various components of research framework like problem identification, research design, data collection, analysis, report writing and presentation. This will also cultivate critical thinking, analytical skills and problem solving skills in the participants. The graduates are expected to conduct disciplined research in the area of their specialisation to meet the organisational requirements and objectives.

List of Cases, Recent Articles and Specific References will be announced in the Class Room at the time of launching of the course.

801: INTERNATIONAL BUSINESS

Course Objective

The objective of this subject is to facilitate the students in understanding International Business in a multi- cultural world.

Course Contents:

Unit- I: INTRODUCTION TO INTERNATIONAL BUSINESS Meaning and Definition of International Business — Theories of International Trade — Economic Theories — Forms of International Business - Nature of International Business

Unit- II: MODES OF ENTRY INTO INTERNATIONAL BUSINESS Mode of Entry: Exporting, Licensing, Franchising, Contract Manufacturing, Turn Key Projects, Foreign Direct Investment: Mergers, Acquisitions and Joint Ventures ,Comparison of different mod. of Entry

Unit- III: GLOBALIZATION Globalization: Meaning - Features — Stag. —Production — Investment and Technology, Globalization — Advantages and Disadvantages — Methods and Essential Conditions for Globalization. MNC's Ad International Business: Definitions — Distinction between Indian Companies — MNC — Global Companies. and TNC — Organizational Transformations — Merits and Demerits of MNC's in India

Unit- IV: INTERNATIONAL MARKETING INTELLIGENCE Information required — Source of Information — International Marketing Information System and Marketing Research.

Unit-V: EXIM TRADE Export Trade, Procedure, Steps & Documentation, Direction of India's Trade — Export Financing — Documents related to Export Trade — Export Marketing — Import Trade, Procedure, Steps, Documentations and Problems - EXIM Policy - Balance of Payment — Disequilibrium and Measures for Rectification - Institutions connected with EXIM Trade.

Outcome:
Global Exposure and Cross cultural Understanding
The participants will learn various aspects of international business and role of political, social, cultural variables in influencing the business. The graduates are expected to formulate and execute appropriate strategies and plans essential to succeed in global business world.

Suggested Readings:

I. Dr.Aswathappa International Business, Tata McGmw Hill.
2. P. SubbaRao — thtemational Business — HPH
3. ShyamShukla; Intemational Business, Excel Books.
4. Francis Cherunilam, International Business, Prentice Hall of India

List of Cases, Recent Articles and Specific References will be announced in the Class Room at the time of launching of the course.

802: OPERATION RESEARCH

Course Objective:

The objective of the course is to develop an understanding of basic management science techniques and their role in managerial decision making.

Course Contents:

UNIT- I: Introduction to OR Introduction, Nature and scope, Methodology/ Modelling in OR, Principles of Modelling in OR. Types of models, Overview of various OR models used in business.

UNIT- II: Linear Programming Linear Programming, Introduction, Formulation, Graphical and Simplex Method for solving L.P.P Maximization & Minimization type problems.

UNIT- III : Operational Models Transportation Problems: Formulation Basic Feasible solution and optimality test, balanced/unbalanced problem; Assignment Problems: Minimization and maximization type, balanced/unbalanced problem.

UNIT- IV : Network Analysis: Network Analysis **:** Basic concepts, Rules of Network construction, PERT & CPM: Determination of critical path ,Determination of project completion time, Dummy activity, Dynamic Programming. (Elementary concept).

UNIT -V: Operational Theories Game Theory: Type of Game. Two person Zero Sum Game, Saddle Point. Dominance rule, solution to 2x2, 2xn and mx2 games. Queuing theory: Operating characteristics of a Queuing system, Replacement theory (Elementary concept).

Outcome:
Critical thinking, Business Analysis, Problem Solving and Innovative Solutions
This course will hone the critical thinking, analytical skills and problem solving ability of the participants and will enable them to propose, communicate and implement action plan that addresses opportunities and issues related to optimum allocation of resources in the business world.

Suggested Readings:

1. Vohra N.D., Quantitative Techniques in Management, New Delhi, TMGH 1990
2. Sharma SD, Operations Research
3. Sharma JK, Operational Research: Theory and Applications, New Delhi, Macmjllian India Ltd. 1997
4. Narag A S, Linear Programming and Decision Making New Delhi, Sultan Chand, 1995.

List of Cases, Recent Articles and Specific References will be announced in the Class Room at the time of launching of the course.

803: INTERNSHIP & DISSERTATION

Objective:

The objective of this course is to give a practical exposure to the participants regarding the functioning of the business organisations by taking up a project during the tenure of the Internship and going through a practical problem of that organisation.

Course Contents:

The participants will be required to undergo a vocational training of 6-8 weeks in any business/commercial organisation of national /international repute. They will be required to have an orientation of the enterprise and/or identify one of the practical problems, study the variables through primary/secondary data, report the research findings & conclusion on the basis of data analysis and give certain suggestions for future.

The Dissertation submitted by the participants will be evaluated by at least one external and one internal examiner as per the rules. The candidate will have to make an oral presentation on his practical work with or without help of PPT and will appear in a Viva-voce conducted in the department/institute or on-line as decided by the university.

Outcome:

Critical Thinking, Business Analysis, Problem Solving and Innovative Solutions
The course will develop the skills on analysing the business data, application of relevant analysis and problem solving and reporting in functional area of management such as Marketing, Finance or Human Resource Management. The graduates are expected to apply theoretical lessons acquired in the classroom to the real-world business challenges in the internship environment.

AWADHESH PRATAP SINGH UNIVERSITY
REWA, MADHYA PRADESH, INDIA

MASTER OF BUSINESS ADMINISTRATION (MBA)
FULL-TIME FOUR SEMESTER PROGRAMME

CHOICE BASED CREDIT SYSTEM (CBCS)
PROGRAMME STRUCTURE, SCHEME OF EXAMINATION & SYLLABUS

2020-21

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Master of Business Administration (MBA)
Full-Time Four Semester Programme

Choice Based Credit System (CBCS)
As per Ordinance 14, Approved by Co-Ordination Committee

PROGRAMME OBJECTIVES & STRUCTURE

Programme Objectives

PO#	PROGRAMME OUTCOME
PO1	**Critical Thinking**: This program places a strong emphasis on the value of being conscious of our presumptions, challenging their accuracy, and approaching concepts and choices from several angles. It entails having the capacity to recognize, assess, and make sensible choices based on logical reasoning.
PO2	**Effective Communication:** This program helps participants improve their communication skills and makes sure they can express themselves accurately in written, spoken, and technological mediums. It also encompasses the capacity to link individuals, concepts, literature, media, and technology, as well as the capacity to communicate effectively and interpret the world.
PO3	**Social Interaction:** It emphasizes on the capacity to solicit the opinions of others, resolve conflicts, and aid in reaching decisions in group settings. It entails having the capacity to collaborate with others, forge agreement, and settle disputes.
PO4	**Effective Citizenship:** The necessity of sympathetic social concern and equity-focused national development is emphasized. It entails being aware of the problems that society faces, being involved in civic affairs via volunteering, and behaving in a way that reflects a thorough understanding of these problems.
PO5	**Ethics:** It emphasizes the significance of appreciating many value systems, comprehending the moral implications of choices, and taking accountability for them. It entails being conscious of ethical concerns

	and basing judgments on ethical principles.
PO6	**Environment and Sustainability:** Understanding environmental surroundings and sustainable development are the main objectives. It entails being conscious of how human behavior affects the environment and acting to advance sustainability.
PO 7	**Self-directed and Life-long Learning:** gaining the capacity to participate in independent, ongoing learning in light of socio-technical developments. It entails having the capacity to learn on one's own, adjust to new technology, and consistently acquire new abilities and information.

PROGRAMME SPECIFIC OUTCOME

PSO1	Students will be able to gain a broad understanding of economic, legal and social environment of business which will ensure identification of potential business opportunities, its evolvement and exploration of entrepreneurial opportunities. Besides this demonstration of global outlook that is supposed to enhance ability to identify aspects of the global business as well as cross cultural understanding
PSO2	Development of competencies regarding quantitative and qualitative data analysis pertaining to business in addition to problem solving in the areas of marketing, business strategy and human resources.
PSO3	Developing responsiveness to social issues, exploring solutions with business ethics, identifying problems, opportunities for social entrepreneurship, designing ethical business solutions, and educating students on ethical awareness and behaviour.
PSO4	Utilize diverse business communication methods, incorporating technology, logical reasoning, and effective oral and written skills in business applications. Foster understanding of leadership responsibilities and effective team leadership across organizational levels, enabling collaboration, showcasing leadership qualities, and leveraging team members' diverse skills in relevant domains.

COURSE OUTCOME (COs)

Semester I

S.No.	Course Code	Course Name		Course Outcome
1.	**101**	**Management Concepts & Practices**	CO1	Gain insight of various management concepts and practices.

			CO2	Learning about the basic concepts, principles and process of planning, its importance, process and limitations.
			CO3	Understanding concept and process of organizing and organizational structures alongwith importance of responsibility over authority and its various aspects
			CO4	Understanding basic functioning of the organizations not only in corporate but also in other sectors such as government, NGO, Social Organizations etc.
			CO5	To gain knowledge about the effective control mechanism and ensuring co-ordination between various functional units and areas.
2.	**102**	**Quantitative Methods**	CO1	The graduates of this course will be able learn about the basic mathematics and statistics applicable in business decisions.
			CO2	This will sharpen their critical thinking, analytical skills and problem solving ability.
			CO3	Enhancement of the ability to effectively analyze and interpret data, make informed decisions and draw reliable conclusions, enabling evidence-based reasoning.
			CO4	Identification of mathematical models and algorithms to identify the root causes of problems and develop effective solutions.
			CO5	By using statistical models to analyze historical data, managers can make predictions about future trends, such as sales, demand, and customer behaviour.
3.	**103**	**Managerial Economics**	CO1	Learning about the role of economics in business management and prospects of the business in a span of time.
			CO2	Helping students to learn analyzing and optimizing resources such as labor, capital, and technology and making efficient use of resources to improve their productivity and profitability.
			CO3	Enabling analysis of competition, pricing, market power and market efficiency and informing business strategies and regulatory policies.
			CO4	Helping to learn and analyze and optimize resources such as labor, capital, and technology. By making efficient use of resources, organizations can improve their productivity and profitability.
			CO5	Understanding the impact of business risks on the organization, managers can develop risk management strategies to minimize the negative impact on business functioning.
4.	**104**	**Business Environment**	CO1	The participants of this course will be able learn about the macro factor affecting business environment.
			CO2	Acquaintance with the latest changes in the different

				components of business environment.
			CO3	Ability to comprehend and navigate the social, cultural, and political factors that shape business operations and stakeholder management in diverse domestic and international contexts.
			CO4	Understanding of how technological advancements and trends impact industries, enabling businesses to harness technology effectively, innovate, stay competitive and adapt to changing market demands.
			CO5	Ability to integrate sustainable practices, mitigate environmental risks, comply with regulations, and create positive environmental impacts.
5.	**105**	**Business Communication**	CO1	Learning about the various aspects of verbal and non-verbal communication which will be extremely useful to the students at the entry level in any professional 6organization in the initial years of their career.
			CO2	Development of effective verbal and nonverbal communication skills, enabling clear, persuasive, and engaging delivery of information, ideas, and messages in various interpersonal and professional contexts.
			CO3	Helping students in portraying themselves in a positive light and improve their reputation and enhance their professional image
			CO4	Understanding and utilizing body language, facial expressions, gestures, and other non-verbal cues to enhance communication effectiveness, convey messages, build rapport, and interpret meaning in interpersonal interactions.
			CO5	Learning to communicate effectively with customers, suppliers, and other stakeholders, organizations can optimize their operations and improve efficiency.
6.	**106**	**Accounting for Managers**	CO1	Acquainting the participants with the basics of accountancy regarding financial transactions of an organization.
			CO2	Developing critical thinking skills as they analyze financial data and make informed decisions based on that data.
			CO3	Understanding financial statements, budgeting, and cash flow management, students can develop the skills and knowledge needed to manage their own finances and make informed business decisions.
			CO4	Developing financial literacy skills that are essential for managing their personal finances.
			CO5	Enabling the students to gain insights about rising expenses based on the production and its effect on profit value of the firm.
7.	**107**	**ICT & E- Business Fundamentals**	CO1	This course will hone the skills of participants with basics of computers, ICT, office automation, E-Business and emerging technologies.

			CO2	It will also improve the critical thinking, analytical ability and problem solving skills of the participants.
			CO3	gaining a strong understanding of the role of technology in modern business operations
			CO4	Equipping students with digital literacy skills, including proficiency in using various software, applications,
			CO5	Develop basic understanding of online tools for communication, data analysis, and information management.
8.	**108**	**Organizational Behaviour & Industrial Psychology***	CO1	Learning about behavioural aspects of different individuals and groups in an organization.
			CO2	Collaborating and leading teams across organizational boundaries
			CO3	Learning to demonstrate leadership qualities.
			CO4	Understanding about the various aspects of trans-national culture and global leadership.
			CO5	Development of interpersonal and teamwork skills.

COURSE OUTCOME (COs)

Semester II

S.No.	Course Code	Course Title		Course Outcome
1.	**201**	**Indian Ethos & Ethics Management**	CO1	Gaining insights about Ancient Indian wisdom contained in Indian scriptures.
			CO2	Learning the significance of Indian Values and their role in Management, Leadership and Trusteeship.
			CO3	Understanding Work Ethos, Laws and Values propounded in Indian Spiritual values and its relevance in value based management in Sustainable Growth of Business Organizations.
			CO4	Building a strong sense of morality and ethics to help in the development of moral values.
			CO5	Enhancing the decision making skills in situation of ethical dilemma.
2.	**202**	**Research Methodology**	CO1	Acquainting the participants with the basics of research before they go to the corporate world for their project study.
			CO2	Cultivating critical thinking, analytical skills and problem solving skills in the participants by way of systematic research.

			CO3	Equipping the students with the skills needed to effectively collect and analyze data, make informed decisions and conduct research in various fields.
			CO4	Understanding the utility and importance of statistics in research and enabling the individuals to make informed decisions based on data analysis.
			CO5	Equipping the students with the necessary skills to leverage technology in research and report preparation and to make the students able to prepare effective research reports.
3.	**203**	**Human Resource Management**	CO1	Developing the knowledge, skills, and experience required to perform HR functions effectively in different organizational settings
			CO2	Understanding of the knowledge of recruitment, training and development, compensation and benefits, and employee relations.
			CO3	Gaining knowledge of a person's unique psychological traits and capacities
			CO4	Learning to analyze situations and develop effective solutions to HR-related problems.
			CO5	Developing an awareness of the legal and ethical issues involved in HR management and learn how to navigate them appropriately.
4.	**204**	**Financial Management**	CO1	Graduates will improve their knowledge on business finance
			CO2	Gaining knowledge about the various methods of short term financing and working capital management.
			CO3	Learning about the aspects about allocation and differentiation of returns among the shareholders.
			CO4	Imparting knowledge about different sources for long term fund raising for the firm.
			CO5	Creating awareness about the cost of raising fund and composition of own and borrowed fund.
5.	**205**	**Marketing Management**	CO1	The participants of this course will be able to learn about the foundation of marketing in different focal areas.
			CO2	Understanding the consumer decision making process in buying and marketing research.
			CO3	Imparting knowledge about product at different stages of its life cycle, branding and packaging.
			CO4	Developing strategies to promote products or services to target customers.

			CO5	Acquiring expertise in diverse marketing domains such as rural, service, digital, and environmentally friendly marketing.
6.	**206**	**Production & Operations Management**	CO1	Understanding the nature of production and operations management, facility location strategies, types of manufacturing systems and layouts, as well as acquiring knowledge in layout planning and analysis.
			CO2	Making informed operations decisions, including production planning and control in mass production and batch/job manufacturing, as well as capacity planning using relevant models.
			CO3	Gaining knowledge in process planning, aggregate planning, scheduling, maintenance management concepts, work study as well as understanding the work environment and industrial safety practices.
			CO4	Understanding material management through an overview of material planning, inventory control, Just-in-Time (JIT) principles, materials planning budgeting, material requirement planning, purchase management, and stores management.
			CO5	Enhancing the knowledge of quality assurance practices such as acceptance sampling, statistical process control, total quality management (TQM), ISO 9000 standards, as well as maintenance and safety management.
7.	**207**	**Business Legislation**	CO1	Understanding the Indian Contract Act, 1872, covering essentials of valid contracts, void agreements, contract performance, breach and remedies, quasi-contracts, indemnity, guarantee, contingency, bailment, and agency.
			CO2	Understanding the Indian Contract Act, 1872, including the essentials of a valid contract, void agreements, performance of contracts, breach of contract, remedies, quasi-contracts, indemnity, guarantee, contingency, bailment, and agency.
			CO3	Gaining an introduction to the field of company law, which includes understanding the legal framework and fundamental principles governing companies and their operations.
			CO4	Understanding the concept and significance of share capital, including the different types of shares, share issuance, rights of shareholders, and the impact of share capital on a company's capital structure.
			CO5	Understanding the legal provisions and remedies for the prevention of oppression and mismanagement in

				companies, as well as gaining knowledge of the Consumer Protection Act and Cyber Laws for effective consumer protection and legal governance in the digital realm.
8.	**208**	**International Business Environment***	CO1	The participants will be able to learn about the various aspects of global business environment.
			CO2	They will have basic knowledge about different mechanisms and institutions in International Business.
			CO3	Understanding of different financial institutions which are functioning globally
			CO4	Understanding the role and functions of various financial institutions, such as banks, insurance companies, investment firms, and regulatory bodies, in the financial system and their impact on the economy.
			CO5	Gaining a broader understanding of global issues and perspectives, including economic, political, social, and environmental dimensions, to develop a more comprehensive and informed worldview.

COURSE OUTCOME (COs)

Semester III

S.No.	Course Code	Course Title		Course Outcome
1	**301**	**Operations Research**	CO1	Gaining an introduction to operations research, which involves applying mathematical and analytical methods to optimize decision-making, solve complex problems, and improve efficiency in various organizational contexts.
			CO2	Understanding linear programming, a mathematical technique used to optimize resource allocation and decision-making by formulating and solving linear mathematical models.
			CO3	Understanding operational models, which are mathematical tools used to analyze and optimize various operational processes, enhance efficiency, and make informed decisions
			CO4	Understanding operational networks, which involve the design, analysis, and optimization of interconnected systems and processes to achieve efficient flow of goods, services, or information across various nodes and channels within an

				organization
			CO5	Understanding operational theories which provide frameworks and concepts to analyze and improve operational processes as well as enhance productivity, quality, and efficiency, and drive continuous improvement within organizations.
2	**302 A**	**Consumer Behaviour**	CO1	This course provides a valuable insight on how consumers make buying decisions and how social, cultural and economic factors affect their buying decisions.
			CO2	Exploring the psychological factors that drive consumer behavior and how individual traits and characteristics influence consumer decision-making processes.
			CO3	Understanding consumer attitudes and personalities, exploring how beliefs, values, and individual characteristics shape consumer behavior and influence their preferences, choices, and brand perceptions.
			CO4	Gaining the insight on reference group influence, diffusion of innovation, consumer involvement and opinion leadership, family functions and their impact on lifestyle, online buying behavior, and the impact of e-marketing on consumer behavior
			CO5	Understanding consumer behavior models and their practical application in analyzing and predicting consumer choices, preferences and decision-making processes.
3	**302 B**	**Investment Analysis & Portfolio Management**	CO1	Understanding the principles and strategies of Investment Management, you can develop the skills and knowledge needed to make informed investment decisions, manage portfolios effectively and potentially achieve financial goals.
			CO2	Equipping individuals with the skills to effectively evaluate securities, make informed investment decisions and manage investment risks.
			CO3	Gaining the knowledge and skills to navigate and participate in stock market investments, understand market dynamics, analyze stock performance and make informed investment decisions.
			CO4	Development of the skills to construct and manage investment portfolios effectively, optimize asset allocation, diversify risk, and align investments with specific goals and risk tolerance.
			CO5	Gaining the ability to effectively construct and

				monitor investment portfolios, evaluate their performance, and make data-driven adjustments to optimize investment outcomes.
	302 C	**Employee Relations**	CO1	Developing an understanding of the dynamics between employers and employees, labor laws, negotiation strategies, and conflict resolution techniques to foster harmonious workplace relationships and promote fair and productive working environments.
			CO2	Acquiring the skills to effectively address and resolve workplace grievances, encourage employee engagement and participation, and foster a positive and inclusive work environment.
			CO3	Gaining a comprehensive understanding of international labor standards, promoting social justice, and effectively managing labor relations within organizations.
			CO4	Gaining the knowledge of the updated labor laws and regulations in India, enabling individuals to navigate and comply with the provisions related to industrial relations
			CO5	understanding of the comprehensive framework for promoting and ensuring occupational safety, health, and improved working conditions,
4	**303 A**	**Sales & Distribution Management**	CO1	Developing the skills and knowledge to effectively navigate the sales process, understand customer needs, build relationships, and employ persuasive techniques to drive successful sales outcomes.
			CO2	Acquiring the skills to recruit, train, motivate, and lead a sales team, ensuring their effectiveness in achieving sales targets and driving business growth.
			CO3	Gaining the ability to develop comprehensive sales strategies, set realistic sales targets, track performance metrics and make data-driven decisions to optimize sales effectiveness and drive business success.
			CO4	Understanding of skills to effectively design, develop, and manage distribution channels, ensuring efficient product/service delivery, maximizing market reach, and fostering strong relationships with channel partners.
			CO5	Developing the knowledge and skills to effectively oversee and optimize retail operations, including merchandising, customer service, inventory management, and sales strategies, to drive profitability and customer satisfaction.
	303 B	**International**	CO1	Demonstrating a global outlook with the ability

		Finance		to identify global businesses and cross cultural understanding.
			CO2	It will increase the knowledge of participants' imperative for long term financial decisions corresponding to global operations.
			CO3	Understanding of a country's economic transactions with the rest of the world, including the measurement of imports, exports, and financial flows
			CO4	Understanding the global marketplace enabling individuals and businesses to make informed decisions regarding currency exchange rates, international trade, and investment opportunities.
			CO5	Enhancing the knowledge of different debt instruments and their implications, allowing individuals, businesses, and governments to make informed decisions about financing needs, risk management, and financial planning in both the short and long term
	303 C	**Human Resource Development**	CO1	Understanding of HR environment in which business operates and how economic, competitive and legislative factors affect staffing requirements.
			CO2	Holistic understanding of strategies and practices aimed at enhancing employee engagement, satisfaction, and growth, leading to improved productivity, retention, and overall organizational success.
			CO3	Comprehensive understanding of how to effectively manage a diverse workforce, navigate cultural differences, foster inclusivity, and leverage the benefits of cultural diversity to create a harmonious and productive work environment.
			CO4	Understanding of how to effectively structure and manage HRD functions within an organization, aligning employee development initiatives with strategic goals, and maximizing the potential of the workforce to drive organizational growth and success.
			CO5	Understanding of how to leverage technology for managing hr processes, ensuring compliance with financial regulations, and effectively tracking and analyzing HR and financial data
5	**304**	**Entrepreneurship**	CO1	Comprehensive understanding of the key skills needed to succeed as an entrepreneur, the emerging trends and benefits of the Indian start-up ecosystem, the various stakeholders involved, and the importance of business incubators in fostering rural and social entrepreneurship.

			CO2	Leaning about coordinating the activities within specific functional areas of an organization, such as marketing, operations, finance, human resources, and information technology, to achieve organizational goals and optimize overall performance.
			CO3	Understanding of how to identify and leverage technological advancements, develop innovative business models, and effectively utilize digital tools and platforms to create and scale new ventures, driving economic growth and disruption across industries.
			CO4	Understanding of how to effectively apply business principles and strategies to address social and environmental challenges, create sustainable impact, and foster positive change within communities and society at large.
			CO5	Enhancing the knowledge of the unique challenges, opportunities, and strategies associated with female-led businesses, empowering women to overcome barriers, leverage their strengths, and make significant contributions to economic growth and gender equality.

COURSE OUTCOME (COs)

Semester IV

S.No.	Course Code	Course Title		Course Outcome
1	**401**	**Strategic Management**	CO1	Comprehensive understanding of the nature, importance, and purpose of formulating business policies, and implement strategic management practices to drive organizational success and achieve long-term sustainable growth.
			CO2	Comprehensive understanding of the process of analyzing internal and external factors, identifying strategic options, evaluating their potential impact, and making informed decisions
			CO3	Learning about different options and approaches available to an organization when formulating and implementing strategies, enabling informed decision-making and the selection of the most suitable course of action

			CO4	Learning about effectively translating strategic plans into action, allocate resources, establish organizational structures, align processes, motivate employees and monitor progress
			CO5	Assessing the effectiveness and efficiency of implemented strategies, monitor performance, identify deviations from planned objectives and implement corrective actions and continuously improving strategic initiatives.
2	**402**	**Management Information System**	CO1	Understanding the Information systems used at different levels for processing large amount of data.
			CO2	Learning about MIS components, including data collection, storage, processing, and dissemination, and its integration to support decision-making, facilitate information flow, enhance organizational efficiency.
			CO3	Understanding of how to effectively collect, organize, store, process, analyze, and interpret data, ensuring data quality, security, and accessibility, and transforming raw data into valuable information
			CO4	Leveraging technology and analytical tools to assist decision-makers in gathering relevant data, analyzing complex problems, exploring alternative solutions, and making informed decisions,
			CO5	Learning to utilize computer-based tools, software, and technologies to enhance managerial functions such as communication, information management, decision-making, data analysis, project management and resource planning.
3	**403 A**	**Integrated Marketing Communication**	CO1	Learning various advertising and promotional tools and their importance in attracting the customers.
			CO2	Enhancing the knowledge to plan, create, and execute advertising campaigns to effectively communicate messages, promote products or services, build brand awareness, influence consumer behavior and achieve marketing objectives.
			CO3	Learning about different media channels and platforms available for advertising and enabling effective media planning and selection to reach target audiences.
			CO4	Learning to leverage digital platforms and social media channels to create and implement targeted marketing strategies.

			CO5	Learning about promotional techniques and strategies, including discounts, coupons, contests, giveaways, loyalty programs, encourage brand loyalty and achieve short-term marketing objectives in a competitive marketplace.
	403 B	**Project Appraisal & Finance**	CO1	Understanding capital expenditure, recognizing the importance and difficulties associated with project implementation, and acquiring negotiation skills for effective project management.
			CO2	Ability enhancement to effectively evaluate and assess various project components, such as feasibility, risks, costs and benefits and to make informed decisions and optimize project success.
			CO3	Acquisition of skills and knowledge necessary to plan, organize, execute, and control projects successfully, ensuring they are delivered on time, within budget, and to the satisfaction of stakeholders.
			CO4	Ability enhancement to identify and secure appropriate funding sources understands financial strategies and effectively manages the financial aspects of a project to ensure its successful implementation and sustainability.
			CO5	Ability to critically assess and evaluate the feasibility, viability, and potential impact of a project, considering various factors such as financial, economic, social, and environmental aspects, to make informed decisions.
	403 C	**Compensation & Benefits Management**	CO1	Understanding and application of various models, principles, and strategies to effectively design, implement, and manage compensation systems that align with organizational objectives.
			CO2	Ability enhancement to comprehensively evaluate, select, and implement appropriate compensation approaches including salary structures, incentive plans, benefits packages as well as non-monetary rewards.
			CO3	Proficiency in designing and constructing comprehensive and competitive compensation plans that incorporate salary, bonuses, benefits, and other incentives to attract, motivate, and retain employees
			CO4	Understanding of the legal provisions and regulations pertaining to wages, minimum wage fixation, payment methods, and other related aspects, enabling effective compliance and fair

				wage practices within organizations.
			CO5	Understanding legal framework and provisions regarding social security benefits, including healthcare, pension, maternity benefits, and other welfare measures, facilitating compliance and ensuring employee well-being
4	**404 A**	**International Marketing**	CO1	Ability enhancement to strategically promote and sell products or services in global markets, effectively navigating cultural, economic, and political differences to achieve business objectives.
			CO2	Understanding of the impact of protectionist measures and regional trade agreements on international trade flows, enabling informed decision-making and strategic planning for businesses
			CO3	Acquisition of knowledge and skills to effectively plan, coordinate, and execute international export operations, ensuring compliance with regulations, optimizing market entry strategies, and maximizing profitability in foreign markets.
			CO4	Learning export procedures and documentation and enhancement of the ability to navigate the complex process of exporting goods or services as well as minimizing risks associated with international trade.
			CO5	Understanding of how to adapt and optimize product, price, promotion, and distribution strategies in diverse global markets
	404 B	**Taxation**	CO1	Ability enhancement to comprehend and navigate the complexities of tax laws and regulations, ensuring accurate tax reporting and compliance while effectively managing personal or business tax liabilities.
			CO2	Understanding and complying with the tax system, effectively managing tax obligations, and optimizing business processes to ensure accurate GST calculation, reporting, and payment
			CO3	Enabling effective tax planning, compliance, and optimization of tax liabilities to support financial decision-making and overall business success.

			CO4	Enabling informed decision-making that maximizes tax efficiency, minimizes risks, and aligns with overall business objectives.
			CO5	Learning about taxing and strategic alliances and optimization of tax outcomes to support successful collaborations and partnerships.
	404 C	**Organisational Change & Development**	CO1	Gaining understanding of organizational changes will allow the graduates to learn new skills, explore new opportunities and exercise creativity in ways that ultimately benefit the organization.
			CO2	Learning about positive organizational change and enhance organizational effectiveness, fostering growth, productivity and employee well-being.
			CO3	Ability enhancement to apply a diverse range of interventions to diagnose and address organizational challenges, foster collaboration, enhance performance, and drive continuous improvement within the organization.
			CO4	Learning about enabling effective OD interventions and fostering sustainable organizational growth and success.
			CO5	Understanding and practice of OD and promoting evidence-based interventions and contributing to the continuous improvement of organizational effectiveness and development.

Programme Structure

SEMESTER – I					
Course Code & Name	**Course Type**	**Theory Paper**	**Internal Assessment**	**Maximum Marks**	**Credits**
101 Management Concepts & Practices	CC	60	40	100	4
102 Quantitative Methods	CC	60	40	100	3
103 Managerial Economics	CC	60	40	100	3
104 Business Environment	CC	60	40	100	3
105 Business Communication	CC	60	40	100	3
106 Accounting for Managers	CC	60	40	100	3
107 ICT & E- Business Fundamentals	CC	60	40	100	3
108 Organisational Behaviour & Industrial Psychology*	GE	60	40	100	4
109 Comprehensive Viva Voce	CC			100	4
SEMESTER TOTAL				**900**	**30**

SEMESTER – II					
Course Code & Name	**Course Type**	**Theory Paper**	**Internal Assessment**	**Maximum Marks**	**Credits**
201 Indian Ethos & Ethics Management	CC	60	40	100	4

202 Research Methodology	CC	60	40	100	3
203 Human Resource Management	CC	60	40	100	3
204 Financial Management	CC	60	40	100	3
205 Marketing Management	CC	60	40	100	3
206 Production & Operations Management	CC	60	40	100	3
207 Business Legislation	CC	60	40	100	3
208 International Business Environment*	GE	60	40	100	4
209 Comprehensive Viva Voce	CC			100	4
SEMESTER TOTAL				**900**	**30**

SEMESTER – III					
Course Code & Name	**Course Type**	**Theory Paper**	**Internal Assessment**	**Maximum Marks**	**Credits**
301 Operations Research	CC	60	40	100	4
302 A Consumer Behaviour**	DCE	60	40	100	4
302 B Investment Analysis & Portfolio Management**	DCE	60	40	100	4
302 C Employee Relations**					
303 A Sales & Distribution Management**	DCE	60	40	100	4
303 B International Finance**	DCE	60	40	100	4
303 C Human Resource Development**					
304 Entrepreneurship*	GE	60	40	100	4
305 Internship Dissertation & Comprehensive Viva Voce	CC			100	6
SEMESTER TOTAL				**700**	**30**

*Students may choose this course as a **Generic Elective** or may choose a Generic Elective Course offered in other UTDs at the same level or may choose a Course offered by MOOCs through SWAYAM.

Students may choose any four courses as **Discipline Centric Electives from the six courses offered in three choice based specialisations: Marketing, Finance and Human Resource Management (Group A or B or C).

SEMESTER – IV					
Course Code & Name	**Course Type**	**Theory Paper**	**Internal Assessment**	**Maximum Marks**	**Credits**
401 Strategic Management	CC	60	40	100	3
402 Management Information System	CC	60	40	100	3
403 A Integrated Marketing Communication**	DCE	60	40	100	4
403 B Project Appraisal & Finance**	DCE	60	40	100	4
403 C Compensation & Benefits Management**					
404 A International Marketing**	DCE	60	40	100	4
404 B Taxation**	DCE	60	40	100	4
404 C Organisational Change & Development**					
405 Managing Banks & Financial Institutions*	GE	60	40	100	4
406 Comprehensive Viva Voce	CC			100	4
SEMESTER TOTAL				**800**	**30**
GRAND TOTAL				**3300**	**120**

*Students may choose this course as a **Generic Elective** or may choose a Generic Elective Course offered in other UTDs at the same level or may choose a Course offered by MOOCs through SWAYAM.

Students are required to continue with two specialisations: Marketing, Finance and Human Resource Management (Group A or B or C) chosen by them in III Semester and take four courses as **Discipline Centric Electives.

Credit Distribution

SEMESTER	CORE	ELECTIVE COURSES	COMPREHENSIVE	TOTAL

	COURSES	GENERIC	DISCIPLINE CENTRIC	VIVA /DISSERTATION	CREDITS
Semester I	**22**	**04**	**00**	**04**	**30**
Semester II	**22**	**04**	**00**	**04**	**30**
Semester III	**04**	**04**	**16**	**06**	**30**
Semester IV	**06**	**04**	**16**	**04**	**30**
TOTAL	**54**	**16**	**32**	**18**	**120**

Scheme of Examination

1. Semester End Theory Paper: Each theory paper of 60 marks will have following questions.

Type of Questions	Number of Questions	Marks allotted to each Question	Total Marks
Short Answer Type	5	4	20
Long Answer Type	5	8	40

There will be two questions of each type from each UNIT in all the question papers.

2. Internal Assessment: The internal assessment of 40 marks shall be based on two Written Tests of 20 marks each and one Test of 20 marks based on Assignment, Presentation & Class Participation of the student with following details. Marks will be awarded on the basis of best of the two Test Scores.

Type of Assessment	Marks	Remarks
Class Test	20 Marks	Two assessments of 20 Marks Each on the basis of evaluation of Answer scripts of the student.
Assignment	05 Marks	Assessment based on Written Assignment submitted by the student within due date on the allotted topic.
Presentation	10 Marks	Assessment based on Oral Presentation given by the student within due date on the allotted topic.
Class Participation	05 Marks	Assessment based on attendance and active participation of the student in the class debates, discussions, quiz etc.

The University Teaching Department reserves all rights to make necessary changes in the above Internal Assessment valuation system in case of any contingencies.

Computation of Letter Grade, Grade Points, Credit Points, SGPA & CGPA

1. Grade Letter & Grade Points

The grade letter and grade points will be assigned as per the following table:

Letter Grade	Grade Points	Description	Range of Marks (%)
O	10	Outstanding	90-100
A+	9	Excellent	80-89
A	8	Very good	70-79
B+	7	Good	60-69
B	6	Above Average	50-59
C	5	Average	40-49
P	4	Pass	35-39
F	0	Fail	00-35
Ab	0	Absent	Absent

2. Credit Points

The credit points will be computed by multiplying course credit with grading points in each course. Total Credit Points of the semester will be calculated by adding the credit points of all the courses of the concerned semester.

3. SGPA

Semester Grading Point Average will be calculated by dividing the total credit points of the semester by sum of credits allotted to that semester:-

SGPA (Si) = ∑(Cix × Gi)/∑Ci

SGPI will be expressed up to two decimal places by rounding off.

4. CGPA

Cumulative Grading Point Average will be calculated by by taking the ratio of total credit points scored by the student and sum of total credits in all courses studied till the semester end. CGPA will be expressed up to two decimal places by rounding off.

An illustration of computing letter grade, grade points, credit points, SGPA & CGPA:

Course Code	Course Title	Credits	Grade	Grade Point	Credit Points (Credits x Grade Point)
101	Management Concepts & Practices	4	B+	7	4×7 = 28
102	Quantitative Methods	3	A	8	3×8 = 24
103	Managerial Economics	3	C	5	3×5 = 15
104	Business Environment	3	B+	7	3×9 = 27
105	Communication Skills	3	B+	7	3×7 = 21
106	Accounting for Managers	3	B	6	3×6 = 18
107	Computers for Management	3	C	5	3×5 = 15
108	Organisational Behaviour & Industrial Psychology*	4	B+	7	4×7 = 28
109	Comprehensive Viva Voce	4	B+	7	4×7 = 28
	TOTAL CREDIT POINTS	30			204
SEMESTER I		SGPA = 204/30 = 6.8			

Course Code	Course Title	Credits	Grade	Grade Point	Credit Points (Credits x Grade Point)
201	Indian Ethos & Ethics Management	4	A	8	4×8 = 32
202	Research Methodology	3	A	8	3×8 = 24
203	Human Resource Management	3	B	7	3×7 = 21
204	Financial Management	3	A+	9	3×9 = 27
205	Marketing Management	3	B+	7	3×7 = 21
206	Production & Operations Management	3	B	6	3×6 = 18
207	Business Legislation	3	B+	7	3×7 = 21
208	International Business Environment*	3	B+	7	3×7 = 21
209	Comprehensive Viva Voce	4	A	8	4×8 = 32
	TOTAL	30			217
SEMESTER II		SGPA = 217/30 = 7.23			

	Semester I	Semester II	Semester III	Semester IV
Credit Points	204	217		
Credits	30	30		
SGPA	6.8	7.23		
CGPA	6.8	7.02		

DEPARTMENT OF BUSINESS ADMINISTRATION

AWADHESH PRATAP SINGH UNIVERSITY

REWA (MP)

Master of Business Administration (MBA)
Full-Time Four Semester Programme

Choice Based Credit System (CBCS)

SYLLABUS

Session: 2020-21

CC 101: MANAGEMENT PROCESS

Course Objective:
The objective of this paper is to familiarise the student with basic management concepts and behavioural process in the organisation.

Course Contents:

UNIT I: Introduction
Concept and significance of Management as a science or an art, Distinction between Management and Administration Functional Management, Principles of Management. Evolution of Management thought Classical School, neo-Classical School & Modem School.

UNIT II: Planning and Decision Making

Planning: Nature Process, Types, Principles& Significance. Planning Vs Forecasting. Objectives: Meaning, Characteristics, Types. & Importance of MBO Decision Making: Meaning & Significance, types, process, rationale, rationale & imitations.

UNIT III: Organizing
Concept & Process of Organizing. Organisation Structures & Design. Departmentation: Meaning, Needs and Consideration, Span of Management. Authority, Power and Responsibility. Delegation of Authority: Meaning. Advantages an Limitations. Centralization Decentralization of Authority.

UNIT IV : Direction, Motivation & Leadership
Direction-Meaning, Principles and Techniques. Motivation- Meaning. Significance and Theories Leadership-Concept. Theories Styles, Leadership & decision making.

UNIT V : Controlling & Co- ordination
Controlling- Meaning, Characteristics and Steps. Prerequisites of effective control. Co-ordination-Meaning. Importance and principles. Co-ordination as an essence of management.

Outcome:
Business Environment and Domain Knowledge
The graduates will be able learn about the basic concepts, principles and process of management. This learning will build a foundation and help them in understanding basic functioning of the organisations not only in corporate but also in other sectors such as government, NGO, Social Organisations etc.

Suggested Readings:

1.	Koontz O Donnell	:	Essentials of Management
2.	Terry and Franklin	:	Principles of Management
3.	Drucker Peter	:	Principles of Management
4.	Prasad, L.M	:	Principles of Management
5.	Narayan & Rao	:	Principles of Management

List of Cases, Recent Articles and Specific References will be announced in the Class Room at the time of launching of the course.

CC 102: QUANTITATIVE METHODS

Course Objective:
The objective of the course is to provide elementary knowledge of the concepts of Quantitative Teahouse and their application in business field.

Course Contents:

UNIT I: Matrices
Elementary introduction to Vectors & Determinants. Matrices: Meaning, Definition, Kinds, Equality, Transpose and basic operations on matrices Business Application of matrices: representation of data, Solution to the simultaneous equations,

UNIT II: Probability
Introduction, Basic terminologies, Simple problems related to addition, multiplication and division of probability, Conditional probability.

UNIT III: Introduction to Statistics
Arithmetic mean, Median, Mode and Weighted Average, Geometric mean, range, Quartile, Percentile, Deciles, Mean Deviation, Standard Deviation, and coefficient of variation.

UNIT I: Statistical Analysis (a)
Correlation and Regression Analysis, Scatter diagram and Karl Pearson's Co-efficient of Correlation. Index number: Quantity and Price Indexes, Fisher's ideal Index Number.

UNIT V: Statistical Analysis (b)
Time series Analysis and Forecasting: Components of Time series, Measurement of trend forecasting Graphical, Moving average, and least square methods.

Outcome:
Critical thinking, Business Analysis, Problem Solving and Innovative Solutions
The graduates of this course will be able learn about the basic mathematics and statistics applicable in business decisions. This will sharpen their critical thinking, analytical skills and problem solving ability.

Suggested Readings:

1.	Levin Rechard I	:	Statistics for Management
2.	Gupta, C.B.	:	An Introduction to Statistics.
3.	Gupta. S.C	:	Fundamentals of Statistics.
4.	Elhance, D.N	:	Fundamentals of Statistics.
5.	Ray & Sharma	:	Statistics.
6.	Raghavchari, C.	:	Business Mathematics.

CC 103: MANAGERIAL ECONOMICS

Course Objective: The objective of this course is to acquaint the participants with concept and techniques used in micro and macro economics and to enable them to apply this knowledge in the business decision making.

Course Contents:

UNIT I: Introduction

Managerial Economics: Meaning, Scope, Relationship with other disciplines. Demand Analysis, Elasticity of Demand. Supply: Nature, Types& Equilibrium. Indifference Curve Analysis, Price, Income and Substitution Effect. Demand Forecasting. Significance of Managerial Economics in Business Decisions.

UNIT II: Production Theory & Cost Analysis

Production Theory: Proportion (Short Run Production Analysis) and Law of returns to scale (Long Run Production Analysis) through the use of ISO QUANTS. Cost analysis: Cost Concept, Cost in Managerial Decision.

UNIT III: Theory of Firm & Market Structure

Theory of Firm- Profit Maximization & Sales Maximisation. Market Structure- Features and Price Determination of Monopoly, Oligopoly, Perfect Competition and Non- Price Competition.

UNIT IV: Employment Theory & Business Cycle

The Classical Theory of Employment, the Keynesian Theory of Employment. Circular Flow of Income in 2,3,4 Sector Economy. Business Cycle: Phases, Significance and Impact on society. Government policies related to Business Cycle, Inflation, Money supply.

UNIT V: Macro Economics Aggregates & Concepts

Concept and Measurement of National Income. Determination of National Income. Consumption & Saving Functions and their relationships. Aggregate Consumption – Gross Domestic Savings, Gross Domestic Capital Formation, GNP & GDP, WPI, CPI, HDI, Inflation. Investment Function: MEC & MEI. Balance of Payment, Fiscal Policy and Monetary Policy.

Outcome:

Business Environment and Domain Knowledge

The graduates of this course will be able learn about the role of economics in business management and prospects of the business in a span of time.

Suggested Readings:

1.	V.C. Sinha & Ritika Sinha	:	Managerial Economics
2.	P. L. Mehta	:	Managerial Economics
3.	Varshney & Maheshwari	:	Managerial Economics
4.	Joel Dean	:	Managerial Economics
5.	M. L. Jhingan	:	Micro Economic Theory

CC 104: BUSINESS ENVIRONMENT

Course Objective: The primary objective of this course is to familiarize the students with the business environment prevailing in India, its different dimensions, influencing factors and its implications to business.

Course Contents:

UNIT I: Business and Environment

Definition, Nature and Components of Business; Concept , Classification and Significance of Business Environment ; Factors affecting environment of Business ; Assessing risk and opportunity in Indian and global business environment. Environment Management System (EMS), EMS Standards and Environmental Auditing.

UNIT II: Economic Environment

Components of Economic Environment of Business ; Basic Economic System ; Role of Five Year Plans to Industry ; Economic Reforms in India- Liberalisation, Globalisation and Privatisation ; New Economic Policy ; Industrial Policy ; Concept of Fiscal Policy & Monetary Policy.

UNIT III: Socio-cultural and Political Environment

Social Environment and its impact on Business; Role of culture in business, Social Responsibility of business; State Intervention in Business - Reasons, Types and Problems ; Concept of Private and Public Sector in India; Co-operative Organizations, MNCs and FDI in India.

UNIT IV: Technological Environment

Technological factors affecting business; Technology Policy of India; Prospects and Challenges to adopt technology; Role of Patents and Intellectual Property Rights in Business; Quality Standards and introduction of Six Sigma & Kaizen.

UNIT V: Environmental Management

Concept, Scope and Determinants of Environmental Management System ; Introduction of Sustainable Development ; Role and Trade of Forest Products in India ; Bio-Diversity & Waste Management ; Air, Water and Land Pollution- Causes and Laws ; Measures of Energy Conservation. Overview of Environment Protection Act.

Outcome:

Business Environment and Domain Knowledge

The participants of this course will be able learn about the macro factor affecting business environment and will be well acquainted with the latest changes in the different components of business environment.

Suggested Readings:

1.	Principles of Business Management	:	Kumar & Sharma
2.	Business Environment	:	F. Cherunilum
3.	Economic environment of Business	:	Biswnath Ghosh
4.	Business Environment for Strategic Management	:	K. Aswathappa
5.	Indian Economy	:	Mishra and Puri

List of Cases, Recent Articles and Specific References will be announced in the Class Room at the time of launching of the course.

CC 105 CP: COMMUNICATION SKILLS

Course Objective: This Course is aimed at equipping the students with the necessary techniques and skills of communicating individually and in a group. Oral, written and non-verbal communication skills are considered important in accomplishing the organisational goals and maintaining harmony.

Course Contents:

UNIT I: Introduction

Definition and Process of Communication, Essentials of Effective Communication, Barriers to Communication, Communication Networks, Role of communication in organizational effectiveness, Use of Grapevine.

UNIT II: Oral Communication

Public Speech & Presentation Skills: Composition, Principles, Speech Delivering Skills, Overcoming Glossophobia, Just-A-Minute Presentation. Interview: Pre Planning for the Interview, Facing the Interview Board. Communication in Group Discussion, Do's and Don'ts in GD's. Communication in Committees, Seminars and Conferences.

UNIT III: Non-Verbal Communication

Non- Verbal communication: Meaning and its Importance. Facial expression, Postures, Gestures, Eye Contact & Gazing, Hepatics, etc. Listening: Process, Types and Principles.

UNIT IV: Writing Skills

Writing different types of Job Application Letters. Preparing Bios & Resumes. Writing different types of Reports, Proposals, E-mails and Summaries. Drafting Notices, Advertisements etc.

UNIT V: Business Correspondence

Essentials of Effective Business Correspondence. Structure of Business Letter, Forms of Letter layout. Types of Business Letters- Enquiries and replies, orders and their execution, complaint letter, sale letter, Response Letter, Thanks Letter.

Outcome:

Effective Communication

The participants of this course will be able learn about the various aspects of verbal and non-verbal communication which will be extremely useful to them at the entry level in any professional organisation in the initial years of their career.

Suggested Readings:

1.	Nageshwar Rao & R. P. Das	:	Communication Skills
2.	M. V. Rodrigues	:	Effective Business Communication
3.	R. C. Sharma & Krishna Mohan	:	Business Correspondence & Report Writing
4.	E. H. McGrath, S. J.	:	Basic Managerial Skills for All
5.	P. D. Chaturvedi & Mukesh Chaturvedi	:	Business Communication

List of Cases, Recent Articles and Specific References will be announced in the Class Room at the time of launching of the course.

CC 106: ACCOUNTING FOR MANAGERS

Course Objective:

The basic purpose of this course is to develop an insight of postulates, principles and techniques of accounting and utilisation of financial and accounting information for planning, decision making and control.

Course Contents:

UNIT I: Basic Accounting Concepts
Financial Accounting: Concept, Importance and Scope. Generally accepted accounting principles, Preparation of Financial Statement with special reference to analysis of Balance Sheet and measurement of Business Income.

UNIT II: Financial Statements
Financial Statements analysis, Cash Flow Statement, Fund Flow Statement , Ratio Analysis – Meaning, Importance and Limitations. Preparation of various types of statements.

UNIT III: Management Accounting
Management Accounting - Concept, Need, Importance and Scope. Cost Accounting- Records & Process, Cost Ledger& Control Accounting, Job and Process Costing. Reconciliation & Integration between Financial Accounting and Cost Accounting.

UNIT IV: Budgeting
Various types of budget and their preparation, Master Budget, Flexible Budget, Performance Budgeting, Zero Budgeting and Budgetary Control.

UNIT V: Costing
Costing for Decision Making: Standard Costing, Variance Analysis, Marginal Costing and Absorption Costing. Overview of GST.

Outcome:
Business Environment and Domain Knowledge
This course will acquaint the participants with the basics of accountancy regarding financial transactions of an organisation.

Suggested Readings:

1. S. M. Shukla	:	Advanced Accounting
2. Sharma & Gupta	:	Management Accounting
3. Jain &Narang	:	Accountancy
4. I. M. Pandey	:	Advanced Accounting
5. Shukla & Grewal	:	Advanced Accountancy

CC 107: ICT & E-BUSINESS FUNDAMENTALS

Course Objective:

The objective of this course is to give an exposure to the participants regarding the usage of computers software, ICT, E-Business Fundamentals and emerging technologies in the business organisation with the specific reference to the commercial data processing systems.

Course Contents:

UNIT l: Introduction

Computers. An Introduction, Development of Computer, Components of Computer, System: - CPU, Input and Output Devices, Storage Media, Computer Hardware/Software Generations, Classification of Computer Programming Languages. Overview of Number System, Information Technologies, Internet Communication Technologies. Applications of Computer in Business.

UNIT II: PC Software Package

Operating System: Introduction to Operating System (DOS & Windows). Basics of Word Processing Insert, Page Layout, References and Mailings. Basics of Excel/Spreadsheet: Data Formatting, Data Representation & Data Visualization. Power Point: Creating a PowerPoint Presentation on PC. Do's and Don'ts of Power Point Presentation.

UNIT III: E-Business:

E-Business framework, E-Business application, Technology Infrastructure for E-Business. Mobile and Wireless computing fundamentals: Mobile computing, framework, wireless technology and switching method, mobile information access device, mobile computing application.

UNIT IV: E-Business Models:

Elements of Business models, B2B, B2C models Payment Systems: Type of E-payment, digital token-based e-payment, smart card, credit card payment systems, risk on e-payment, designing e-payment.

UNIT V: Emerging Technologies

Communication Technologies: 2G, 3G, 4G and 5G, Artificial Intelligence (AI), Internet of Things (IoT), Machine Language, Big Data, Coding, Cloud Computing, Cyber Security etc.

Outcome:

Critical Thinking, Business Analysis, Problem Solving and Innovative Solutions

This course will hone the skills of participants with basics of computers, ICT, office automation, ,E-Business and emerging technologies. It will also improve the critical thinking, analytical ability and problem solving skills of the participants.

Suggested Readings:

1. Sinha and Sinha,"Computer Fundamentals", BPR Publications , Latest Edition
2. Niranjan Shrivastava, Computer Applications in Management
3. R.K. Taxali,, "PC Software for Windows Made Simple", Tata McGraw Hills, New Delhi,
4. R Kalakoita & M Robinson. "E-Business. Roadmap for Success", Pearson Education.
5. Rayudu C.S.,"e-Business", Himalaya Publishing House, Latest Edition
6. Elaine Rich and Kevin Knight, "Artificial Intelligence", Tata McGraw Hill
7. V. Madisetti & A. Bahga, "Internet of Things, A Hands on Approach", University Press.
8. Gupta Sarika, "Information and Cyber Security", Khanna Publishing House, Delhi.
9. Jain V.K., "Big Data and Hadoop", Khanna Publishing House, Delhi.
10. AurélienGéron, "Hands-On Machine Learning with Scikit-Learn and Tensor Flow: Concepts, Tools, and Techniques to Build Intelligent Systems", 1st Edition, O'Reilly Media

GE 108: ORGANISATIONAL BEHAVIOUR & INDUSTRIAL PSYCHOLOGY

Course Objective:

The objectives are to impart an understanding of resource component in the process of management and to develop an understanding of organisational and individual variants which affect organisations, amongst the course participants.

Course Contents:

UNIT I: Introduction
Concept of Organisational Behaviour, Contributing Disciplines to organisational Behaviour, Background/ Historical Perspective and Framework of OB, OB in a Learning Organisation.

UNIT II: Individual Behaviour & Group Dynamics
Perception and Impression Management, Personality- Concept and Determinants, Attitudes and Values. Group Formation, Nature of Groups, Group norms, Reasons for joining Groups, Individual Roles in Groups., Functions of Groups within an Organisation.

UNIT IV : Global Leadership
Cultural Dimensions & its impact on Business Practices. Leadership across Culture, Challenging role of a Global manager as a Global Business Leader. Challenge of managing Cross-cultural workgroups and international teams. Cross cultural communication & Negotiations. Cultural differences & Ethical dilemmas.

UNIT IV: Industrial Psychology
Evolution of Industrial Psychology, Psychological Conflicts: Causes Effects and Remedies. Role Clarity & Role Conflict. Work life balance. Causes of Monotony, Fatigue, Accidents and Alcoholism in employees. Employee Retention Strategies.

UNIT V: Other Issues
Emotional Intelligence: EI Framework, Effect of EI individual and organisational effectiveness. Stress Management- Meaning, Cause, Effects and Coping Strategies for Stress and Interpersonal Behaviour. Creating High Performance Culture. Mentoring & Talent Management. Team Building & Team Work, Time Management.

Outcome:
Leadership, Teamwork, Global Exposure and Cross Cultural Understanding
The participants of this course will be able to learn about behavioural aspects of different individuals and groups in an organisation. Graduates are expected to collaborate and lead teams across organisational boundaries and demonstrate leadership qualities. The participants will be able to learn about the various aspects of trans-national culture and global leadership.

Suggested Readings:

1. Stephens P. Robbins	:	Organisational Behaviour
2. Keith Davis	:	Organisational Behaviour
3. Uma Shekaran	:	Organisational Behaviour
4. UdaiPareek .	:	Understanding Organisational Behaviour
5. Bhattacharya D. K.	:	Organisational Behaviour

List of Cases, Recent Articles and Specific References will be announced in the Class Room at the time of launching of the course.

SEMESTER II

CC 201: INDIAN ETHOS & BUSINESS ETHICS

Course Objective: This is a value based course. The objective of this course is to acquaint the students with the moral values and traditional wisdom inherent in our Indian mythology and literature.

Course Contents:

UNIT I: Introduction

History and Relevance, Principles Practiced by Indian Companies, Role of Indian Ethos in Managerial Practices. Managerial lessons from Vedas, Ramayan, Mahabharat, Bible and Quran. Kautilya's Arthshashtra.

UNIT II: Indian Values

Indian Heritage in Management. Impact of Value on Stakeholders, Trans-Cultural Human Values, Secular v/s Spiritual Values, Value System in Work Culture. Meditation, Mental Health and Yoga. Gurukul System of Learning. Gandhian Approach in Management & Trusteeship. Importance of Trusteeship Principles in Business Management.

UNIT III: Ethos & Laws

Ethics v/s Ethos, Indian v/s Western Management, Work Ethos and Values for Indian Managers. Relevance of value based management in Global Change. Nishkama Karma, Law of Karma, Law of Creation, Law of Humility, Law of Growth, Law of Responsibility, Law of Connection and Corporate Karma Leadership.

UNIT IV: Understanding Ethics

Need for Ethics, Ethical Values, Myths and Ambiguity, Ethical Codes, Ethical Principles in Business. Theories of Ethics, Absolutism v/s Relativism. Kohlberg's six stages of Moral Development (CMD).

UNIT V: Managing Ethical Dilemma

Ethical Decision Making, Ethical Reasoning, Dilemma Resolution Process. Ethical Dilemma in different business areas of Finance, HRM, Marketing and International Business. Ethics and Value Based Leadership. Traditional Indian Wisdom towards Business Ethics.

Outcome: Value based learning & Leadership

The participants of this course will be able to learn values from Indian mythology and Role Models and use them in sustainable growth of business organisations.

Suggested Readings:

K.C. R. Raja	:	Ethics, Indian Ethos & Management
Bishwanath Ghosh	:	Ethic in Management & Indian Ethos
R. Nandgopal&AjithSankar R. N.	:	Indian Ethos & Values in Management
G. D. Sharma	:	Management & Indian Ethos
S. K. Chakraborty	:	Ethics in Management :Vedantic Perspective

CC 202: RESEARCH METHODOLOGY

Course Objective*:* To equip the students with the basic understanding of the research methodology and to provide an insight into the application of modern analytical tools and techniques for the purpose of management decision making.

Course Contents:

UNIT I : Introduction
Meaning, Objectives, and Significance of Research; Types of Research; Concept and scope of research methodology in Management; Criteria for a good Research ; Research Organisations in India.

UNIT II : Research Process
Steps in Research Process. Need and Features of a good Research Design; Types of Research Design; Sampling Design Techniques; Characteristics of a good Sample Design; Formulation of Research Objectives and Hypothesis.

UNIT III : Methods of Data Collection
Types of Data. Sources of secondary data; Review of Literature and its importance. Methods of Collecting Primary Data; Observation, Interview &Questionnaire Method. Designing and Administration of Questionnaire. Questionnaire vs Schedule. Measurement & Scaling techniques.

UNIT IV : Methods of Data Representation & Analysis
Use of Graphs, Charts and Maps in Data Representation. Processing of data- Editing, Coding, Classification and Tabulation of Data; Utility and Importance of Statistics in Research ; Measures of Central Tendency and Dispersion, Correlation and Regression etc. Statistical tests such as Chi - square test, t – test, and ANOVA.

UNIT V : Research Report Preparation
Preparation of Research Reports; Layout of the Research Report; Steps in Report Writing ; Applications of MS Word, Power Point and Excel in Report preparation ; Research related Software and their application.

Outcome:
Critical thinking, Business Analysis, Problem Solving and Innovative Solutions
This course will acquaint the participants with the basics of research before they go to the corporate world for their project study. This will also cultivate critical thinking, analytical skills and problem solving skills in the participants.

Suggested Readings:

1. Research Methodology : C.R. Kothari
2. Research Methodology : R. Pannersevam
3. Research Methodology in Management : Dr. V.P. Michael
4. Business Research Methods : Naval Bajpai
5. Marketing Research : Malhotra & Dash

CC 203: HUMAN RESOURCE MANAGEMENT

Course Objective:

The objective of this paper is to acquaint the student about the various facts of managing manpower and to develop the insight on various policies and practices of Human Resource Management.

Course Contents:

UNIT I: Introduction
Concepts & Perspectives on Human Resource Management, HRM in Changing Environment, Corporate Objectives and Human Resource Planning, Career & Succession Planning, Job analysis and Job Description.

UNIT II: Recruitment and Training
Recruitment and Selection of Manpower, Induction and Orientation, Training and Development, Performance Appraisal and Potential Appraisal.

UNIT III: Compensation
Job Evaluation, Wages and Salary Administration. Employee Benefit Programmes, Incentives and Fringe Benefits. Organiational Participation and Productivity Sharing.

UNIT IV: Managerial Skills
Introducing change in the organization, Discipline, Absenteeism and Employee Turnover, Conflict Management, Grievance Handling. Work from home in contingencies such as pandemic situation.

UNIT V: Industrial Relations
Employee Welfare, Industrial Relations and Trade Unions; Dispute Resolution & Grievance Management; Employee Empowerment.

Outcome:

Business Environment and Domain Knowledge

This course will ensure the basic learning of managing human resource in an organisation and participants will also gain understanding of influence of external environment forces on HRM.

Suggested Readings:

1. Gary Dessler : Fundamentals of Human Resource Management
2. K. Aswathappa : Human Resource and Personal Management
3. C.B. Memoria : Personnel Management
4.. Deeepak Kumar Bhattacharya : Human Resource Management
5. V.S. P. Rao : Human Resource Management

List of Cases, Recent Articles and Specific References will be announced in the Class Room at the time of launching of the course.

CC 204: FINANCIAL MANAGEMENT

Course Objective:

The basic purpose of this course is to develop an insight of postulates, principles, and techniques of accounting and utilization of financial and accounting information for planning, decision making, and control.

UNIT I: Introduction
Financial Management – Nature, Scope & Objectives, Financial Analysis & Control, Cost Volume Profit Analysis, Valuation of a Firm, Business Forecasting.

UNIT II: Short Term Financing
Working Capital Management, Management of Cash & Receivables, Accounts and Receivables Management, Inventory Management, Debt Financing, Bank Financing.

UNIT III: Capital Structure and Dividends
Capital Structure Decision of a firm, Theories of Capital Structure, Dividend Policy of the Firm, Valuation &Dividend Decisions.

UNIT IV: Long Term Financing
Sources of Long Term funds externally: Long term Debt, Preferred & Common Stock, Convertible Securities & Warrants, Lease Financing.

UNIT V: Investment Decisions
Capital Budgeting, Methods of Capital Budgeting, Cost of Capital for Risky Investment, Multiple Risky Investment, Portfolio Management.

Outcome:

Business Environment and Domain Knowledge

Graduates will improve their knowledge on functioning of local and global business environment and will be acquainted about various aspects related to sources of funds and management of funds in an organisation

Suggested Readings

1. Khan & Jain : Financial Management
2. I.M. Pandey : Financial Management
3. S. K. Gupta & R. K. Sharma : Financial Management
4. Prasanna Chandra : Financial Management: Theory & Practices
5. V. K. Bhalla : Financial Management and Policy

List of Cases, Recent Articles and Specific References will be announced in the Class Room at the time of launching of the course.

CC 205: MARKETING MANAGEMENT

Course Objective:

This is an introductory course to the marketing specialisation. The objective of the course is to introduce the students to the basic concepts and components of marketing so as to develop an understanding of different functional areas of management irrespective of the selected area of specialisation.

Course Contents:

UNIT I: Introduction

Basic Concepts and Approaches to Marketing Management, Selling vs. Marketing, Marketing System, Marketing Environment, Marketing Mix, Market Segmentation and Marketing Process. Targeting & Positioning.

UNIT II: Consumer Behaviour & Marketing Research

Concept of Consumer Behaviour, Factors affecting Consumer Behaviour. Decision Making Process in Buying. Diffusion of Innovation. Types and Levels of Decision Making in Buying. B2B Marketing and CRM. Concept and Components of Marketing Information System (M_kIS). Marketing Research: Meaning, Process, Scope and Significance.

UNIT III: Product & Brand Management

Product Mix, Product Classification, Product Life Cycle, Launching of a New Product. Branding Decisions & Strategies: Selecting a Brand Name, Brand Identity, Personality & Associations. Packaging: Functions & Types, Legal Dimensions of Packaging, Packaging as a Promotional Tool.

UNIT IV: Pricing, Promotion & Distribution Management

Pricing Objectives & Methods. Factors influencing Pricing of a Product. Promotional Decisions- Advertising, Sales Promotion, Personal Selling, Publicity and Public Relations. Promotion Mix. Channels of Distribution, Channel Planning & Channel Mix, Factors Affecting Channel Choice. Types of Middlemen. Functions of Middlemen, Utility Created by Middlemen.

UNIT V: Specific Marketing Areas

Service Marketing, Rural Marketing, Green Marketing, International Marketing, Social & Non-Profit Marketing, Social Media & Digital Marketing. Marketing to base of Pyramid Customers.

Outcome:

Business Environment and Domain Knowledge

The participants of this course will be able to learn about the foundation of marketing in different focal areas and they will also understand the impact of economic, political, technological factors on marketing activities.

Suggested Readings:

1. Ramaswami V. &Namkumari S.,	:	Marketing Management.
2. Kumar Arun&Meenakshi N.	:	Marketing Management
3. Kotler Philip, Keller K.L., Koshy Abraham Jha M.	:	Marketing Management, 12th Edition
4. Stanton W. J.,	:	Fundamentals of Marketing
5. KujnishVashishth	:	A Practical Approach to Marketing Management

List of Cases, Recent Articles and Specific References will be announced in the Class Room at the time of launching of the course.

CC 206: PRODUCTION AND OPERATIONS MANAGEMENT

Objective:

The course is designed to acquaint the students with decision making in Planning, Scheduling and control of Production and Operation function in both manufacturing and services Productivity improvement in operations through layout engineering and quality management etc. effective and efficient flow, replenishment and control of materials with reference to both manufacturing and services organizations.

Course Contents:

UNIT I : Introductory Concept to Operations

Nature and of Production and Operations Management, Facility Location, Types of Manufacturing Systems & Layouts, Layout Planning and Analysis Material Handling- Principles Equipments, Line Balancing- Problems.

UNIT II: Operational Planning

Operations decisions- Production Planning and Control – In Mass Production – In Batch/Job Manufacturing Capacity Planning – Models.

UNIT III: Process Planning

Process Planning – Aggregate Planning- Scheduling- Maintenance Management Concepts, Work Study, Method Study, Work Measurement, Work Sampling, Work Environment – Industrial Safety.

UNIT IV: Material Management

Material Management: An Overview of Material Management, Material Planning and Inventory, Control, JIT, Materials Planning Budgeting and Material Requirement planning, Purchase Management, Stores Management.

UNIT V: Quality Control

Quality Assurance: Acceptance Sampling, Statistical Process Control, TQM, ISO 9000, Maintenance, Safety Management.

Outcome:

Business Environment and Domain Knowledge

This course will expose the participants with towards various aspects of manufacturing sector.

Suggested Readings:

1. Buffa, E.S. : Modern Production Management
2. Chary S.N. : Production and Operations Management
3. Chunawalla & Patel : Production and Operation Management
4. Subimal Bhattacharya : Operations Management
5. K. K. Ahuja : Production Management

List of Cases, Recent Articles and Specific References will be announced in the Class Room at the time of launching of the course.

CC 207: BUSINESS LEGISLATION

Objective:
The course is designed to assist the students in understanding basic laws affecting the operations of a business enterprise.

Course Contents:

UNIT I : Contract Act.

The Indian Contract Act, 1872: Essentials of valid Contract. Void Agreements. Performance of contracts, Breach of Contract and Its remedies. Quasi-Contracts. Indemnity. Guarantee Contingency, Bailment and Agency.

UNIT II: Sales of Goods Act & Negotiable Instruments Act.

The Sale of Goods Act, 1930: Formation of a Contract .Right of Unpaid Seller. The Negotiable Instruments Act, 1881: Nature and Types. Negotiation and Assignment. Holder–in-Due Courses Dis honor and Discharge of a negotiable Instrument.

UNIT III : Introduction to Company Law.

The Companies Act 1956:Nature and Types of Companies. Formation. Memorandum and Articles of Association, Prospectus.

UNIT IV: Share Capital

Allotment of Shares. Shares and Share Capital. Shares vs Debentures Membership, Borrowing Powers. Management and Meeting. Accounts and Audit. Compromise Arrangements and Reconstruction.

UNIT V : Other Issues

Prevention of Oppression and Mismanagement. Winding UP: Consumer Protection Act and Cyber Laws.

Outcome:
Business Environment, Domain Knowledge, Critical Thinking & Problem Solving
The course will acquaint the participants with functioning of legal business environment and concerned potential issues and laws in managing operations of business and thereby they are expected to make judgment calls and take legit decisions in future that a business professional has to make on daily basis. This course will prepare the participants for imaginative and responsible leadership roles in the business. They are expected to critically analyze, evaluate and create solutions in the business.

Suggested Readings:

1. Avtar Singh, Company Law, 11th Ed. Lucknow, Eastern 1996
2. Gang & Chanda, Marchantile Law.
3. Kapoor N.D. Marcantile Law

The list of cases and specific references including recent articles will be announced in the class at the time of launching of the course.

GE 208: INTERNATIONAL BUSINESS ENVIRONMENT

Objective:

The primary objective is to acquaint the students to emerging global trends in business environment and enhance the knowledge about the foreign markets.

Course Contents:

UNIT-I Introduction

International Business: An overview- Types of International Business. The External Environment: Economic and Political Environment, The Human Culture Environment and its influence on Trade and Investment Patterns.

UNIT-II World Trade

Recent World Trade and Foreign Investment Trends, Balance of Payments and Balance of Trade, Theories related with International Trade. World's Economic Growth & Environment.

UNIT-III International Finance

World Financial Environment: Cross-national Cooperation and Agreements, Tariff and Non-Tariff barriers, WTO, GATT, Regional Blocks.

UNIT-IV Financial Institutions

Foreign Exchange Market Mechanism, Determinants of Exchange rates, Euro-Currency Market, Offshore Financial Centres, International Banks, Non-Banking Financial Services Firms, and Stock Markets.

UNIT-V Global Issues & Perspectives

Global Competitiveness: Technology and Globalisation, Export Management, Licensing & Joint Ventures, Globalisation and Human Resource Development, Globalisation with Social Responsibility.

Outcome:

Global Exposure and Cross cultural Understanding

The participants will be able to learn about the various aspects of global business environment. They will have basic knowledge about different mechanisms and institutions in International Business.

Suggested Readings:

1.	Leslie Hamilton & Philip Webster	:	The International Business Environment
2.	Anant Kumar	:	The International Business Environment
3.	Bhalla, V.K. and S. Shivaramu	:	International Business Environment and Business
4.	Janet Morrison	:	The International Business Environment
5.	Sukumar Nandi	:	The International Business Environment

List of Cases, Recent Articles and Specific References will be announced in the Class Room at the time of launching of the course.

SEMESTER :III

CC 301: OPERATIONS RESEARCH

Objective:
The objective of this paper is to give the students a firm grasps of quantitative techniques, which are useful to them in the field of management. The emphasis is mainly laid on operational research.

Course Contents:

UNIT I : Introduction to OR

Introduction, Nature, Scope and managerial application, methodology and Modelling in OR Types of models, Principles of Modelling in OR. Overview of various OR models used in business.

UNIT II : Linear Programming.

Linear Programming, Introduction, Formulation, Graphical and Simplex Method for solving L.P.P Maximisation & Minimisation Type Problems, Big m and Two –Phase Methods.

UNIT III : Operational Models

Transportation Problems: Formulation Basic Feasible solution and optimality test, Assignment Problems: Minimisation types, constraints, unbalanced and maximization type, Monte Carlo's simulation (Elementary concept).

UNIT IV : Operational Network :

PERT & CPM: Basic concepts, Rules of Network construction Determination of critical path Determination of float. Determination of project completion time . Dynamic Programming. (Elementary concept).

UNIT V : Operational Theories

Game Theory: Type of Game. Two person Zero Sum Game, Saddle Point. Dominance rule, solution to 2x2, 2xn and mx2 games. Queuing theory: General Structure of a queuing system Queuing Theory, Operating characteristics of a Queuing system, Simple problems related to Queuing. Replacement theory (Elementary concept).

Outcome:
Critical thinking, Business Analysis, Problem Solving and Innovative Solutions
Competency in quantitative techniques will hone the critical thinking, analytical skills and problem solving ability of the participants. They are expected to use these techniques to solve the problems under uncertainty and take appropriate decisions in the business world.

Suggested Readings:

1. Vohra N.D., Quantitative Techniques in Management, New Delhi, TMGH 1990
2. Sharma SD, Operations Research
3. Sharma JK, Operational Research: Theory and Applications, New Delhi, Macmjllian India Ltd. 1997
4. Narag A S, Linear Programming and Decision Making New Delhi, Sultan Chand, 1995.

DCE 302 A : CONSUMER BEHAVIOUR

Objective:
The basic objectives of this course is to develop and understanding about the consumer decision- making process and its applications in marketing function of firms.

Course Content :

UNIT I : Introduction

Introduction to consumer Behaviour: Consumer Behaviour and Marketing strategy: Consumer Involvement and Decision Making: Information Search Process: Evaluation criteria and Decision Rules.

UNIT II : Motivation & Personality

Consumer motivation: Need and Goals, positive & Negative motivational, Dynamic Nature or Motivation, Consumer Perception: Conceptual Framework, Dynamics of Perception, Consumer Imaging.

UNIT III : Attitude & Personality

Consumer Attitude and Attitude Change: Influence of personality and self concept on Buying Behaviour: psychographics and lifestyle: AIO & VALS Classification.

UNIT IV : Influence on CB

Reference Group Influence: Diffusion of Influence: Diffusion of Innovation Process, The concept of Chasm: Profile of Consumer Involvement and Opinion Leadership, Family functions and family life style. On-line Buying Behaviour, Influence of E-marketing on Buying Behaviour.

UNIT V : CB Models & Application

Models of Consumer Behaviour: Nicosia Model: Howard Sheth Model, Engel Blackwell Julia Model, Industrial Buying Behaviour Consumer Behaviour Studies in India.

Outcome:
Business Environment, Domain Knowledge, Social Responsiveness & Ethics
This course provides a valuable insight on how consumers make buying decisions and how social, cultural and economic factors affect their buying decisions. The graduates are expected to identify the problems and tap the opportunities in the market by constructing smarter marketing strategies and fill the gap by identifying products that are needed and products that are obsolete pertaining to the business they work in future. The participants will gain an understanding of social issues & problems in the society and will be able to explore solutions to it within ethical boundaries which would further affect consumer judgment and buying decision positively**.**
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Suggested Readings:

1. Schiffman, LG and Kanuk, LL Consumer Behaviour New Delhi, PHI.
2. Mowen, John C. – Consumer Behaviour, New York, Mac Millan.
3. Engle JF etc, Consumer Behaviour in Marketing, Engle wood Cliffts, New Jersey, PHI.

The list of cases and specific references including recent articles will be announced in the class at the time of launching of the course.

DCE 302 B : INVESTMENT ANALYSIS AND PORTFOLIO MANAGEMENT

Objective:
The objective of this course is to impart knowledge to students regarding the theory and practice of Investment Analysis and practices of Portfolio Management.

Course Contents:

UNIT I: Investment Management

Investment – Return and Risk: Operation of Indian Stock Market; New Issue Market; Listing of Securities: cost of Investing in Securities: Mechanics of Investing Markets and Brokers: Investment Companies , Market Indices and Return .

UNIT II: Security Analysis

Security Credit Ratings; Objective of Security Analysis; Investment Alternatives; Valuation Theories of fixed and variable income Securities; The Return to Risk and the Investment Decision; Government Securities; Non Security Form of investment.

UNIT III: Stock Market

Market: stock Market Analysis- Fundamental and Technical Approach, Efficient Market Theory; Recent Development in Indian Stock Market; Investment Instruments of the Money. Derivatives-Contract, Future market & Hedging, Swap, Option pricing, Derivative Markets in India.

UNIT IV: Portfolio Management

Introduction to portfolio Management – An optimum portfolio – Selection Problem, Markowitz Portfolio Theory, The Nature of Investment Risk MVC and Portfolio Selection, Portfolios of two Risky Securities, A Three Security Portfolio, the Efficient Frontier .

UNIT V : Managed Portfolios and Performance Measurements

Sharpe: Single Index Model; Application of Market Model in Portfolio Construction Capital Assets Pricing Model, Constructing the Optimum Portfolio, Portfolio Investment Process: Bond Portfolio Management Strategies : Investment timing and Portfolio Performance Evaluation : Corporate Portfolio Management in India .

Outcome:
Critical thinking, Business Analysis, Problem Solving and Innovative Solutions
The participants will acquire knowledge on techniques and strategies used to manage funds and assets of the organization. This will refine their analytical skills, problem solving and they will be able to plan and execute investment decisions by gauging the risk patterns effectively thereby managing the portfolio of the organization effectively.

Suggested Readings:

1. Bhalla, V.K., Investment Management: Security Analysis and Portfolio Management 8th Ed. New Delhi, S Chand.
2. Fisher Donald E and Jordan, Ronald J. Security Analysis and Portfolio Management 6the Ed. New Delhi PHI.
3. Sharpe, Willam F. etc Investment. New Delhi PHI.

The list of cases and specific references including recent articles will be announced in the class at the time of launching of the course.

DCE 302 C: EMPLOYEE RELATIONS

Objective:
Organisational efficiency and performance are intricately interlinked whit Industrial relations. This course is an attempt to appreciate the conceptual and practical aspect of employee relations at the micro and macro levels .

Course Contents:

UNIT I : Introduction

Industrial Relations Perspectives: Industrial Relations and The Emerging Soclo – economic scenario : Industrial Relations and the state : Legal framework of industrial Relations .

UNIT III : Employee Grievance & Participation

Discipline and Grievance Management: Negotiation and Collective Settlements: Participative Management and co-ownership: Productive Bargaining.

UNIT III : ILO & IR

Industrial unrest in India, ILO, India and ILO, Dunlop's Industrial Relations Model. Employee Empowerment, Quality Management.

UNITI V : Industrial Relation Code 2020

Preliminary, Bi Parity Forum, Trade Unions, Standing Orders, Notice of Change, Voluntary Reference of Dispute and Arbitration. Mechanism for Resolution of Industrial Dispute, Strikes & Lock-outs, Special Provisions Related to Lay Offs, Retrenchment & Closure in Certain Establishment. Factories Act 1948.

UNIT V: Occupational Safety, health & Working Condition Code 2020

Preliminary, Registration, Duties of Employer & Employees, Occupational Safety & Health, Health Safety & Working Conditions, Welfare Provisions, Hours of Work & Annual Leave with Wages, Maintenance of Registers, Records & Returns, Inspector cum Facilitator and Other Authority. Special Provisions related to employment of Women, Special Provisions for Contract Labour, Offences & Penalties, Social Security Fund.

Outcome:
Business Environment and Domain Knowledge
The participants will learn social and political influences of labour relations on business and thereby it will help them to deal with the realities of managing a business in the complex world.

Suggested Readings:

1. Das R.P., Management of Industrial Relations, Varanasi , K Krishna Trading Corp.
2. Agrawal SN Labour Relations Law in India.
3. Taxman Labour Laws.
4. Menal Arora, Industrial Relations, Excel Books.

The list of cases and specific references including recent articles will be announced in the class at the time of launching of the course.

DCE 303A: SALES AND DISTRIBUTION MANAGEMENT

Objective:
The purpose of this paper is to acquaint the students with the concepts which are helpful in developing a sound sales and distribution policy and in organizing and managing sales force and marketing channel.

Course contents:

UNIT I : Selling Process & Concepts

Nature and Scope of sales management: Setting and Formulating Personal Selling Objectives Sales Theories, Steps in Selling process, Pre- requisite of a Good Sales Personnel.

UNIT II : Management of Sales Force

Recruiting and Selecting Sales Personnel: Developing and Conducting Sales Training Programme, Designing and Administrating Compensation Plans: Supervision of salesman: Motivating Sales Personnel: Sales Meeting and Sales Contest.

UNIT III : Sales Planning & Evaluation

Process of Sales Planning, Designing Territories and Allocating Sales Efforts: Size and Type of Sales Force. Objectives and Quotas for Sales Personnel: Developing and Managing Sales Evaluation Programme.

UNIT IV : Channel Management

Structure and types of Marketing Channels. B2B Marketing. Functions of Intermediaries, Wholesaling, Nature, Important & Classification. Channel Planning: Channel Integration, Intensity of Market Coverage, Selection of Distribution Channels and Channel Associates, Behaviour of Channel Member, Legal issues in Channel Management. Power & Conflicts in Channel Management.

UNIT V : Retail Management

Understanding Shoppers, Delivering Value through Retail Format, Store Layout and Design, Supply Chain Management (SCM), Technology in Retailing and E-retailing, In-store Technologies, Technology-Human Interface. POP Displays & Retail Marketing, Strategic issues and recent trends in retailing.

Outcome:
Business Environment and Domain Knowledge
This course gives an understanding of sales, distribution & retailing in Indian business. The graduates are expected to develop responsiveness towards challenges of increasing competition in the business world by resorting to improved methods of sales & distribution aimed at reducing cost, increasing profits and fulfilling the customers' expectations.

Suggested Readings:

1. Stanton, William J. Management of Sales Force, Chicago, Irwin.
2. Johnson, E M etc. Sales Management: Concept Practices and Cases. New York, John Wiley.
3. Anderson, R. Professional Sales Management: Englewood Cliffs, New Jersey, PHI.

The list of cases and specific references including recent articles will be announced in the class at the time of launching of the course.

DCE 303 B: INTERNATIONAL FINANCE

Objective:
The objective of this paper is to give students an overall give of the International financial system and how multinational corporations operate.

Course Contents:

UNIT I : Introduction

Meaning and Scope of International finance. The Emerging Challenges, Recent Changes in Global Finance Markets. Risk Management and Wealth Maximization. Foreign Exchange Exposure & Risk.

UNIT II : International Monetary System

Introduction, Exchange Rate Regimes, International Monetary Fund (MF), The Problem of Adjustment , The European Monetary System (EMS). Economic and Monetary Union (EMU).

UNIT III : Balance of Payment

Introduction , Accounting , Principles in BOP, Valuation and Timing , Components of BOP, Detail & Surplus in BOP , Exchange Rates , Interest Rates & Inflation Rates .

UNIT IV : Foreign Exchange Market.

Structure , Mechanic of Currency Trading , Types of Transactions and Settlement Data , Exchange Rates , Quotation & Arbitrage , Pricing of short Data Broken Data Contracts Foreign Exchange Market in India .

UNIT V : Short Term & Long Term Borrowing .

Short Term Borrowing : Introduction , Investment Pattern & Cash Management . Long Term Borrowing : Cost & Risk of Long Term Foreign Borrowing . Syndicated Loans, International Bonds, Risk and Return Form Foreign Equity Investment, Project Finance. Leasing, Hire purchase and Factoring.

Outcome:

Global Exposure and Cross Cultural Understanding
This course demonstrates a global outlook with the ability to identify global businesses and cross cultural understanding. It will increase the knowledge of participants' imperative for long term financial decisions corresponding to global operations.

Suggested Readings:

1. Bhalla, V.K., International Financial Management 2nd Ed., New Delhi, Anmol.
2. Shapiro, Alari C. Multinational Financial Management, New Delhi, PHI.
3. Abdullah, F.A. Financial Management for Multinational Firm, Englewood Fliffs, PHI.

The list of cases and specific references including recent articles will be announced in the class at the time of launching of the course.

DCE 303 C: HUMAN RESOURCE DEVELOPMENT

Objective:
The purpose of this course is to facilitate an understanding of the concepts, methods are strategies for HRD

Course Contents:

UNIT I : Introduction
Fields of HRD – Concept, Goals, HRD department and its functions, HRD Climate and Practices in India. Staffing HRD Function , Developing HR Strategies and their execution in India .

UNIT II : Enriching Employees
Tanning and Development – Needs, designing and administration of training and Development programmes, Training effectiveness and its evaluation method, Importance of feedback to Trainee and Trainer.
Performance Appraisal, Nature and Method of Appraisal, Potential appraisal – Its Utilization an Implementation , Bench making , Career Planning , Job Change , Career management , non trends in career management , Counselling and Mentoring.

UNIT III : HR with Cross Culture
Human and Cultural variables in Global Organization, Cross Cultural differences and management Implication, HRM factor in Global Organization – Leadership, Decision Making, Communication and Negotiation, Selection and Compensation Management. Emerging trends in Global Business and consideration by HR-BPO, Off-shoring.

UNIT IV : Organisation for HRD
HRD System: Design & Administration of HRD Systems: HRD for workers: HRD Intervention HRD Approaches for coping with organizational Changes: Case Studies of HRD in India Organisations.

UNIT V : Human Resource Information System , Auditing & Accounting
HR Information System – Introduction, Job Information and families, Job competency. HR Audit, HR Report and research keeping mode, HR Accounting – Nature and Objective Models of HR Accounting and its prospects, Emerging issues.

Outcome:
Business Environment and Domain Knowledge & Social Responsiveness and Ethics
This course creates an understanding of HR environment in which business operates and how economic, competitive and legislative factors affect staffing requirements. The course promotes understanding of various human and cultural variables in local and global organization. It also helps in developing responsiveness towards contextual social problems, ethical dilemmas by exploring solution to it. This will enable the graduates to adapt methods, techniques and strategies that are used to improve the productivity of human capital. They are expected to learn skills of planning, designing and administering various developmental activities aimed at up scaling the performance of the employees.

Suggested Readings:

1. Rao T.V., “Alternative approaches & Strategies of Human Resources Development”, Jaipur, Rawat.
2. Pareek U., Managing Transitions the HRD Response New Delhi, Tata Mc Graw Hill.
3. Dayal Ishwar, Successful Applications of HRD, New Delhi, New Concepts.
4. Tripathi PC, Personnel Management & IR.

The list of cases and specific references including recent articles will be announced in the class at the time of launching of the course.

GE 304: ENTREPRENEURSHIP

Objective:

The objective of this course is to acquaint the participants with the basic concepts of entrepreneurship and recent trends in start-up revolution in India.

Course Contents:

UNIT I : **Introduction**

Overview of Entrepreneurship and Qualities of a good Entrepreneur. Managerial Skills required for Entrepreneurship. India's start up revolution-Trends, Imperatives, benefits; the players involved in the ecosystem, Business Incubators-Rural entrepreneurship, social entrepreneurship, Cases of large and small entrepreneurs of India. Success Stories of regional and local entrepreneurs.

UNIT II: Functional Management

Business Model Designing- Business Plan Designing-Financial Planning-Venture Valuation techniques-Financial management for entrepreneurs-Accounting principles-Management accounting for entrepreneurs. Entrepreneurial positioning, targeting, and segmenting, Prototype Development, Test Marketing & Commercial Launch. Pricing decisions and Sales & Distribution Management, HRM in Entrepreneurship: recruitment, selection, compensation, training and development.

UNIT III: Technology based Entrepreneurship

Technology overview-IPR protection for these technology industries-Patents, trademarks, designs, copyrights, and integrated circuit. Issues in the management of innovation and technology. Success stories of technology and App based entrepreneurs/start-ups in India.

UNIT IV: Non-profit & Social Ventures

Social Entrepreneurship; Addressing persistent social problems-Financing Social ventures, Venture Capital, Corporate Entrepreneurship and Micro Financing. Venture Valuation-Angel funds-Venture Capital-In-house corporate funding mechanism.

UNIT V: Women Entrepreneurship

Women Entrepreneurship in India- Categorisation of Women Entrepreneurs, Reasons for growth of Women Entrepreneurship, Problems faced by Women Entrepreneurs, Steps taken by the Government to develop women Entrepreneurs in India. Success stories of Women Entrepreneurs in India.

Outcome:

Developing Social Responsiveness and Leadership- This course will encourage the youngsters to respond to the requirements of the society and the economy by becoming job providers instead of job seekers. It will give them motivation and confidence to become business leaders.

Suggested Readings:

1. Peter Drucker: Innovation & Entrepreneurship.
2. Rashmi Bansal: Stay Hungry Stay Foolish
3. Shukla M.B: Entrepreneurship and Small Business Management.
4. H. S. Krishna, High-tech Internet Start-ups in India.
5. Susan Coleman & Dafna Kariv: Creating the Social Venture.
6. Priyanka Sharma Gurnani: Women Entrepreneurship: Emerging Dimensions of Entrepreneurship in India.

CC 305: INTERSHIP DISSERTATION & COMPREHENSIVE VIVA VOCE

Objective:

The objective of this course is to give a practical exposure to the participants regarding the functioning of the business organisations by taking up a project during the tenure of the Internship and going through a practical problem of that organisation.

Course Contents:

The participants will be required to undergo a vocational training of 6-8 weeks in any business/commercial organisation of national /international repute. They will be required to have an orientation of the enterprise and/or identify one of the practical problems, study the variables through primary/secondary data, report the research findings & conclusion on the basis of data analysis and give certain suggestions for future.

The Dissertation submitted by the participants will be evaluated by at least one external and one internal examiner as per the rules. The candidate will have to make an oral presentation on his practical work with or without help of PPT and will appear in a Viva-voce conducted in the department/institute or on-line as decided by the university.

Outcome:

Critical Thinking, Business Analysis, Problem Solving and Innovative Solutions
The graduates are expected to develop skills on analysing the business data, application of relevant analysis and problem solving and reporting in functional area of management such as Marketing, Finance or Human Resource Management.

SEMESTER IV

CC 401: STRATEGIC MANAGEMENT

Course Objective:

The objective of this course is to impart an understanding of the comprehensive process of top management of a business enterprise so as to develop the ability to analyse business problems and provide an opportunity to experience the process of decision making.

Course Contents:

UNIT –I Introduction
Business Policy Nature, Importance, Purpose & Objective. Concept of Strategy, Mission Policy, Purpose Objective, Goal & Tactics, Strategic Management an Overview.

UNIT –II Strategy Formulation
Environmental Appraisal: Mega, Micro & Relevant, Organisational Appraisal, SWOT Analysis, ETOP, OCP, & SAP Profiles, Environment Scanning & Sources of Information.

UNIT –III Strategic Alternative & Choice
Various Strategic Alternative, Grand Modernisation, Diversification, Integration, Merger, Takeover, Joint Venture, Turn Around, Divestment & Liquidation, Strategic Choice and Process.

UNIT –IV Strategic Implementation
Issues involved, Project & Procedural Implementation, Resources Allocation, Structural, Functional & Behavioural Implementation.

UNIT –V Strategic Evaluation & Control
An overview, nature and importance of Strategic Evaluation. Participant and Barriers in Strategic Evaluation. Requirements for Effective Evaluation. Operational Control; Premise Control, Implementation Control and Strategic Surveillance, Techniques of Strategic Control.

Outcome:
Domain Knowledge, Global Approach, Social Responsiveness and Ethics
The course gives a picture of how companies determine their long term goals and adapt course of action by appropriately allocating the resources. This will develop responsiveness to contextual social issues, problems and exploring solutions, understanding business ethics. The graduates will be able to analyze the business problems in a comprehensive way and strategize business decisions pertaining to problem across the apex level of management.

Suggested Readings:

1. Kazmi Azhar, Strategic Management, New Delhi, TMH.
2. Drucker P, Changing World of the Executive, New York.
3. Prahalad CK, Competing for Future. Boston, Harvard Business School Press.
4. John A. Pearce, Richard b. Robinson & Amita Mital: Strategic Management.
5. M. A. Carpenter, W. G. Sanders & Prashant Salwan: Strategic Management

The list of cases and specific references including recent articles will be announced in the class at the time of launching of the course.

CP 402: MANAGEMENT INFORMETION SYSTEM

Course Objective:
The objective of the course is to develop the basic understanding of the decision support system of the artificial intelligence for business organization.

Course Contents:

UNIT I: Introduction to MIS
Management Information system: Definitions: Basic concepts Frameworks- Major Trends in Technology, Applications of Information Technology, System & Design: System Development Initiative Different Methodologies – Life Cycle & prototype approach role of MIS at various managerial levels, viz operational, planning and control.

UNIT ll: Structure of MIS.
Systems Approach to MIS. Operating element of a MIS, MIS and Decision making. MIS structure on the basis of Management activity and organisastional functions, Synthesis of MIS structure evaluation.

UNIT lll: Data Management & Information Handling.
Need of Information: Level of Information , Handling: Characteristics of Information at various control levels , advantage of computerization; Data flow diagram , Data dictionary , Data Base management and Word Processing ; Electronic Spreadsheet and its managerial application .

UNIT IV: Decision Support System (DSS)
Characteristics, Structure and Classes of DSS , DSS as an aid to Decision Making , Support for intelligence , Design and choice , Decision trees , Approaches to development of DSS.

UNIT V: Managerial Application of Computers
Use of Computers in Management functions, viz Finance, Marketing and Operations etc. Computer based Financial System: Financial analysis and Planning, Financial Management Software. Computer based Inventory system: computerized Inventory Management, Inventory system Design.
Computer based HRM: System design, Data requirement and use of computers in HRM .

Outcome:
Critical thinking, Business Analysis, Problem Solving and Effective Communication
Understanding the Information systems used at different levels for processing large amount of data will promote problem solving capacity, critical thinking and analytical skills and thereby innovative solutions to the problem of bulk data processing will be generated. The graduates are expected to make the best use of computer technology in handling the information at different levels of management to take decisions. Competency in MIS will help graduates to ensure better communication and connectivity throughout the organization across all levels of management.

Suggested Readings:

1. David Olson : Management Information System
2. Mudrick, Ross : Information Systems for Modern Management
3. Andrew P : Decision Support System Engineering, Sage
4. Hitesh Gupta : Management Information System
5. D. P. Goyal : Management Information System: Managerial Perspectives.

The list of cases and specific references including recent articles will be announced in the class at the time of launching of the course.

DCE 403 A: INTEGRATED MARKETING COMMUNICATIONS

Course Objective:
The aim of the paper is to acquaint the students with concept, techniques and give experience in the application of concept for developing an effective marketing communication strategy and its execution.

Course Contents:

UNIT I : Introduction
Process of Marketing Communication, Enhancing Brand Equity through Integrated Marketing Communication (IMC). Corporate Communication, Communication Mix, Role of Advertising & Promotions in Segmentation, Targeting & Positioning. Stimulating of Primary & Selective Demand, DAGMAR approach.

UNIT II : Advertising as a Communication
Definition, Objectives, Functions and Classification of Advertising. Advertising vs other forms of Mass Communication, Determination of Target Audience: Building of Advertising Programme-Message, Headlines, Copy, Logo, Illustration, Appeal, Layout: Campaign Planning: Copy Testing: Pre Test &Post Test, Ad Effectiveness. Ethics and truth in advertising.

UNIT III : Advertising Media & Ad Agency
General and Special Characteristics of different Advertising Media. Media Planning and Media Strategy, Media Tactics: Media Class, Vehicle, Option and Timing Decision, Media Buying. Traditional vs Modern Media: Online & Mobile Advertising, Social Media for Advertising & Promotion. Function of a modern agency, functions of the advertising department and advertising manager, Advertising Budget-Approaches and Procedures for determining the size of the budgets, characters of items to be charged to advertising.

UNIT IV : Digital & Social Media Marketing
Evolution of Digital Marketing, Digital Marketing Landscape, Search Engine Marketing, Social Media Marketing: Strategy & Customer Engagement, Affiliate Marketing & Strategic Partnerships, E-mail Marketing and Content Strategies. Data Analytics: Web Analytics, Social Listening & Social Media Analytics. Integrating Digital & Social Media Strategies.

UNIT V : Sales Promotion
Consumer Oriented Sales Promotion and Trade Oriented Sales Promotion. Samples, Coupons, Deals, Premiums and other emerging tools of Sales Promotion, Integrating Sales Promotion with Integrative Marketing Communication Strategies. Word of Mouth Influence & Sponsorships, POP Communication & Signage.

Outcome:
Business Environment and Domain Knowledge
The graduates will be able to learn various advertising and promotional tools and their importance in attracting the customers. This will also hone their creativity, analytical and communication skills which they are expected to display in developing and managing effective product promotion with the use of appropriate media.

Suggested Readings:

1. Aaker David a. Advertising Management, 4th Ed. PHI, New Delhi.
2. Ogilvy, David Lgilvy on Advertising London, Lonfman.
3. Sontakki : Advertising Management
4. Mohan M : Advertising Management

The list of cases and specific references including recent articles will be announced in the class at the time of launching of the course.

DCE 403 B: PROJECT APPRAISAL & FINANCE

Course Objective:
The basic purpose of this course is to understand the framework for evaluating Capital expenditure Proposals, their planning & management in the review of the projects undertaken.

Coarse Contents:

UNIT I : Introduction

Generation and Screening of Project Idea; Capital Expenditure; Importance & Difficulties. Project Negotiation.

UNIT II : Project Analysis

Market demand & situational analysis; technical analysis; Managing of project risk; & market risk; social cost benefit analysis.

UNIT III : Project Management

Multiple Projects & constraints; Network Techniques for Project Management: Project Review & Administrative Aspects.

UNIT IV : Project Financing

Overview and structuring of Project Financing. Project Financing in India; Problem of time & cost overrun in public sector enterprises in India.

UNIT V : Project Appraisal

Assessment of tax burden of various projects, making comparative analysis; Environmental appraisal of projects-Financial & Technical Environment.

Outcome:
Critical thinking, Business Analysis, Problem Solving and Innovative Solutions
The participants will acquire skills for setting goals within a realistic budget and time. They are expected to play a lead role in planning, executing, monitoring and controlling the projects by ensuring their completion in a timely fashion and within budget.

Suggested Readings:

1. Chandra, Prasanna, Projects: Preparation, Appraisal , Budgeting & Implementation.
2. Ahuja, G.K & Gupta, Ravi, Systematic Approach to Income Tax Allahabad Bharat Law House.
3. Bhalla V.K. Modern Working Capital Management, New Delhi, Anmol.
4. Bhalla V.K., Financial Management & Policy II Ed. New Delhi Anmol.
5. Dhankar, Raj S. Financial Management of Public Sector Undertaking, New Delhi, West Ville.

The list of cases and specific references including recent articles will be announced in the class at the time of launching of the course.

DCE 403 C: COMPENSATION & BENEFITS MANAGEMENT

Course Objective:
The course is designed to promote understanding of issues related to the compensation or rewarding Human Resources in the corporate sector, public services and other forms of organizations and to impart skills in designing, analyzing and restructuring reward management system, policies and strategies.

Course Contents:

UNIT I: Compensation Theories & Practices
The market forces of Demand and Supply: The concept of demand for and Supply of Labour, Effectiveness of the forces of Demand and Supply, Competitive Imperatives; Perfect and Imperfect competition, Conceptual and Theoretical Understanding of Economic Theory related to the Reward Management: classical, non-classical and modern theory, Demand and supply theory, competitive theory, Productivity, Bench Marking.

UNIT II: Compensation Methods
Determination of Inter and Intra-Industry Compensation Differentials, Internal and External Equity in Compensation systems; Understanding Tools Used in Designing, Improving and Implementing Compensation Packages.

UNIT III: Compensation Packages
Compensation Design for Specific Type of Human Resources like Compensation of Chief Executives Senior Managers, R&D Staff etc. Understanding Different Components of Compensation Packages like Fringe Benefits, Incentives and Retirement Plans.

UNIT IV: Code on Wage 2019
Preliminary, Minimum Wages, Payment of Wages, Payment of Bonus, Advisory Board, Payment of Dues, Claims & Audit, Inspector cum Facilitator, Offences & Penalties.

UNIT V: Code on Social Security 2020
Preliminary, Social Security Organisations, Employee Provident Fund, Employee State Insurance Corporation, Gratuity, Maternity Benefit, Employee Compensation, Social Security & Cess in Respect of Building & Other Construction Workers, Social Security for Unorganised Workers, Finance & Accounts, Authorities, Assessments, Compliance & Recovery, Offences & Penalties, Employment Information & Monitoring.

Outcome:
Domain Knowledge, Critical Thinking and Problem Solving
This course offers understanding of various external factors affecting the administration of wage and salary**.** The graduates will be acquainted with appropriate ways to analyze and determine the salary, incentives and benefits that employees receive in the organization. This will improve their critical thinking & problem solving skills. They are expected to design and offer fair and attractive pay packages and benefits to the employees in compliance with relevant legislations and paying capacity of the organization when they find the decisional role in the organisation.

Suggested Readings:

1. Srivastava S.C. Industrial Relations and Labour Laws . New Delhi. Vikas.
2. Malhotra OP The Law of Industrial Disputes. Vol. I & II Bombay.
3. Seth DD, Industrial Disputes Act 1947, Vol. I & II Bombay.
4. The Gazette of India (Extraordinary 8 Aug 2019, 29 Sept 2019)

The list of cases and specific references including recent articles will be announced in the class at the time of launching of the courses.

DCE 404 A: INTERNATIONAL MARKETING

Course Objective:
The basic objective of this course is to acquaint the students with environmental, procedural, institutional and decisional aspects of international marketing.

Course Contents:

UNIT I: Introduction

International Marketing-Definition, Concept and Setting, Distinctions between international trade, Marketing and Business: Economic Environment of International Marketing, International Institutions-Word Bank, IMF, UNCTAD, WTO.

UNIT II: Trade Barriers & Blocks

Fiscal and Non-fiscal Barrier, Non-tariff Barriers, Trading Partners - Bilateral Trade Agreements, Commodity Agreements, Customs union, Common markets, Free Trade Zones, Economic Communities.

UNIT III: Export Management

India and Word Trade , Import and Export Policy , Direction and Quantum of India's Exports; Institutional Infrastructure for Exports Promotion , Export Promotion Councils , Public Sector Trading Agencies , ECGC.

UNIT IV: Export Procedures and Documentation

Procedure and Documents – Registration of Exporters, Export Quotations, Production and Clearance of Goods For Exports, Shipping and transportation, Insurance, Negotiation of Documents. Instruments of Payments – Open Account, Bills of Exchange: Letter of Credit Export Finance.

UNIT V : International Marketing Mix

International Marketing Mix- Identification of Markets. Product Policy, International Product Life Cycle, Promotion Strategy, Pricing Strategy and Distribution Strategy.

Outcome:
Business Environment and Domain Knowledge and Global Exposure and Cross Cultural Understanding
This course will improve the awareness on various social, political and economic factors affecting the international business environment. The graduates of this course will be able to learn concepts of marketing in a global perspective which will enable them to identify, explore opportunities in the field. This course demonstrates a global outlook with the ability to identify global businesses and cross cultural understanding.

Suggested Readings:

1. Bhattacharya, Export Marketing: Strategies for Success, Global Business Press, New Delhi.
2. Rathore BS: Export Marketing
3. Varshney & Bhattacharya: International Marketing

The list of cases and specific references including recent articles will be announced in the class at the time of launching of the course.

DCE 404 B: TAXATION

Course Objective:
The objective of the course is to acquaint the participant with the implication of tex structure and corporate profit planning in operational as well as strategic term.

Course Contents:

UNIT I : Income Tax
Basic Concepts of income tax, Filing of returns, Self assessment of Tax, Tax deduction at source, tax rebates and relief, Computation of Tax Liability.

UNIT II : GST
Provisions & Slabs, GST Network, GST Service Providers, GST: Assessment, Audit and Appeals. Electronic Way Bills and GST Return.

UNIT III : Corporate Taxation
Residential Status of a Company. Computation of Income under different heads of income, Set off and carry Forward of losses. Tax Planning and Location of undertaking, Types of activity, Ownership Pattern, Tax planning regarding Dividends Policy, Issue of Bonus Shares, Inter operate Dividends and Translate, Tax Planning Relating to Amalgamation and Merger of Companies.

UNIT IV : Tax Considerations in Respect of specific management decision
Tax considerations in respect of specific managerial decision like make or buy, Own or lease, Close or Continue Sale in Domestic Market or Exports. Replacement and Capital Budgeting decisions etc.

UNIT V : Taxing and Strategic Alliances
Tax Planning in respect of managerial remuneration, Foreign collaboration and joint ventures, implications of avoidance of double Taxation agreements.

Outcome:
Domain Knowledge, Critical thinking, Business Analysis and Problem Solving
This course will improve the awareness of graduates on local and global business environment related to taxation and the associated factors that affect the tax planning decisions. The graduates will elicit knowledge about tax structures and tax planning. It also promotes critical thinking, analytical thinking and problem solving. This can be of great help if they wish to specialize in taxation.

Suggested Readings:

1. Ahuja, GK & Gupta, Ravi Systematic Approach to Income Tax, Allahabad, Bharat Law House..
2. Singhania, VK Direct Taxes: Law and Practices, Delhi, Taxman.
3. Shrinivas, EA, Handbook of Corporate Tax Planning, New Delhi, TMH.

DCE 404 C: ORGANISATIONAL CHANGES AND DEVELOPMENT

Course Objective:
The objective of this paper is to prepare students as organizational change facilitator using knowledge and techniques of behavioural science.

Course Contents:

UNIT I: Introduction

Organization Change- An overview, Approaches to problem Diagnosis, some major technique of Planned Change, Steps in OD, general OD Competencies, OD skills.

UNIT II: O.D. Intervention-I

An overview of OD Intervention, Classification of OD, Team Interventions, Inter-Group and the Party Peace Making Interventions. Training Experiences; Behaviour Modelling and Life.

UNIT III: O.D. Intervention-II

Comprehensive Intervention; Confrontation Meeting, Survey Feedback, Strategic Management Activities and Grid OD, Structure Interventions- Job Design, Job Enrichment, MBO, Quality Circle, QWL, TQM, Parallel Learning Structure.

UNIT IV: Key Consideration & Issue in OD

Issue in Consultant- Client Relationship, Power and Politics in OD, System Ramification Resistance to Change, leadership and Labour Relations.

UNIT V: Research on OD

Assessing effect of OD, Recent Development in research on OD, Future of OD, Condition optimal success of OD.

Outcome:
Domain Knowledge and Social Responsiveness
Gaining understanding of organisational changes will allow the graduates to learn new skills, explore new opportunities and exercise creativity in ways that ultimately benefit the organization. The graduates will elicit knowledge about different types of change and ways to manage that change in the organization. They are expected to develop responsiveness towards the change by exploring the opportunities and strategizing decisions in the favour of organization.

Suggested Readings:

1. French & Bell : Organizational Development, PHI.
2. Bennies WG : Organizational Development
3. Pareek U : Managing Organization Change.

The list of cases and specific references including recent articles will be announced in the class at the time of launching of the courses.

GE 405: MANAGING BANKS & FINANCIAL INSTITUTIONS

Course Objective:

The objective of this course is to give an overview of products & services and recent trends in operations & working system of banks and financial institutions.

Course Structure:

Unit I : Introduction

Introduction to Banking and Finance: Banking Regulation Act, Principles of Banking, Financial system and Economic Development, Flow of fund in Indian Economy, Difference between Financial Market and Product Market.

Unit II : Short Term and Long term Financial Market

Financial Markets: An Overview, Call Money Market, Treasury Bills Market, REPO Market, CBLO Market, Commercial Paper Market, Market for Certificate of Deposits, Bankers' Acceptance, Pricing Money Market Instruments, Bond Market, Equity Stock Market and Private Equity Market.

Unit III Functioning of Banks and Financial Institutions

SEBI and its Regulation, Financial Market & Institution, Depository Institution, Know Your Customer (KYC) Norms, Guidelines, Documentation, Verification and Transaction Monitoring. Commercial Banks, Industrial finance & Term Lending, Bank Credit and Mortgages Market. NPA-norms and management; Documentation-types of documents, documentation procedures, stamping of documents.

Unit IV : Technology in Banking

Information Technology in finance and service delivery; Impact of technology on Banks; Protecting the confidentiality and secrecy of customer data; Banking software-ALPM, Total Bank Mechanisation, Core Banking System, Internet Banking, Anywhere Banking, Electronic Funds Transfer, NEFT, RTGS, SWIFT.

Unit V : Investment Services

Mutual Funds: Types and its Performance Measurement, Chit funds Organization, Life, General and Health Insurance. Pension Funds, Factoring and Forfeiting.

Outcome:

Domain Knowledge & Value Addition

This course will improve the awareness of graduates on banking system and working of financial institutions. It will be value addition to their knowledge as this sector is full of employment opportunity for the fresher's. This course will make them industry ready for placement in Banks & Financial Institutions.

Suggested Readings:

1. Practice of Banking Advances by Bedi and Hardikar
2. Law and Practice of Banking by P. N. Varshney and Gopal Swaroop
3. Banking- Theory, Law and Practice by Gordon & Natarajan
4. Banks and Institutional Management by Vasant Desai
5. Fundamentals of Life Insurance by Kaninika Mishra, PHI.
6. Fundamentals of Investments by Vanita Tripathi

Awadhesh Pratap Singh University
Rewa (M.P.)
Structure of Syllabus for Ph.D Course Work (Management) 2018-19 Onwards
(As per Ordinance No. 11 Doctor of Philosophy)

Paper Code	Name of Theory Papers	Credits	Maximum Marks (Theory + Internal Assessment)	Minimum Passing Marks
Paper I	Research Methodology	4	100 (80+20)	55
Paper II	Review of Published Research in the Relevant Field	3	100	55
Paper III	Computer Applications	3	100(80+20)	55
Paper IV	Advance Course in Management	3	100(80+20)	55
Paper V	Comprehensive Viva-Voce	3	100	55
	Total	16 Credits		

Signature of Members of Board of Studies

Ph.D (Management)
Paper -I
Research Methodology

Time : 3 Hours. **Theory Paper: Max.80**
Credit points:3 **Internal Assessment: Max. Marks: 20**
Minimum Passing Marks: 55

Note: The paper setter is required to set two questions from each unit and the students will be required to attempt one question from each unit. All questions will be of equal marks.

Unit I: An Introduction to Research Methodology
Meaning, Objectives, Significance, Importance and scope of research in management; Review of Literature.

Unit II: Research Design
Meaning, Need and Features of a Good Research Design; Types of Research; Sampling Design; Measurement and Scaling Techniques; Hypothesis: Meaning and its formulation.

Unit III: Data Collection
Methods and Types of Data Collection; Processing of Data- Editing, Coding, Classification, Field Work and Tabulation of Data.

Unit IV: Analysis of Data
Utility and Importance of Statistics in Research; Measures of Central Tendency and Dispersion; Measure of Asymmetry (Skewness); Correlation and Regression; Z- test; t- test; F- test; Chi- Square test, ANOVA.

Unit V: Interpretation and Report Writing
Meaning, Technique and Precautions in Interpretation; Significance and Different steps in Report Writing; Layout of the Research Report; Plagiarism and Paraphrasing, Research Related Software like SPSS and others.

Suggested Readings:

1. Kothari C.R, Research Methodology, New Age Publications Ltd, New Delhi
2. Gupta S.P, Statistical Methods, 30 th ed, S.Chand , New Delhi
3. Beri G. C, Marketing Research, Pearson Publications, New Delhi.
4. Malhotra Naresh, Marketing Research: An Applied Orientatio, Sixth edition, Pearson Publication.
5. Singh , Yogesh Kumar, Fundamental Of Research Methodology And Statistics, New Age International, 2006
6. Rajen K. Gupta, Richa Awasthy, Qualitative Research in Management: Methods and Experiences, SAGE Publications .

Signature of Members of Board of Studies

Paper -II
Review of Published Research in the Relevant Field

Theory Paper: Max.80
Internal Assessment: Max. Marks: 20
Minimum Passing Marks: 55

Note: The paper setter is required to set two questions from each unit and the students will be required to attempt one question from each unit. All questions will be of equal marks.

The course on review of published research in the relevant field will be undertaken under the supervisor or the regular teacher of the centre of the coursework and the candidate has to consult the library or other resources to carry out the literature review. At the end of the coursework, the candidate has to submit a brief report on the literature review for evaluation which will be done by the two examiners.

Signature of Members of Board of Studies

Paper -III

Computer Applications

Time : 3 Hours. **Theory Paper: Max.80**
Credit Points: 3 **Internal Assessment: Max. Marks: 20**
Minimum Passing Marks: 55

Note: The paper setter is required to set two questions from each unit and the students will be required to attempt one question from each unit. All questions will be of equal marks.

Unit-I Basics of Computer & GUI Based Operating System

Computers:- An Introduction, Components of Computer System: - CPU, Input and Output Devices, Storage Media, Concept of Hardware and Software.

Operating System:-An Introduction, Basics of Operating System, The User Interface, Operating System Simple Settings, File and Directory Management, Types of files.

Unit-II: Word Processing & Power Point

Word Processing :-Introduction, Word Processing Basics, Opening and Closing Documents, Text Creation and Manipulation, Formatting the Text, Table Manipulation, Working with various shortcut keys: Select, Find, Replace, Cut, Copy and Paste text.

Making Small Presentations: - Using PowerPoint, Creation of Presentation, Preparation of Slides. Providing Aesthetics: Enhancing Text Presentation, Working with Colour and Line Style, Adding Effects, Adding Tables, Picture, Photos, Movies and Sound. Adding Headers and Footers, Presentation of Slides, Slide Show.

Unit-III: Spread Sheet

Elements of Electronic Spread Sheet:- Opening of Spread Sheet, Addressing of Cells, Printing of Spread Sheet, Saving Workbooks, **Manipulation of Cells**:- Entering Text, Numbers and Dates, Creating Text, Number and Date Series, Editing Worksheet Data, Inserting and Deleting Rows, Column, Changing Cell Height and Width, **Function and Charts**:-Using Formulas, Function, Charts. Statistical Calculation in Excel Sheet.

Unit- IV Computer Communication and Internet

Introduction, Basics of Computer Networks:- Local Area Network (LAN), Wide Area Network (WAN), **Internet:-** Concept of Internet, Basics of Internet Architecture, **Services on Internet:-** World Wide Web and Websites, Communication on Internet, Internet Services, Web Browsing Software, Search Engines, Printing Web Pages, Basics of E-mail, Email Addressing, Using E-mails, Creating, Sending and forwarding an E-mail.

Unit- V Management Information System

Conceptual Framework of Management Information System, Decision Support System, MIS and Decision Making, Use of Computers and Information Technology in Effective Management.

Suggested Readings:

1. Sangeeta Panchal,Alka Sabharwal, Foundations of Information Technology Coursebook 9: Windows 7 and MS Office 2007 (With MS Office 2010 Updates).

2. Prof. Satish Jain, M. Geetha: Complete guide for Step-by-Step Learning Quick and Easy Reference for learning MS Office 2010

3. Priti Sinha, Pradeep Sinha Computer Fundamentals 6th Edition 6th Edition.

Signature of Members of Board of Studies

Paper -IV
Advance Course in Management

Time : 3 Hours. **Theory Paper: Max.80**
Credit Points: 3 **Internal Assessment: Max. Marks: 20**
Minimum Passing Marks: 55

Note: The paper setter is required to set two questions from each unit and the students will be required to attempt one question from each unit. All questions will be of equal marks.

Unit I: General Management

Management in 21st Century, Business Process Re-engineering, Corporate Governance, Corporate Social Responsibility & Business Ethics, Benchmarking, Transformational Leadership, Team Building, Overview of Strategic Management.

Unit II: Human Resource Management

360 degrees Appraisal, Flexi Timing, Emotional Intelligence, Organizational Excellence, Learning Organization, Knowledge Management, Employee Empowerment, Potential Appraisal & Talent Management, Succession Planning, Career Planning and Management, Employee Engagement and Retention Strategies.

Unit III: Marketing Management

Marketing Strategy, Advertising and Sales Promotion, Consumer Behaviour, Creating & Delivering Customer Value, Marketing in a Liberalised Economy, Retail Management, One Roof Concept, Mall Culture, Organised Retail, On-line and Mobile Marketing, Multi Level Marketing, Green Marketing, Rural Marketing, Relationship Marketing & CRM, Social Marketing,

Unit IV: Financial Management

Activity Based Costing, Economic Value Added, Micro Finance, Derivatives Market in India, Stock & Commodity Markets, Corporate Portfolio Analysis in India, NBFC and SIPs , Credit Ratings, DIIs, FDIs & FIIs, Foreign Exchange Market in India, Recent Changes in Global Financial Markets.

Unit V: Operations Management

Enterprise Resource Planning, Business Process Outsourcing, Kaizen, Six Sigma, Just in Time Inventory, Flexible Manufacturing System, Quality Assurance & Quality Standards, ISI & ISO, Concept TQM, Supply Chain Management & Logistics.

Suggested Readings:

1. Gupta C K, Sharma S, Financial Management, Sahitya Bhawan Publications, New Delhi,
2. K.S. Thakur, Emerging Issues in Business Management Paperback – 30 Jul 2008
3. Charle B.Wankel. 21st Century Management: A Reference Handbook (21st Century Reference) 1st Edition
4. Daniel Goleman, Emotional Intelligence: Why it Can Matter More Than IQ Mass Market 2016,
5. Philip T. Kotler, Marketing Management Dec 2014, Prentice Hall,
6. S. Chary, Production & Operations Management – 16 Jul 2004, Tata Mac Graw Hill.

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Paper -V

Comprehensive Viva Voce

Max. Marks: 100

Credit Points: 3 **Minimum Passing Marks: 55**

A comprehensive viva will be conducted at the end of the coursework. The candidate will be orally examined on the above four papers.

Signature of Members of Board of Studies

DEPARTMENT OF COMMERCE

AWADHESH PRATAP SINGH UNIVERSITY, REWA

Syllabus CBCS

B.Com. (Hons.)

Ist and IInd Semester System 2020-21

IIIrd and IVth Semester System 2020-21

Registrar

Awadhesh Pratap Singh University

Rewa(M.P.)

SCHEME OF EXAMINATION

FOR B.COM (HONS.)

CBCS PATERN

2020-21 Onwards

Semester	Paper No.	Nomenclature	Type of Course	Theory/External Assessment		Internal Assessment		Total Marks	Credit Points
		Subjects		Max.	Min.	Max.	Min.		
	C-1	Financial Accounting	Major	60	24	40	14	100	6
Ist Sem.	M-1	Business Organisation and Communication	Minor	60	24	40	14	100	6
	G-E-1 G-E-2	Business Economics Or Banking & Insurance	GEC	60	24	40	14	100	4
	AEC	English Or Environmental Studies	AEC	60	24	40	14	100	4
IInd Sem.	C-2	Advanced Financial Accounting	Major	60	24	40	14	100	6
	M-2	Business regulatory framework	Major	60	24	40	14	100	6
	GE-1 GE-2	Business Maths Or Indian Economy	GEC	60	24	40	14	100	4
	AEC	Hindi Or Environmental Studies	AEC	60	24	40	14	100	4
IIIrd Sem.	C-3	Corporate Accounting	Major	60	24	40	14	100	6
	M-3	Business Statistics	Minor	60	24	40	14	100	6
	GE-1	Financial Management		60	24	40	14	100	4
	GE-2	International Business	GEC		24		14		
	V.C.	E-Accounting and Taxation with GST Or Personal finance and Planning	V.C.	60	24	40	14	100	4
IVth Sem.	C-4	Income Tax Law and Practices	Major	60	24	40	14	100	6
	M-4	Cost Accounting	Minor	60	24	40	14	100	6
	GE-1	Management Accounting Or Human Resource Management		60	24	40	14	100	4
	V.C.	Investment Management Or Digital Marketing	V.C.	60	24	40	14	100	4

Programme Outcomes

B. Com. Hons (CBCS)

PROGRAMME

OUTCOME

PO #	PROGRAMME OUTCOME
PO1	**Critical Thinking:** Take corrective actions after identifying the characteristics of accounting frame our advance thinking and actions to check out the outcome as per these assumptions are correct and valid, and look at our ideas and accounting decisions (intellectual, organizational, and economical) from different perspectives.
PO2	**Effective Communication:** Speaking, reading, writing and listening clearly from person through out an electronic media in Business and Communication full out of the world by connecting people, ideas, books, media and high technology.
PO3	**Social Interaction:** Though some light in perception towards view of others, mediate disagreements and help to reach conclusions into group settings.
PO4	**Ethics:** To recognize different value and systems of Accounting and Management to understand the moral dimensions of the pootiwar decisions and to accept the responsibilities.
PO5	**Environment and Sustainability:** To understand about the issues of environmental, subject matter and sustainable developments.
PO6	**Self-directed and Life-long Learning:** To gain acquire the ability and to engage in independent and life-long learning in the broadest subject matter of Accounting principles, Managerial Decision and technological changes.

PROGRAMME SPECIFIC OUTCOME (B. Com. Hons)

PSO #	PROGRAMME SPECIFIC OUTCOME
PSO 1	To gain a functional knowledge of theoretical concepts and practical aspects of commerce and their uses in the day-to-day era.
PSO 2	To integrate the achieved knowledge with several contemporary and evolving areas in commerce like regarding, classifying, analyzing, summering, inter-netting and business transactions towards the subject matter.
PSO 3	To understand, analyze, plan and to implement qualitative as well as quantitative analytical phenomenon-based on problems in commercial managerial activities.
PSO 4	To provide opportunities in academics, research, Industries, trade and commerce into an efficient manner.

Course Outcome (COs) (B. Com. Hon's)

S.No.	Course Name	Course Code
Semester-I		
101	**Financial Accounting**	**BC-101**
	Course Out Come	
CO1	Gain the conceptual clarity about theoretical framework of accounting.	
CO2	Understand the process of double entry accounting system and gain the knowledge of passing journal entries.	
CO3	Acquire the basic understanding of final accounts of small/non-corporate firms.	
CO4	Calculate the amount of depreciation and valued the investment price of different type of marketable investment.	
CO5	Acquire the basis ability of preparing Branch and Departmental accounts.	
102	**Business Organization and Communication**	**BC-102**
	Course Outcome	
CO1	Understand the basics of the business	
CO2	Imbibe how any business can be organized Successfully	
CO3	Elucidate how communication plays an important role in modern business scenario	
103	**Business Economics**	**BC-103**
	Course Outcome	
CO1	Expose the students of Commerce to the basis concept of Business economics and to inculcate the analytical approach to subject matter.	
CO2	Stimulate the students' interest in various economic theories.	
CO3	Guide the students to understand the real world Market situation.	
CO4	Understand Practical application of concepts.	
	Generic Elective Course-1	
103	**Banking and Insurance**	**BC-103**
	Course Outcome	
CO1	Expose the students of Commerce to the basic concept of Banking and Insurance to inculcate the analytical approach to subject matter.	
CO2	Stimulate the students' interest in various banking and insurance theories.	
CO3	Guide the students to understand the real situation of insurance.	
CO4	Understand Practical application of concepts.	

104	**Banking and Insurance**	**BC-104**
Course Outcome		
CO1	understand the meaning and scope of Banking with functions of Banks and their role into banking.	
CO2	fanuliarize with the operations of Banking and various services and benefits.	
CO3	get an insight of lending operations off banking and causes of NPAs into banking sector.	
CO4	acquaint with the concept of insurance through functions and fundamental principles of insurance.	
CO5	understand the types of Insurance Regulatory framework of Insurance.	
105	**Ability Enhancement Course**	**BC-105**
Course Outcome		
CO1	Prepare for various competitive exams by developing their English language competence.	
CO2	Promote their comprehension skills by being exposed to a variety of texts and their interpretations.	
CO3	Build and enhance their vocabulary.	
CO4	Develop their communication skills by strengthening grammar and usages.	
CO5	Inculcate values which make them aware of national heritage and environmental issues, making them responsible citizens.	
106	**Environmental Education**	**BC-106**
Course Outcome		
CO1	To understand various aspects of life forms. Ecological processes, and the impacts on them by the human during Anthropogenic era.	
CO2	To build capabilities to identify relevant environmental issues, analyze the various underlying causes, evaluate the practices and policies, and develop framework to make inform decisions.	
CO3	To develop empathy for all life forms, awareness, and responsibility to word environmental protection and nature preservation.	
CO4	To develop the critical thinking for shaping strategies such as; scientific, social. Economic. Administrative& iegal. Environmental protection.	

	Conservation of biodiversity environmental equity and sustainable development	
CO5	To prepare for the competitive exams.	
Semester : II		
201	**Advanced Financial Accounting**	**BCH-201**
Course Outcome		
CO1	Gain the conceptual clarity about Partnership accounting.	
CO2	Understand the concept of partnership firm and prepare accounts of dissolution of partnership firm.	
CO3	Learn the accounting process of Hire Purchase and Instalment Systems.	
CO4	Acquire the basic concept of preparing Royalty Accounts.	
CO5	Learn the basic concept of single entry system.	
202	**Business Regulatory Framework**	**BCH-202**
Course Outcome		
CO1	understand basic aspects of contract for making the agreements, contracts and subsequently valid business propositions/ the conceptual clarity about Partnership accounting.	
CO2	equipped about the legitimate rights and obligations under the Sale of Goods Act.	
CO3	Understand the fundamentals of internet based activities under the Information and Technology Act.	
CO4	Enable with skills to initiate entrepreneurial ventures as LLP.	
CO5	Learn how to pursue the consumer rights under the Consumer Protection Act.	
203	**Indian Economy**	**BCH-203**
Course Outcome		
CO1	understand the nature, shortcomings and potential of Indian economy.	
CO2	comprehend the importance and problem of different key sectors of economy.	
CO3	Analyze the various aspects of changing nature of Indian economy and economic policies.	
CO4	Develop analytical skills, interpret the economic events and visrealize the economic future of India.	

204	हिन्दी भाषा संरचना	**BCH-204**
Course Outcome		
CO1	उत्कृष्ट साहित्यक पाठों के अध्ययन से रूचि का विकास करना।	
CO2	सांस्कृतिक चेतना और राष्टीय भावना का विकास करना।	
CO3	भाषा–ज्ञान।	
CO4	सामान्य एवं विशिष्ट शब्दावली के अध्ययन द्वारा भाषा एवं संस्कृति बोध का विकास करना।	
CO5	प्रतियोगी परीक्षाओं हेतु तैयार करना।	
Semester : III		
301	**Corporate Accounting**	**BCH-301**
Course Outcome		
CO1	understand the process of issue of share and debenture.	
CO2	acquire the basic understanding of corporate Financial Statements.	
CO3	develop understanding of valuation of goodwill and shares.	
CO4	Calculate the amount of managerial remuneration.	
CO5	Understand the accounting for amalgamation and liquidate of companies.	
302	**Business Statistics**	**BCH-302**
Course Outcome		
CO1	Acquire a fair degree of proficiency in comprehending statistical data, processing and analyzing it, using statistics tools.	
CO2	Calculate statistical central tendency, deviations and coefficient of variance.	
CO3	Learn to measure of coefficient of skewness, correlation and regression equation.	
CO4	Develop an understanding of index number and their utility in daily life and stock market.	
CO5	Become aware of the pattern revealed by the time series data and use it to make predictions for future.	
303	**Financial Management**	**BCH-303**
Course Outcome		
CO1	understand the scope and objectives of financial management and risk vs. return.	
CO2	Evaluate methodology for decision making for long long terms investments.	
CO3	Understand financial decision and capital structure, theories and various costs incurred for raising capital.	

CO4	Understand the types of dividend decision and theories thereof.	
304	**International Business**	**BCH-304**
Course Outcome		
CO1	Know the concept of the International Business.	
CO2	Obtain the theoretical knowledge of International business.	
CO3	Achieve information relating to international business transaction.	
CO4	Know the historical background and implementation of GATT & WTO.	
305	**E-Accounting and Taxation with GST**	**BCH-305**
Course Outcome		
CO1	Know the concept of the E-Accounting.	
CO2	Obtain the theoretical and practical knowledge of Income Tax Act.	
CO3	Achieve information relating Computation of Taxable Income and Tax Liability.	
CO4	Know the historical background and implementation of GST Act.	
CO5	Know the concept of supply and information of Input Tax Credit.	
306	**Personal Financial Planning**	**BCH-306**
Course Outcome		
CO1	Know the concept of the Personal Financial Planning.	
CO2	Obtain the theoretical knowledge of Personal Financial Planning.	
CO3	Achieve information relating life insurance.	
CO4	Know the concept of investment and mutual fund.	
Semester : IV		
401	**Income Tax Law and practices**	**BCH-401**
Course Outcome		
CO1	understand the basic concepts of Income Tax Act and determine the Residential status of different persons.	
CO2	identify the five heads in which income is categorized and compute total income.	
CO3	understand clubbing procedures, aggregate income after set-off and carry forward of losses and deduction allowed under the income tax act and further to compute taxable income tax act and further to compute taxable income and tax liability of individuals.	
CO4	file online return.	

402	Cost Accounting	**BCH-402**
Course Outcome		
CO1	familiar with the concept of cost accounting.	
CO2	understand the relationship between cost and financial accounting.	
CO3	facilitating the idea and meaning of material and labour cost control in an industry with pricing issues.	
CO4	aware of the concept of various overheads occurring in the factory.	
CO5	expand his knowledge about remuneration and incentives.	
403	**Management Accounting**	**BCH-403**
Course Outcome		
CO1	Understand the basic concepts of management accounting.	
CO2	Understand the relationship between management and accounting.	
CO3	facilitating the idea and meaning of financial statements.	
CO4	Aware of the position of business through ratio analysis techniques.	
CO5	expand his knowledge about cash position and working capital changes.	
404	**Investment Management**	**BCH-404**
Course Outcome		
CO1	Understand the basic concepts of management.	
CO2	Understand the relationship between management and Investment.	
CO3	Facilitating the idea and meaning of Investment Management.	
CO4	Aware a business through the Risk & securities.	
CO5	Expand his knowledge about efficient market hypothesis.	
405	**Digital Marketing**	**BCH-405**
Course Outcome		
CO1	Understand digital marketing, importance thereof, meaning of web site and levels of web site, Difference between blog, portal & website.	
CO2	Learn about SMO (Social Media Optimization) like Facebook, Twitter, LinkedIn, Tumblr, Pinterest and other social media services optimization.	
CO3	understand paid tools like Google AdWords, Display advertising techniques.	

CO4	Learn and apply hands on experience on tools useful to SEO for analysis on website traffic, keyword analysis and learn Email marketing and Ad Designing.	
406	**Human Resource Management**	**BCH-406**
Course Outcome		
CO1	To explain the students and knowledge of HRM	
CO2	To develop among student various practices followed by Human Resource Management	
CO3	To create understanding about recent trends and introduction in HRM.	
CO4	To understand the concept of HR.	

Awadhesh Pratap Singh University, Rewa (M.P.)

Structure for UG Programme : UGC-CBCS

System (As per ordinance 14-A)

Paper offered by the Department of Commerce Under 4 Years CBCS Course of B.Com. Honours/Research

Part-A Introduction

B.Com. (Hons.) Ist Sem

S. No.	Papers Name	Unit	Credit	Course
1.	Financial Accounting	5	6	Major
2.	Business Organization & Communication	5	6	Minor
3.	Business Economics	5	4	Generic Elective
4.	English Language and Indian Culture	5	4	Ability Enhancement Course (AEC)
			Total-20 Credit	

Awadhesh Pratap Singh University, Rewa (M.P.)

Structure for UG Programme : UGC CBCS System

(As Per Ordinance 14-A)

Papers Offered by the Department of Commerce Under 4 Years CBCS Course of B.Com (Honours/Research)

PART-A: INTRODUCTION

Program: UG	Class: B.Com (Honours/Research)	Semester : I	Session : w.e.f. 2021-22
Subject: Commerce			
1.	Course Code	……..(To be filled by Exam Cell)	
2.	Course Title	Financial Accounting	
3.	Course Type	Core Course-1 (Major Paper)	
4.	Pre-Requisite (if any)	No	
5.	Course I earning outcomes (CLO)	After successful completion of the course, the student shall be able to: • Gain the conceptual clarity about theoretical framework of accounting. • Understand the process of double entry accounting system and gain the knowledge of passing journal entries. • Acquire the basic understanding of final accounts of small/non-corporate firms. • Calculate the amount of depreciation and valued the investment price of different type of marketable investment. • Acquire the basis ability of preparing Branch and Departmental accounts.	
6.	Credit value	6(L)	

PART-B: CONTENT OF THE COURSE

Total No. of Lectures Tutorials (in hours per week): L-6		
Total No. of Lectures: L-90 (Lecture of one hour)		
Module	Topics	No. of Lectures
I	**Basic concepts and principals of Accounting :-** Meaning, Definition and Scope of Accounting, its Need, importance and Limitations, Users of Accounting Information, Branches of Accounting. Accounting Principles- Concepts and Conventions An Introduction to Accounting Standards. **Keywords: accounting Branches of accounting accounting principles. Conventions and accounting standards.**	15
II	**Double Entry System of Accounting (DES):** Concept and Definition, Process of DES, Various Stages of DES Accounting: Journal, Concept, Importance and Advantages, Types of Accounts and Rules of Journalizing, An Introduction to Subsidiary Books, Cash Book; Concept and importance, Preparation of Simple Cash Book. Concept of Ledger and Ledger Accounts, Trial Balance; Concept, Definition, Advantages and Limitations, Preparation of Trial Balance. **Keywords: double entry system, golden rules, journal entry, compound entries cash book, ledger and trial balance**	20
III	**Final Accounts with Adjustments:** Trading Account, Profit And Loss Account, and Balance Sheet, Concept and Preparation, Adjustments in Final Accounts- Concept of Adjustments in Final Accounts, Need and Necessity, Various Important Basic Adjustments, Concept and Calculations, Adjustments Related Journal Entries Final Accounts With Adjustment. Depreciation- Introduction, Objectives of Charging Depreciation, Accounting Principles of Depreciation, Depreciation methods. **Keywords: trading account, profit and loss account balance sheet and adjustment entries, Depreciation**	20
IV	**Investment Accounting:** Meaning, Types of investment, Purchase and sale of investment, Cum- interest and EX-interest transaction and calculations. **Branch Accounts :** Concept, Type of Branches, Accounting Procedure of Dependent, Independent and Foreign Branch. **Departmental Accounts:** Concept, Procedure of Departmental Accounts, Allocation of Common expenses and interdepartmental transactions **Keywords: cum-interest, ex-interest, investment Branch departments; foreign branch common expenses and interdepartmental transaction**	20
V	**Computerized Accounting by using any popular accounting software**: Creating a company, configure and feature setting. Creating accounting ledgers and groups, creating stock items and group, voucher entries with their maintenance generating reports of cash book, ledger accounts, balance, profit and loss account and balance sheet.	15
Note – Minimum 70% of numerical questions should be asked.		

PART-C: LEARNING RESOURCES

Textbooks, Reference Books, Other Resources
Suggested Readings:
Textbooks: 1. Shukla S.M., Financial Accounting, Sahitya Bhawan Publication, Agra (English and Hindi) 2. Shukla M.C. Advanced Accounts. Vol-I,-S. Chand & Co., New Delhi. (English and Hindi) 3. Maheshwari S.N. Financial Accounting. Vikas Publishing House, New Delhi. **Reference Book:** 1. Bhattacharyya K. Asish, Essentials of Financial Accounting PHI Learning Private Limited 2. Banerjee Ashok, financial Accounting, Excel Book Publication.
Suggestive digital platform web links
MOOCS-https://www.googleadservices.com https:www.my-mooc.com/en/categorie/accounting. NPTEL- https://onlinecourses.nptel.ac.in, https://nptel.ac.in /course
Suggested equivalent online courses

Part D: Assessment and Evaluation			
External Assessment (UE)	Max. Marks. 60	Min. Marks: 24	U.E. Time 3 Hours
Internal Assessment	Max. Marks. 40	Min. Marks. 14	
Total	100		

Awadhesh Pratap Singh University, Rewa (M.P.)

Structure for UG Programmc: UGC CBCS System

(As Per Ordinance 14-A)

Papers Offered by the Department of Commerce Under 4 Years CBCS Course of B.Com (Honours/Research)

PART-A: INTRODUCTION			
Program: UG	Class: B.Com (Honours/Research)	Semester: I	Session : w.e.f. 2021-22
Subject: Commerce L-90 (lecture of one hour)			
1.	Course Code		
2.	Course Title	BUSINESS ORGANIZATION AND COMMUNICATION	
3.	Course Type (Course/Discipline Specific elective/Generic Elective)	Minor-1	
4.	Pre-Requisite (If any)	Not required	
5.	Course Learning Outcomes (CLO)	After the successful completion of the course, students shall be able to: • Understand the basics of the business • Imbibe how any business can be organized Successfully • Elucidate how communication plays an important role in modern business scenario	
6.	Credit Value	6 (L)	

PART-B: CONTENT OF THE COURSE

Module	Topics	No. of Lectures
I	**INTRODUCTION :** Indian traditional businesses and their organizational structures. Concept of business, Trade, Industry and commerce-classification Relationship between Trade, industry and commerce-Business Organization-Concept, characteristic, Importance and Objective. Function of Business and Social Responsibility of a business Steps to Start an Enterprise.	20
II	**FORMS OF BUSINESS ORGANIZATION :** Business Organization-Classification- Factors Influencing the Choice of Suitable Form of Organization-Sole Proprietorship and Partnership- Meaning, Definition, Characteristics, Advantages. Co-operative Organization- Meaning. Functions and Limitation of Co-operative Societies. **ORZANIZATION OF COMPANIES :** Concept, Meaning, Formation, Characteristics and Significance of Private Company and Public Company. Multinational Companies (MNC's) and the Challenges of their organization in India	20
III	**COMMUNICATION:** Definition, Nature, Importance, Objective of Communication. Communication theories and process- Information theory, Interactive theory, Transaction Theory, Elements of Communication process. Barriers to Communication Linguistic Barriers, Psychological Barriers, Interpersonal Barriers, Cultural Barriers, Physical Barriers, Organizational Barriers.	20
IV	**WRITTEN COMMUNICATION :** Writing Techniques and Guidelines. Letter Writing Basis Principles. Purpose. Types of Business Letters, Report Writing. Types of Reports, Drafting of Reports. Oral Communication Speeches for Different Occasions, Guidelines For Effective Listening, Job Interview, Types of Information.	15
V	**MODERN FORMS OF COMMUNICATION :** E-mail, Video Conferencing, International Communication for Global Business Information Technology Forms of Technology, Uses in Modern Communication System. Role of Social Media in Modern Business. Keywords: Business organization, Sole proprietorship, Barriers, Communication	15

PART-C: LEARNING RESOURCES

Textbooks, Reference Books, Other Resources

Suggested Readings:

1. Author Surname, Initials "Book Title" , Publisher's name , City/Country of Publication-Year of Publication. Edition No. if any

Textbooks:

S.N	Author	Book Title	Publisher	City
1	T,N. Chhabra	Business Communication	Himalaya Publication House	New Delhi
2	K.k. Sihna	Essentials of Business Communication	VK Global Publication	Faridabad
3.	Dr. Ramesh Mangal	Business Communication	Universal Publication	Agra

Suggestive digital platform web links

Part D: Assessment and Evaluation			
External Assessment (UE)	Max. Marks. 60	Min. Marks: 24	U.E. Time 3 Hours
Internal Assessment	Max. Marks. 40	Min. Marks. 14	
Total	100		

Awadhesh Pratap Singh University, Rewa (M.P.)

Structure for UG Programme: UGC CBCS System

(As Per Ordinance 14-A)

Papers Offered by the Department of Commerce Under 4 Years CBCS Course of B.Com (Honours/Research)

PART-A: INTRODUCTION

Program: UG	Class: B.Com (Honours/Research)	Semester : I	Session : w.e.f. 2021-22
Subject: Commerce			
1.	Course Code	……(To be filled by Exam Cell)	
2.	Course Title	Business Economics	
3.	Course Type	Generic Elective Course-1	
4.	Pre-Requisites (if any)	No	
5.	Course learning Outcomes (CLO)	After successful completion of the course, the student shall be able to: • Expose the students of Commerce to the basis concept of Business economics and to inculcate the analytical approach to subject matter. • Stimulate the students' interest in various economic theories. • Guide the students to understand the real world Market situation. • Understand Practical application of concepts.	
6.	Credit Value	4	

PART-B: CONTENT OF THE COURSE

Total No. of Lectures (in hours per week): L-90 (lecture of one hour)		
Module	Topics	No. of Lectures
I	**Business Economics :** Introduction, Definition, Nature& Scope of Economics, Economic Theories- Adam Smith, Marshall, Robinson, and Modern Economists, Utility of Economics for Business, Utility Analysis of Demand, Law of Diminishing Marginal Utility-Economic Laws, Meaning of Demand & Supply, Law of Demand. Elasticity of Demand & Supply-meaning. Features. Types of Elasticity, Degrees of elasticity **Consumer Surplus:** Meaning, Assumption, Measurement of consumer surplus, Importance of Consumer Surplus: **Keywords: theories of eminent economists. Elasticity of demand. Utility of demand consumer surplus**	**20**
II	**Production:** Meaning of production, Factors of production. Scale of Production, Law of Returns to Scale, Production Function, Iso-quants, Law of Variable Proportions. Cost of production: Concept of explicit costs, Implicit Costs and Opportunity Costs. **Revenues :** Average, Marginal and total Revenue **Keywords: Production, law of returns production function, variable proportion**,	**20**
III	**Market:** Meaning, Classification, Factors Affecting the Extent of Market. Theory of price & Output Determination in Different Market Structures: Price Determination under perfect competition in firms and Industry Price Determination under Imperfect Competition. Price Determination under Monopoly, Price Determination under Discrimination Monopoly. **Keywords: theory of price, Price Determination**	**20**
IV	**Distribution:** Profit-Meaning, Definition-Gross Profit, Net Profit, Principles of Profit-Cost Concept & Determination- Total Average & Marginal Cost, Concept of Revenue Theory of Rent, of Wages, Theory of Interest. **Keywords: theories of distribution, Concept of revenue.**	**15**
V	**Demand Forecasting:** Meaning, Objectives, Factors Involved in Demand Forecasting, Techniques of Demand Forecasting **Welfare Economics:** Meaning. Theories of Welfare Economics **Concept of Inflation & Deflation:** Nature and Causes Meaning of Deficit financing, Impact with Special Reference to India. **Keywords : Inflation deflation**	**15**

PART- C: CLEARNING RESOURCES

Textbooks, Reference Books other Resources

Suggested Readings:

Textbooks:

1. Jhingan M.L. Monetary Economics -7th edition, Edition Vrinda publication Mayur Vihar Delhi
2. Ahuja H.L. Business Econo0mics, 2019 S.Chand Publishing
3. Pant j.C. Economics Micro and Macro, Sahitya Bhawan Agra

Reference Book:

1. Mankar B.G. Business Economics, Mac-milan India India ltd, Delhi
2. Girjashanakr Business Economics Atharv Publication Pune,

Suggested equivalent online course
https;//nptel.ac.in/courses/110/101/110/01005

Part D: Assessment and Evaluation			
External Assessment (UE)	Max. Marks. 60	Min. Marks: 24	U.E. Time 3 Hours
Internal Assessment	Max. Marks. 40	Min. Marks. 14	
Total	100		

Awadhesh Pratap Singh University, Rewa (M.P.)

Structure for UG Programme: UGC CBCS System

(As Per Ordinance 14-A)

Papers Offered by the Department of Commerce Under 4 Years CBCS Course of B.Com (Honours/Research)

PART-A: INTRODUCTION

Program: UG		Class: B.Com (Honours/Research)	Semester : I	Session : w.e.f. 2021-22
Subject: Commerce				
1.	Course Code	……(To be filled by Exam Cell)		
2.	Course Title	Banking and Insurance		
3.	Course Type	Generic Elective Course-1		
4.	Pre-Requisites (if any)	No		
5.	Course learning Outcomes (CLO)	After completing the course the student skill be able to • understand the meaning and scope of Banking with functions of Banks and th role into banking. • famuliarize with the operations of Banking and various services and benefits. • get an insight of lending operations off banking and causes of NPAs into banking sector. • acquaint with the concept of insurance through functions and fundamental principles of insurance. • understand the types of Insurance Regulatory framework of Insurance.		
6.	Credit Value	4		

PART-B: CONTENT OF THE COURSE

Total No. of Lectures (in hours per week): L-90 (lecture of one hour)		
Module	Topics	No. of Lectures
I	**Origin of banking :** Definition and function of banks, banker and customer relationship, general and special types of customers, Types of Deposits, Type of banks in India, Rale of Foreign Banks in India, India's approach to Banking Sector reforms, Achievements of financial sector reforms and areas of concern, Credit Allocation Policies of Commercial banks, Credit Market Returns.	**20**
II	**Operations of Banking** Cheque Definition, features and types of cheque, endorsement meaning and essentials of a valid endorsement , types of endorsement, Era of Interest Banking and its benefits, Mobile Banking, Home banking, Virtual Banking, Electronic Clearing System (ECS), e-payments, Electronic Fund Transfer (EFT), E-momey, Sateguard for internet banking, Critical comparison of traditional banking methods and e-banking; Balance Sheet of Bank, special items of a Balance Sheet, off Balance Sheet Items; Anti-money Laundering Guidelines	**20**
III	**Loans and Advances** Principles of sound lending, Types of loans and advances, Advances against various securities, Securitization of Standard Assets; Basel Accord merits and weaknesses of the Basel II, Balel III NPA; Meaning, causes of NPA, Impact of NPA on Banking Sector, Insolvency and Banking Code 2016. Objectives & Features**.**	**20**
IV	**Concept of Insurance** Characteristics, Functions of Insurance, Fundamental Principles of Insurance; Indemonity, Insurable Interest, Utmost Good faith, Proximate Cause, Contribution, Subrogation.	**15**
V	**Fundamental of Agency Law :** Definition of on agents, Regulation, Insurance Intermediaries, Agents compensation.	**15**

PART- C: CLEARNING RESOURCES

Textbooks, Reference Books other Resources

Suggested Readings:

1. Dr. V.C. Sinha Banking
2. Dr. H.C.Sharma, Banking
3.Dr. M. L. Seth, Banking in India
4. Dr. B. K. Jain, Banking in India

Part D: Assessment and Evaluation			
External Assessment (UE)	Max. Marks. 60	Min. Marks: 24	U.E. Time 3 Hours
Internal Assessment	Max. Marks. 40	Min. Marks. 14	
Total	100		

Awadhesh Pratap Singh University, Rewa (M.P.)

Structure for UG Programme : UGC CBCS System

(As Per Ordinance 14-A)

Papers Offered by the Department of Commerce Under 4 Years CBCS Course of B.Com (Honours/Research)

PART-A: INTRODUCTION

Program: UG	Class: B.Com (Honours)	Semester: I	Session : w.e.f. 2021-22
Subject: Commerce			
1.	Course Code	……	
2.	Course Title	English Language and Indian Culture	
3.	Course Type/Core Course/Elective/Generic Elective/Vocational	Ability Enhancement Course (AEC)	
4.	Pre-Requisite (if any)	To Study this course. A student should have basic knowledge of English language. This course will be studied by all the students of UG level under the Foundation Course Category.	
5.	Course Learning Outcomes (CLO)	Through this course the students will be able to; 1. Prepare for various competitive exams by developing their English language competence. 2. Promote their comprehension skills by being exposed to a variety of texts and their interpretations. 3. Build and enhance their vocabulary. 4. Develop their communication skills by strengthening grammar and usages. 5. Inculcate values which make them aware of national heritage and environmental issues, making them responsible citizens.	
6.	Credit Value	4 Credit	

PART:B Content of the Course

Total No. of Lectures-Tutorials-Practical (in hours per week): L-T-P		
Total No. Lectures: L-90 (lecture of one hour)		
Unit	**Topics**	**No. of Lectures**
I.	**Reading Writing and Interpretation Skills:** 1. Where The Mind is Without Fear- Rabindranath Tagore **Key Word: Patriotism** 2. National Education- M.K. Gandhi [key word: Edification] 3. The Axe- R.K. Narayan [key word: Environment] 4.The Wonder That Was India –A.L. Basham (an excerpt) **Key word: Indianness** 5. Preface to the Mahabharata C. Rajagopalachari **key Word: Indian My Theory**	20
II	**Comprehension of an unseen passage :** Questions should be objective/multiple-choice, and should test (a) and understanding of the passage in questions and (b) a grasp of general language skills and issues with reference words and usage within the passage.	20
III	**Basic Language Skills I:** Vocabulary Building: Suffix, Prefix, Synonyms, Antonyms, Homophones, Homonyms and one-word substitution. 2. Basic Grammar: Noun, Pronoun Adjective, Verb Adverb, Prepositions, Articles, Time and Tense	20
IV	**Paragraph Writing :** Word limit : 100-150 words. Candidates to attempt any one of three alternative topics provided.	15
V	**Basic Language Skills – Grammar and Usage :** Modals, linking devices. Questions should not repeat the examples or exercises given in the textbooks.	15

PART C : Learning Resources
Textbooks, Reference Books, other Resources
Suggested Readings Essential English Grammar- Raymond Murphy, Cambridge University Press. • Practical English Grammar Exercises I-A. J. Rhomson & A.V. Martinet, oxford India. • Practical English Usage- Mlchael Swan, Oxford • English Grammar in Use – Raymond Murphy, Cambridge University Press.

Part D: Assessment and Evaluation			
External Assessment (UE)	Max. Marks. 60	Min. Marks: 24	U.E. Time 3 Hours
Internal Assessment	Max. Marks. 40	Min. Marks. 14	
Total	100		

Awadhesh Pratap Singh University, Rewa (M.P.)

Structure for UG Programme: UGC CBCS System

(As Per Ordinance 14-A)

Papers Offered by the Department of Commerce Under 4 Years CBCS Course of B.Com (Honours/Research)

PART-A: INTRODUCTION

Program: UG	Class: B.Com (Honours)	Semester: I	Session : w.e.f. 2021-22
Subject: Commerce			
1.	Course Code	X1-FCACIT	
2.	Course Title	Environmental Education	
3.	Course Type/Core Course/Elective/Generic Elective/Vocational	Ability Enhancement Course (AEC)	
4.	Pre-Requisite (if any)	A course intended to create awareness about the life of human beings which is an integral part of environment; and to inculcate the skills required to protect the environment from all sides. To study this course, the student must have a knowledge about the environmental components, pollution, biodiversity, and ecosystem at senior secondary, Class 12^{th} level.	
5	Course Learning Outcomes (CLO)	1. To understand various aspects of life forms. Ecological processes, and the impacts on them by the human during Anthropogenic era. 2. To build capabilities to identify relevant environmental issues, analyze the various underlying causes, evaluate the practices and policies, and develop framework to make inform decisions. 3. To develop empathy for all life forms, awareness, and responsibility to word environmental protection and nature preservation. 4. To develop the critical thinking for shaping strategies such as; scientific, social. Economic. Administrative& iegal. Environmental protection. Conservation of biodiversity environmental equity and sustainable development 5. To prepare for the competitive exams.	
6.	Credit Value	4 Credit	

PART-B: Content of the Course		
Total No. Lectures: L-90 (lecture of one hour)		
Unit	**Topics**	**No. of Lectures**
1.	**Environment and Natural Resources:** • Multidisciplinary nature, Scope and importance of Environment • Components of Environment: Atmosphere, Hydrosphere, Lithosphere, and Biosphere, • Brief account of Natural Resources and associated problems: Land Resource, Water Resource, Energy Resource • Concept of Sustainability and Sustainable Development Keywords: Environment, Forest, Mineral, food, Land, Water, Energy, Sustainable Development	10 Hrs.
II	**Biome, Ecosystem and Biodiversity**: • Major Biomes: Tropical, Temperate, Forest, Grassland, Desert, Tundra, Wetland, Estuarine and marine • Ecosystem: Structure Function and types their Preservation & Restoration • Biodiversity and its conservation practices, Keywords: Biome, Ecosystem, Biodiversity	8 Hrs.
III	**Environmental Pollution, Management and Social Issues:** • Pollution: Types, Control measures, Management and associated problems. • Environmental Law and Legislation: Protection and conservation Acts. • International Agreement & Program. • Environmental Movements, communication and public awareness problems. • National and International organization related to environment conservation and monitoring. • Role of information technology in environment and human health. Keywords: Pollution, Environmental legislation, Environmental Movement, Environmental Program and organization.	12 Hrs
Suggested activities: (at least one) 1. Visit to an area to document environmental assets: rivers/forest/flora/fauna 2. Visit to a local Polluted site Urban/Rural/Industrial/Agricultural 3. Study of simple ecosystem.		

PART-C: Learning Resources
Textbooks, Reference Books, Other Resources
• Singh; J.S. Singh S.P. and Gupta, S.R.; "Ecology; Environment Science and Conservation ", S. Chand publishing, New Delhi, (2018) • Divan, S. and Rosencranz, A., "Environmental Law and Policy in India :Cases, Material & Status" Oxford University Press, India, (2002) 2nd Edition. • Odum, E.P. "Fuindamentals of Ecology" , Philadelphia Saundres, (1971) • Bharucha, Erach, "Environmental Studies : Universities Press India Pvt. Ltd. Hyderabad (2004) (Hindi Edition also available). • Kaushik, Anubha, Kaushik, C.P. "Perspectives in Environmental Studies "New age International Publishers, (2018, 6th Edition. • Asthana, D.K. Asthana Meera, "A Textbook of Environmental Studies", S. Chand Publishing New Delhi, (2007) • National Digital Library (https://ndl.iitkgp.ac.in/homestdy/science) • Epg-pathshala (https://epgp.inflibnet.ac.in/Home/Dowhload) • NPTEL (https://m[te;.ac.in/course.html) • Coursera (Https://www.coursera.org/seaqrch?query=environmental+science&page=1) • इराक भरुचाए पर्यावरण अध्ययनए ओरियन्ट ब्लैकस्वान प्राइवेट लिमिटेड नई दिल्ली (2004) • दयाशंकर त्रिपाठी, पर्यावरण अध्ययन मोतीलाल बनारसीलाल पब्लिशर्स दिल्ली (2005) • रतन जोशी, पर्यावरण अध्ययन, साहित्य भवन पब्लिकेशन (2018)
Suggested equivalent online Coures i. The Health Effects of Climate Change (edx) ii. Climate Change: Financial Riske and Opportunities (Edx) iii. Introduction to Environmental law and Policy (Coursera) iv. Women in environmental biology (Course) v. Our Earth: It's Climate, History, and Processes (Course) vi. Ecology, physiology, environmental science (national digital library)

Part D: Assessment and Evaluation			
External Assessment (UE)	Max. Marks. 60	Min. Marks: 24	U.E. Time 3 Hours
Internal Assessment	Max. Marks. 40	Min. Marks. 14	
Total	100		

Awadhesh Pratap Singh University, Rewa (M.P.)

Structure for UG Programme : UGC CBCS System

(As Per Ordinance 14-A)

Papers Offered by the Department of Commerce Under 4 Years CBCS Course of B.Com (Honours/Research)

PART-A: INTRODUCTION

Program: UG	Class: B.Com (Honours/Research)	Semester : II	Session : w.e.f. 2021-22
Subject: Commerce			
1.	Course Code	……..(To be filled by Exam Cell)	
2.	Course Title	Advanced Financial Accounting	
3.	Course Type	Core Course- (Major)	
4.	Pre-Requisite (if any)	No	
5.	Course l earning outcomes (CLO)	After successful completion of the course, the student shall be able to: • Gain the conceptual clarity about Partnership accounting, • Understand the concept of partnership firm and prepare accounts of dissolution of partnership firm. • Learn the accounting process of Hire Purchase and Instalment Systems. • Acquire the basic concept of preparing Royalty Accounts. • Learn the basic concept of single entry system.	
6.	Credit value	6(L)	

PART-B: Content of the Course		
Total No. of Lectures+Tutorials (in hours per week) : L-6 Hrs.		
Total No. of Lectures: L-90 (Lecture of one hour)		
Module	**Topics**	**No. of Lectures**
I	**Partnership Account- Admission, Retirement and Death :** Adjustment of the profit sharing ratio, Adjustment of Revaluation of Assets and Liabilities, Adjustment for Goodwill, Amount due to retiring Partner, Death of a partner and Joint Life Policy. Keywords: Profit sharing ratio, admission of partner, revaluation account, goodwill and joint life policy.	20.
II	**Accounting for Dissolution of the Partnership Firm :** Accounting of Dissolution of the Partnership Firm Including Insolvency of partners, sale to a limited company and piecemeal distribution. Keywords: dissolution of firm, insolvency of firm, limited company and piecemeal distribution.	20
III	**Accounting for Hire Purchase and Installment Systems :** Calculation of interest, partial and full repossession, Hire purchase trading (total cash price basis), stock and debtor's system; Concepts of operating and financial lease, Journal Entries and Accounting. Keywords: hire purchase, financial lease and repossession.	20
IV	**Royalty Accounts :** Rent and Royalty, Minimum Rent, Short-working, surplus, Recoupment of short working, Abnormal fall in output, Accounting Entries in lessees's book and lessor's book. Keywords: rent, royalty, minimum rent, short-working. surplus and abnormal fall	15
V	**Single Entry System and Accounting from incomplete Records :** **Salient Features, Limitations of Single Entry System, Ascertainment of Profit, Statement of Affairs, Preparation of Final Account from Incomplete records.** **Keywords : single entry system, statement of affairs and incomplete records**	15
Note- Minimum 70% of numerical questions should be asked.		

PART-C: Learning Resources
Textbooks, Reference Books, Other Resources
Suggested Readings :
Textbooks : 1. Shukla S.M., Financial Accounting, Sahitya Bhawan Publication, Agra 2. Shukla M.C., Advanced Accounts. Vol.-I.S. Chand & Co., New Delhi 3. Maheshwari S.N., Financial Accounting. Vikas Publishing House, New Delhi. Reference Book : 1. Bhattacharyya K. Ashish, Essentials of Financial Accounting, Phi Learning Private Limited 2. Pillai R.S.N., Advanced Accounting, S.Chand and Company pvt. Ltd.
Suggestive digital platform web links
Hittps://www.my-mooc.com/en/categorie/accounting.
Suggested equivalent online courses
https://swayam.gov.in/nd2cec29-16/preview

Part D: Assessment and Evaluation			
External Assessment (UE)	Max. Marks. 60	Min. Marks: 24	U.E. Time 3 Hours
Internal Assessment	Max. Marks. 40	Min. Marks. 14	
Total	100		

Awadhesh Pratap Singh University, Rewa (M.P.)

Structure for UG Programme : UGC CBCS System

(As Per Ordinance 14-A)

Papers Offered by the Department of Commerce Under 4 Years CBCS Course of B.Com (Honours/Research)

PART-A: INTRODUCTION

Program: UG	Class: B.Com (Honours/Research)	Semester : II	Session : w.e.f. 2021-22
Subject: **Commerce**			
1.	Course Code	……..(To be filled by Exam Cell)	
2.	Course Title	Business Regulatory Framework	
3.	Course Type	Minor	
4.	Pre-Requisite (if any)	No	
5.	Course l earning outcomes (CLO)	After successful completion of the course, the student shall be able to: • understand basic aspects of contract for making the agreements, contracts and subsequently valid business propositions/ the conceptual clarity about Partnership accounting, • equipped about the legitimate rights and obligations under the Sale of Goods Act. • Understand the fundamentals of internet based activities under the Information and Technology Act. • Enable with skills to initiate entrepreneurial ventures as LLP. • Learn how to pursue the consumer rights under the Consumer Protection Act.	
6.	Credit value	6(L)	

PART-B: Content of the Course		
Total No. of Lectures+Tutorials (in hours per week) : L-6 Hrs.		
Total No. of Lectures: L-90 (Lecture of one hour)		
Module	**Topics**	**No. of Lectures**
I	**Indian Contract Act 1872 :** Meaning of contract, Essentials of valid contract, offer and Acceptance, consideration, Capacity to contract, Free consent, Legality of object and consideration, void agreements, Contingent contracts, Performance of contract, Discharge of contract, Branch of contract-remedies. Keywords: contract act, consideration, agreements, contingent.	20.
II	**Contracts Relating to Indemnity and Guarantee :** Contracts Relating to bailment and pledge, contracts Relating to Agency –meaning Agent and Agency, Kind of Agents, Rights and Duties of agents and Principal, Termination of Agency. Keywords:.indemnity, guarantee, termination of agency.	20
III	**Indian Sales of Goods Act 1930 :** Definitions, Essentials of contract of sale kinds of goods, conditions warranties and their distinction. Express and implied conditions and warranties. Doctrine of Caveat-Emptor, Provisions regarding transfer of property and Rights and Duties of buyer and seller, Definition and rights of unpaid seller. Keywords sales of goods act, warranties, caveat-emptor, unpaid seller.	20
IV	**Partnership Laws :** The Partnership Act 1932 (amended)-Introduction, Nature and characteristics of partnership, Partnership Deed, Registration of partnership firm, types of partners, rights and duties of partners, mode of dissolution of partnership firm. The Limited Liability Partnership Act 2008 (amended) –Salient features of LLP, difference between LLP and Partnership, LLP and Company, LLP agreement, Incorporation document, incorporation by registration , partners and their relationship. Keywords:partnership deed, registration of partnership firm, LLP.	15
V	**Consumer Protection Act 2018 :** Definition, salient features, objects and important Provisions, mechanism for consumers right, offences and penalties**.** **The information Technology Act, 2000 (Amendment2008)** Definition under the Act, objectives, Scope, penalties Adjudication, Cyber crime, Digital signature, Keywords : consumers protection, offences, penalties, ITA, Cyber, digital	15

PART-C: Learning Resources
Textbooks, Reference Books, Other Resources
Suggested Readings :
Textbooks : 1.Snfh, Ayur, The Principles of Mercentile Law, Eastern Book Company, Lucknow 2.Maheshwari & Maheshwari Business Law National Publishing House Delhi 3. Gupta, Parul, Legal Aspects of Business, Vikas Publication New Delhi. **Reference Book** 1. Tulsian, PC Business, Law, Tata McGraw Hill New Delhi. 3. Lee Reach, Business Laws, Oxford University Press U.K.
Suggestive digital platform web links
Hittps://www.my-mooc.com/en/categorie/accounting.

Part D: Assessment and Evaluation			
External Assessment (UE)	Max. Marks. 60	Min. Marks: 24	U.E. Time 3 Hours
Internal Assessment	Max. Marks. 40	Min. Marks. 14	
Total	100		

Awadhesh Pratap Singh University, Rewa (M.P.)

Structure for UG Programme : UGC CBCS System

(As Per Ordinance 14-A)

Papers Offered by the Department of Commerce Under 4 Years CBCS Course of B.Com (Honours/Research)

PART-A: INTRODUCTION

Program: UG	Class: B.Com (Honours/Research)	Semester : II	Session : w.e.f. 2021-22
Subject: **Commerce**			
1.	Course Code	……..(To be filled by Exam Cell)	
2.	Course Title	INDIAN ECONOMY	
3.	Course Type	Generic Elective Course	
4.	Pre-Requisite (if any)	No	
5.	Course l earning outcomes (CLO)	After successful completion of the course, the student shall be able to: • understand the nature, shortcomings and potential of Indian economy • comprehend the importance and problem of different key sectors of economy. • Analyze the various aspects of changing nature of Indian economy and economic policies.. • Develop analytical skills, interpret the economic events and visrealize the economic future of India.	
6.	Credit value	4(L)	

PART-B: Content of the Course		
Total No. of Lectures+Tutorials (in hours per week) : L-6 Hrs.		
Total No. of Lectures: L-90 (Lecture of one hour)		
Module	**Topics**	**No. of Lectures**
I	**Nature and Basic Issues related to Indian Economy :** Economy and Economic Systems, India as a Developing Economy-Basic Characteristics of Indian Economy. Concept of Development, Human Resource and Economic Development, Economic Growth and Development, Structural Changes in Different Stages of Economic Growth, Unemployment and Poverty in India. Keywords : economic growth, human resource, poverty-line, socialism, capitalism, developing economy.	18
II	**Economic Planning in India :** Background, Objectives, Features, Problems, Targets and Achievements. Public Sector : Role, Objectives, Problems and Reforms. Role of Industries and Industrial Development, Industrial Policy of India, Indian Agriculture : Role, characteristics, Problems, Agriculture Policy, Suggestions. Keywords : democratic socialism, centralized planning, decentralized planning, land reforms, growth with social justice, green revolution.	18
III	**Economic Policies :** Monetary policy of India and its implications, Fiscal policy of India. Tools and Techniques of Fiscal Policy, Critical Evaluation of Fiscal policy of India. Union Budget and its Analysis, Tax and Non-Tax Resources of Union Government. Service Sector in India-Role and Performance. Keywords: industrial licensing, IDRA, MRTP, repo rate, reverse repo, open market operations, deficit financing, capital expenditures, revenue receipts, GST, revenue expenditures.	18
IV	**Economic Reforms in India :** Background, Need, Reformative Steps, Impact, Suggestions. Small Scale and Cottage Industries in India-Meaning, Definitions, Role, problems, policy, suggestions **Private Sector in India-**Role in Economy, Problems and Prospects. Keywords : tiny sector, disinvestment, liberalization, globalization and privatization.	18
V	**Foreign Capital in India :** Need, Role, Capital, Policy, Problems, Suggestions **Foreign Trade in India-** Free Trade vs. Trade Protection, Foreign Trade Policy, Composition and Direction of Foreign Trade/ Foreign Direct investment and India, Capital Market and SEBI.	18

PART-C : Learning Resources
Textbooks, Reference Books, Other Resources
Suggested Readings :
Textbooks : 1.Dutt Gaurav and Sundaram-Indian economy, S.Chand and company pvt ltd. 2.Dhar P.K., Indian Economy, Kalyani Publishers 3. Mishra and Puri, Indian Economy, Himalaya Publishing House 4. Kapila Uma, Indian Economy-Performance and Policies, Academic Foundation, New Delhi. Note : Latest edition of textbooks may be preferred. **Reference Books :** 1. Ahluwalia Montek Singh, Growth and Poverty in Developing Countries. 2. Singh Ramesh, Indian Economy, McGraw Hill Publication. 3. Banerjee Abhijit and Duflo Esther, Poor Economics, Penguin Books.
Suggestive digital platform web links
Suggested equivalent online course
SWAYAM Course : Hittps://onlinecourse.nptel.ac..in/noc21 hs51/preview

Part D: Assessment and Evaluation			
External Assessment (UE)	Max. Marks. 60	Min. Marks: 24	U.E. Time 3 Hours
Internal Assessment	Max. Marks. 40	Min. Marks. 14	
Total	100		

Awadhesh Pratap Singh University, Rewa (M.P.)

Structure for UG Programme : UGC CBCS System

(As Per Ordinance 14-A)

Papers Offered by the Department of Commerce Under 4 Years CBCS Course of B.Com (Honours/Research)

PART-A: INTRODUCTION

Program: UG	Class: B.Com (Honours/Research)	Semester : II	Session : w.e.f. 2021-22
Subject: **Commerce**			
1.	Course Code	……..(To be filled by Exam Cell)	
2.	Course Title	Business Mathematics	
3.	Course Type	Generic Elective Course	
4.	Pre-Requisite (if any)	No	
5.	Course l earning outcomes (CLO)	After successful completion of the course, the student shall be able to: • understand the nature, shortcomings and potential of Indian economy • comprehend the importance and problem of different key sectors of economy. • Analyze the various aspects of changing nature of Indian economy and economic policies.. • Develop analytical skills, interpret the economic events and visrealize the economic future of India.	
6.	Credit value	4(L)	

PART-B: Content of the Course		
Total No. of Lectures+Tutorials (in hours per week) : L-6 Hrs.		
Total No. of Lectures: L-90 (Lecture of one hour)		
Module	**Topics**	**No. of Lectures**
I	Ratio- Profit ratio, sacrifice ratio and gain ratio, Percentage- Application of percentage of calculating cost and invoice price, Managers commission, discount, commission and brokerage, Average, Profit and loss.	18
II	Simultaneous equations : Meaning, Characteristic and calculations.	18
III	Eliminatory Matrices and D terminals; Definition of a matrices, Types of Matrices, Algebra of Matrices properties of determinants; Calculation of values of determinants up to second order.	18
IV	Logarithms Linear Programming, Graphical method of solution. Problems relating to two variables including the case of mixed constraints. Simples Method- Solution of problems up to two variables.	18
V	Simple & compound Interest and annuities different types of interest rates; concept of present value and amount of a sum types of annuities; present value and amount of an annuity including the case of continuous compounding; problems relating to sinking fund.	18

PART-C : Learning Resources
Textbooks, Reference Books, Other Resources
Suggested Readings :
Textbooks : 1. Allen R.G. Basic Mathematics, macmillan, New Delhi. 2. Dowling : E.T. : Mathematics for Economics Schaum Series, Mc. Graw Hill London. 3. VVavsayik Gaint : Dr. Ramesh Mangal. 4. Vavsayik Gaint : P.K. Jain 5. Loornba, Paul : Liner Programming; Tata M.C. Graw Hill, New Delhi. 6. Vollra, N.D> Quantitative Techniques in Management; Tata Mc Graw Hill New Delhi. 7. Soni R.S. business Mathematics : Pitamber Publishing House 8. Dr. S.M. Shukla, Business Mathematics in Hindi 9. Dr. Vinod Shukla, Business Mathematics in Hindi

Part D: Assessment and Evaluation			
External Assessment (UE)	Max. Marks. 60	Min. Marks: 24	U.E. Time 3 Hours
Internal Assessment	Max. Marks. 40	Min. Marks. 14	
Total	100		

अवधेश प्रताप सिंह विश्वविद्यालय, रीवा (म0प्र0)

कार्यक्रम रूपरेखा : यू.जी. लेवल, सी.बी.सी.एस. प्रणाली

(अध्यादेश–14अ के अन्तर्गत)

वाणिज्य विभाग बी.कॉम. (आनर्स/रिसर्च) के अन्तर्गत 4 वर्षीय सी.बी.सी.एस. प्रणाली

भाग–अ परिचय

कार्यक्रम : यूजी	कक्षा : बी.कॉम. (आनर्स/रिसर्च)	सेमेस्टर : द्वितीय	सत्र– 2021–22
विषय : वाणिज्य			
1.	कोर्ष कोड		
2.	कोर्ष शीर्षक	हिन्दी भाषा संरचना	
3.	कोर्ष का प्रकार	क्षमता वृद्धि पाठ्यक्रम	
4.	कोर्ष अपेक्षित	नहीं	
5.	कोर्ष अधिगम उपलब्धि (लर्निंग आउट–कम) (C.L.O.)	• उत्कृष्ट साहित्यक पाठों के अध्ययन से रूचि का विकास करना। • सांस्कृतिक चेतना और राष्टीय भावना का विकास करना। • भाषा–ज्ञान। • सामान्य एवं विशिष्ट शब्दावली के अध्ययन द्वारा भाषा एवं संस्कृति बोध का विकास करना। • प्रतियोगी परीक्षाओं हेतु तैयार करना।	
6.	क्रेडिट मान	04	

भाग–ब : कोर्ष सामग्री		
व्याख्यान की कुल संख्या : 90 व्याख्यान		
यूनिट	विषय	व्याख्यान संख्या
I	1. भारत वंदना (काव्य) : सूर्यकान्त त्रिपाठी निराला 2. स्वतंत्रता पुकारती (काव्य) : जयशंकर प्रसाद 3. भाषा की महत्ता और उसके विविध रूप 4. जाग तुझको दूर जाना : सुश्री महादेवी वर्मा 5. भाषा कौशल	18
II	1. करूणा (निबंध) : आचार्य रामचंद्र शुक्ल 2. बिच्छी बुआ (कहानी) : डॉ. लक्ष्मणसिंह विष्ट 'बटरोही' 3. हिन्दी की शब्द संपदा (पर्याय, अनेकार्थी, शब्दयुग्म,विलोम) 4. समन्वय की प्रक्रिया (निबंध) : रामधारी सिंह दिनकर 5. पारिभाषिक शब्दावली	18
III	1. विलायत पहुँच ही गया (आत्मकथांश) : महात्मा गांधी 2. तीर्थ यात्रा (कहानी) : डॉ0 मिथिलेश कुमारी मिश्र 3. वाक्य संरचना और विराम चिन्ह 4. अफसर (व्यंग) : शरद जोशी 5. शब्द संरचना : तत्सम, तद्भव, देशज, विदेशी	18
IV	1. अप्प दीपो भव (वक्तव्य कला) : स्वामी श्रद्धानंद 2. पत्र मैसूर के महाराजा को (पत्र लेखन) : स्वामी विवेकानंद 3. पत्र लेखन, महत्व और उसके विविध रूप 4. भारत का सामासिक व्यक्तित्व (प्रस्तावना) : जवाहरलाल नेहरू 5. बनी रहेंगी किताबें (आलेख) : डॉ. सुनीता रानी घोष	18
V	1. योग की शक्ति (डायरी) : डॉ. हरिवंश राय बच्चन 2. कोश के अखाड़े में कोई पहलवान नहीं उतरता (साक्षात्कार) : भाषाविद् डॉ. हरदेव बाहरी से प्रो. त्रिभुवन नाथ शुक्ल 3. सारलेखन, भाव पल्लवन 4. यादि बा न होती तो शायद गॉधी को यह ऊँचाई न मिलती (साक्षात्कार) : कथाकार गिरिराज किशोर से सतेन्द्र शर्मा 5. साक्षात्कार : प्रयोजन और कौशल	18

Part D: Assessment and Evaluation			
External Assessment (UE)	Max. Marks. 60	Min. Marks: 24	U.E. Time 3 Hours
Internal Assessment	Max. Marks. 40	Min. Marks. 14	
Total	100		

Awadhesh Pratap Singh University, Rewa (M.P.)

Structure for UG Programme : UGC CBCS System

(As Per Ordinance 14-A)

Papers Offered by the Department of Commerce Under 4 Years CBCS Course of B.Com (Honours/Research)

PART-A: INTRODUCTION

Program: UG	Class: B.Com (Honours/Research)	Semester : II	Session : w.e.f. 2021-22
Subject: **Commerce**			
1.	Course Code	……..(To be filled by Exam Cell)	
2.	Course Title	Environmental Studies	
3.	Course Type [SEC(F)/SEC(V)]	Ability enhancement course	
4.	Pre-Requisite (if any)	OPEN FOR ALL	
5.	Course learning outcomes (CLO)	After completing this course student will be able to: • To Know the concept of the Environmental pollution and problems. • To understand various aspects of air, water, noise and nuclear pollution. • To understand food resources, Energy resources and Land resources. • To Know the concept of Environment conservation laws.	
6.	Credit value	4	

Part-B : Content of the Course

Total No. of Lectures Tutorials (in hours per week): L-6		
Total No. of Lectures: L-90 (Lecture of one hour)		
Module	Topic	No. of Lecture
I	**Study of Environmental and ecology :** Definition and Importance, Environmental Pollution and problems., Public participation and Public awareness.	20
II	**Environmental Pollution :** Air water, noise, heat and nuclear .pollution, Causes, effect and prevention of pollution, disaster management – flood , Earthquake, cyclones and landslides.	20
III	**Environment and social problems:** Development –non-sustainable to sustainable, Energy problems of cities, Water preservation- rain-water collection..	15
IV	**Role of mankind in conserving natural resources:-** Food resource-World food problem, Energy resources-increasing demand for energy, Land resource- Land cs resources, land degradation, manmade landslides	15
V	**Environment conservation laws:** Conservation laws for air and water pollution **,** Wildlife conservation laws, Role of information technology in protecting environment and health..	20

PART-C : Learning Resources

Suggestive digital platform web links

1. https//www.gst.gov.in
2. https//www.icmai.in
3. https//www.cleartax.in

Part D: Assessment and Evaluation			
External Assessment (UE)	Max. Marks. 60	Min. Marks: 24	U.E. Time 3 Hours
Internal Assessment	Max. Marks. 40	Min. Marks. 14	
Total	100		

Awadhesh Pratap Singh University, Rewa (M.P.)

Structure for UG Programme : UGC CBCS System

(As Per Ordinance 14-A)

Papers Offered by the Department of Commerce Under 4 Years CBCS Course of B.Com (Honours/Research)

PART-A : INTRODUCTION

Program: UG	Class: B.Com (Honours /Research)	Semester : III	Session : w.e.f. 2021-22
Subject: Commerce			
1.	Course Code	……..(To be filled by Exam Cell)	
2.	Course Title	Corporate Accounting	
3.	Course Type	Core Course- (Major)	
4.	Pre-Requisite (if any)	No	
5.	Course learning outcomes (CLO)	After successful completion of the course, the student shall be able to: • understand the process of issue of share and debenture. • acquire the basic understanding of corporate Financial Statements. • develop understanding of valuation of goodwill and shares. • Calculate the amount of managerial remuneration. • Understand the accounting for amalgamation and liquidate of companies.	
6.	Credit value	6(L)	

PART-B: Content of the Course		
Total No. of Lectures+Tutorials (in hours per week) : L-6 Hrs.		
Total No. of Lectures: L-90 (Lecture of one hour)		
Module	**Topics**	**No. of Lectures**
I	**Accounting for Share Capital :** General Introduction Joint Stock Company, Issue of Share, Forfeiture and Reissue of Forfeited Shares : Concept & Process of Book Building; Issue of Rights and Bonus Shares; Buy Back of Shares, Forfeiture and Reissue of Forfeited Shares. Redemption of Preference Shares. Keywords: forfeiture, reissue of forfeited shares, preference shares, buy-back over subscription.	20.
II	D**ebenture : Issue and Redemption of Debenture** **Final Account** Preparation of Profit and Loss Account and Balance Sheet of Corporate Entities excluding calculation of Managerial Remuneration Disposal of Company Profits,. Keywords: Profit and Loss account and Balance Sheet of Corporate Entities, Managerial Remuneration, Disposal of Company Profits.	20
III	**Profit or Loss Prior or Post to Incorporation :** Meaning, Methods of Finding out Profit or Loss, Allocation of Expenses **Valuation of Shares :** Meaning of valuation of Shares, Necessity of valuation, Types of Value of Shares and Methods of Valuation of Shares. Keywords: Vvaluation of shares, methods of valuation of shares, Prior or Post to incorporation.	20
IV	**Amalgamation of Companies :** Concepts and Accounting Treatment as per Accounting Standard : 14 (ICAI) (excluding inter-company holdings), **Internal reconstruction :** Concepts and Accounting Treatment Excluding Scheme of Reconstruction Keywords :accounting standard: 14, internal reconstruction, amalgamation, pooling of interest.	15
V	**Liquidation of Companies :** Meaning of Winding-up of a Company, Winding-up and Insolvency, Mode of Winding-up. Liquidators Statements of Account, Statement of Affairs. **Keywords : winding-up, insolvency, Statement of Affairs.**	15

PART-C: Learning Resources
Textbooks, Reference Books, Other Resources
Suggested Readings :
Textbooks : 1. Shukla M.C, Grewal T.C. and Gupta S.C. Advanced Accounts, Vol.-II S.Chand & Co., New Delhi 2. Goyal V.K. and Goyal Ruchi. Corporate Accounting, PHI Learning. 3. Jain S.P. and Narang K.L. Corporate Accounting. Kalyani Publishers, New Delhi. Reference Book : 1. Tulsian P. C. and Tulsian bharat, Corporate Accounting, S.Chand 2. Mukharjee Amitabha, Mohammed Hanif, Corporate Accounting, McGraw Hill Education. 3. Compendium of Statements and Standards of Accounting. The Institute of chartered Accountants of India, New Delhi

Part D: Assessment and Evaluation			
External Assessment (UE)	Max. Marks. 60	Min. Marks: 24	U.E. Time 3 Hours
Internal Assessment	Max. Marks. 40	Min. Marks. 14	
Total	100		

Awadhesh Pratap Singh University, Rewa (M.P.)

Structure for UG Programme : UGC CBCS System

(As Per Ordinance 14-A)

Papers Offered by the Department of Commerce Under 4 Years CBCS Course of B.Com (Honours/Research)

PART-A: INTRODUCTION

Program: UG	Class: B.Com (Honours/Research)	Semester : III	Session : w.e.f. 2021-22
Subject: **Commerce**			
1.	Course Code	……..(To be filled by Exam Cell)	
2.	Course Title	Business Statistics	
3.	Course Type	Minor	
4.	Pre-Requisite (if any)	No	
5.	Course learning outcomes (CLO)	**After successful completion of the course, student shall be able to:** • Acquire a fair degree of proficiency in comprehending statistical data, processing and analyzing it, using statistics tools. • Calculate statistical central tendency, deviations and coefficient of variance. • Learn to measure of coefficient of skewness, correlation and regression equation. • Develop an understanding of index number and their utility in daily life and stock market. • Become aware of the pattern revealed by the time series data and use it to make predictions for future.	
6.	Credit value	6(L)	

PART-B: Content of the Course		
Total No. of Lectures+Tutorials (in hours per week) : L-6 Hrs.		
Total No. of Lectures: L-90 (Lecture of one hour)		
Module	**Topics**	**No. of Lectures**
I	**Statistics :** Definition, nature and scope, Importance, Limitations & Distrust to Statistics. Statistical Investigations, process, tools and techniques of data collection, Primary and Secondary data, Methods of Sampling classification and tabulation of data, preparation of statistical series. Statistical organization in India and M.P. Keywords :.Statistical Investigation, Data and Statistical Organization.	20.
II	**Measurement of Central Tendency :** Mean, Median, Mode and Partition values. Keywords : Central Tendency, Deviation & Coefficient	20
III	**Disperson :** Meaning and Importance, Methods- Quartile deviation, Mean Deviation and standard Deviation and their Coefficients, Coefficient of Variance. **Skewness :** Meaning, types, Measures of Skewness and its coefficient : Karl Pearson's Cofficient of Skewness, Bowley's Cofficient of Skewness. **Keywords** : Dispersion, Skewness, Coeffivient.	20
IV	**Correlation :** Meaning and definition, types and degree of correlation, methods of correlation-Karl Pearson's Method, Spearman's Method, Concurrent Deviation Method, Ratio of Variation. **Regression Analysis :** Meaning, Uses, Regression equations and calculation of Coefficients of Regression.. Keywords : Correlation, Regression.	15
V	**Index Numbers :** Meaning, characteristics, importance and uses, construction of Index numbers- Fixed Base Index, Chain Base Index, Group Index, Cost of Living Index, Fisher's Ideal Index number with factor and time reversal test. **Analysis of Time Series :** Meaning, Importance and components of time series, measurement of Trends-Moving Average method, Method of Least Square. **Association of Attributes (Two attributes only) :** Meaning, Importance and Methods of Association of Attributes Keywords : Index Numbers, Reversal Test, Time Series, Association of Attributes.	15

PART-C: Learning Resources
Textbooks, Reference Books, Other Resources
Suggested Readings :
Textbooks : 1. Gupta S.P., Statistical Methods, Sultan Chand and Sons, New Delhi. 2. Shukla and Sahai, Business Statistics, Sahitya Bhawan Publication, Agra. **Reference Books :** 1. Bohra N.D. Business Statistics, McGraw Hill, New Delhi. 2. Nagar K.N. Statistics, Minakshi Prakashan Meerut. 3. Field Andy, An Adventure in Statistics, Sage Publication
Suggestive digital platform web links
Hittps://onlinestatbook.com/online_statistics_education.pdf. Hittp://cs.ioc.ee/itkstat/files/lintro.pdf Suggested equivalent online courses

Part D: Assessment and Evaluation			
External Assessment (UE)	Max. Marks. 60	Min. Marks: 24	U.E. Time 3 Hours
Internal Assessment	Max. Marks. 40	Min. Marks. 14	
Total	100		

Awadhesh Pratap Singh University, Rewa (M.P.)

Structure for UG Programme : UGC CBCS System

(As Per Ordinance 14-A)

Papers Offered by the Department of Commerce Under 4 Years CBCS Course of B.Com (Honours/Research)

PART-A: INTRODUCTION

Program: UG	Class: B.Com (Honours/Research)	Semester : III	Session : w.e.f. 2021-22
Subject: **Commerce**			
1.	Course Code	……..(To be filled by Exam Cell)	
2.	Course Title	Financial Management	
3.	Course Type	Generic Elective Course-1 (Own Faculty)	
4.	Pre-Requisite (if any)	No	
5.	Course l earning outcomes (CLO)	After successful completion of the course, the student shall be able to: • understand the scope and objectives of financial management and risk vs. return. • Evaluate methodology for decision making for long long terms investments. • Understand financial decision and capital structure, theories and various costs incurred for raising capital. • Understand the types of dividend decision and theories thereof.	
6.	Credit value	4(L)	

PART-B: Content of the Course		
Total No. of Lectures+Tutorials (in hours per week) : L-6 Hrs.		
Total No. of Lectures: L-90 (Lecture of one hour)		
Module	**Topics**	**No. of Lectures**
I	**Introduction to Financial Management :** Nature, Scope and objectives of Financial Management, Role of Financial Manager, Traditional Approach, Modern Approach, Objectives of Financial Management-Profit Maximisation, Wealth Maximisation, Time value of money, Risk and return. Keywords : risk, return, wealth maximization, profit maximization, finance.	15
II	**Long Term Investmnt Decisions :** Capital Budgeting Meaning, advantages, disadvantages, Process, Payback Period Method, Accounting Rate of Return, Net Present Value (NPV), Internal Rate of Return (IRR), Profitability Index. Keywords : NPV, IRR, PI, ARR, PBP, capital budgeting.	20
III	**Financing Decision :** Sources of Long-Term Financing, Components of Cost of Capital, Methods for calculating Cost of Equity, Cost of Retained Earnings, Cost of Debt and Cost of preference Capital, Weighted Average Cost of Capital (WACC). **Capital Structure-** Theories of Capital Structure (Net Income, Net Operating Income, MM Hypothesis, Traditional Approach). Operating and Financial leverage, Determinants of Capital Structure. Keywords : WACC, Kd, Ke, Kc, Kp, Kr, NOI, NI approach, MM theory.	20
IV	**Dividend Decisions :** Devidend Decisions : Theories and models for Relevance and Irrelevance of dividend decision for corporate valuation : Walter's Model, Gordon's Model, MM Approach, Solomon Approach, Dividends payment methods, Dividend policies in practice. Keywords : Dividend, Walter, Gordon, MM Model, Solomon, Relevance, Irrelevance models.	20
V	**Working Capital Decisions :** Working Capital Decisions : Concepts of Working Capital, Operating & Cash Cycles, sources of short term finance, working capital estimation, cash management, receivables management, inventory management. Keywords : Inventory, Cash, Operating Cycle, Receivables.	15

PART-C : Learning Resources
Textbooks, Reference Books, Other Resources
Suggested Readings :
Textbooks : 1.ICSI-Financial Management (CS Executive) 2.Khan, M.Y. and P.K. Jain, Financial Management : Text and Problems, Tata McGraw Hill 3. Horne, Van; James C., John Wachowicz, Fundamentals of Financial Mamagement, Pearson Education. 4.Ross, Stephen A., Westerfield, Randolph and Jeffrey Jaffe, Corporate Finance. Tata McGraw hill. **Reference Books :** 1. Singh, Surender and Kaur Rajeev. Basic Financial Management, Mayur Paper Book Noida. 2. Singh, J.K. Financial Management-text and problems, 2nd edition, Dhanpat Rai and company, Delhi. 3. Rustagi, R.P., Financial Management, Galgotia Publishing company.
Suggestive digital platform web links
https//en.wikipedia.org/wiki/Financial management https//managementhelp.org/businessfinance/index.htm https//virtusinterpress.org/THE-LINK-BETWEEN-FINANCIAL.html
Suggested equivalent online course
NPTEL Course : Hittps://nptl.ac.in/courses/110/107/110107144/ SWAYAM Course : https://onlinecourse.nptel.ac..in/noc20 mg31/preview https://onlinecourses.swayam2.ac.in/cec20mg05/preview https://onlinecourses.swayam2.ac.in/cec20mg10/preview

Part D: Assessment and Evaluation			
External Assessment (UE)	Max. Marks. 60	Min. Marks: 24	U.E. Time 3 Hours
Internal Assessment	Max. Marks. 40	Min. Marks. 14	
Total	100		

Awadhesh Pratap Singh University, Rewa (M.P.)

Structure for UG Programme : UGC CBCS System

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Papers Offered by the Department of Commerce Under 4 Years CBCS Course of B.Com (Honours/Research)

PART-A: INTRODUCTION

Program: UG	Class: B.Com (Honours/Research)	Semester : III	Session : w.e.f. 2021-22
Subject: **Commerce**			
1.	Course Code	……..(To be filled by Exam Cell)	
2.	Course Title	International Business	
3.	Course Type	Generic Elective Course-1 (Own Faculty)	
4.	Pre-Requisite (if any)	OPEN FOR ALL	
5.	Course learning outcomes (CLO)	After completing this course student will be able to: • Know the concept of the International Business. • Obtain the theoretical knowledge of International business. • Achieve information relating to international business transaction. • Know the historical background and implementation of GATT & WTO.	
6.	Credit value	4(L/P)	

Part-B : Content of the Course

Total No. of Lectures Tutorials (in hours per week): L-6		
Total No. of Lectures: L-90 (Lecture of one hour)		
Module	Topic	No. of Lecture
I	**International Trade Theory :** Absolute advantage theory, Law of Comparative advantage, Opportunity Cost Theory : Production Possibility Curve with opportunity costs and relative commodity prices basis and gains from trade under constant costs. Production Possibility Curve with increasing costs Community Indifference Curve, Equilibrium in Isolation	20
II	**Gains from Trade :** Gains from trade with increasing costs, Gains from exchange and specialization, Offer curves terms of trade.	15
III	**Factor Endowments and the Heckscher-Ohlin Theory :** Meaning of factor Endowment, Assumptions of the theory, Interpretation of Heckcher Ohlin theorem, General equilibrium framework of Heckscher Ohlin Theorem, Diagrammatic presentation of the theory. Factor Price equalization and income distribution, Leontief Paradox and Factor Reversal	20
IV	**International Trade Theory :** Tariffs : Definition, Types Partial equilibrium analysis of a tariff, Effects of a tariff on consumer and producer surplus, Cost and benefit analysis of tariff Rate of effective protection, General equilibrium analysis of a tariff in a small and large country, Optimum tariff, Stopler-Samuelson Theorem. **Non-Tariff Barriers and the New protectionism : Quota-** comparison with tariff, Voluntary Export Restraints, Technical, Administrative and other regulations. International Cartels, Dumping, Export subsidies, strategic trade policies.	20
V	**World Trade Organization** : GATT to WTO, Functions and Principles of WTO and Developing Countries Dispute Settlement Mechanism Recent Trade Rounds and Position India.	15

PART-C : Learning Resources
Textbooks, Reference Books, Other Resources
Suggested Readings :
Textbooks : 1. Soderston, B.O. and Reed, G : International Economics. 2. Salvatore, D. : International Economics 3. Kindleberger, B. : International Economics. 4. Srinivasan, T.N., : Developing Countries and Multilateral Trading System, OUP, Delhi 5. Merr, G.M.: Leading Issues in Economics Delopment. 6. Francies Cherunilam, "International Business-Text and Cases", PHI Pvt. Ltd. New Delhi. Environment and Management, Anmol Publications Pvt Ltd. New Delhi. 7. V.K. Bhalla, S. Shiva Ramu, International Business Environment and Management. 8. V. Sharan, : International Business, Pearson Education, New Delhi. 9. Recent Articles on WTO.
Suggestive digital platform web links
1. https//www.gst.gov.in 2. https//www.icmai.in 3. https//www.cleartax.in
Suggested equivalent online course
NPTEL Course :…….. SWAYAM Course : ……

Part D: Assessment and Evaluation			
External Assessment (UE)	Max. Marks. 60	Min. Marks: 24	U.E. Time 3 Hours
Internal Assessment	Max. Marks. 40	Min. Marks. 14	
Total	100		

Awadhesh Pratap Singh University, Rewa (M.P.)

Structure for UG Programme : UGC CBCS System

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Papers Offered by the Department of Commerce Under 4 Years CBCS Course of B.Com (Honours/Research)

PART-A: INTRODUCTION

Program: UG	Class: B.Com (Honours/Research)	Semester : III	Session : w.e.f. 2021-22
Subject: **Commerce**			
1.	Course Code	……..(To be filled by Exam Cell)	
2.	Course Title	E-Accounting and Taxation with GST	
3.	Course Type [SEC(F)/SEC(V)]	VOCATIONAL (Course type : Title of SEC paper)	
4.	Pre-Requisite (if any)	OPEN FOR ALL	
5.	Course learning outcomes (CLO)	After completing this course student will be able to: • Know the concept of the E-Accounting. • Obtain the theoretical and practical knowledge of Income Tax Act. • Achieve information relating Computation of Taxable Income and Tax Liability.. • Know the historical background and implementation of GST Act. • Know the concept of supply and information of Input Tax Credit.	
6.	Credit value	4(L/P)	

PART-B: Content of the Course		
Total No. of Lectures+Tutorials (in hours per week) : L 6 Hrs.		
Total No. of Lectures/Practical: L-90 hrs		
Module	**Topics**	**No. of Lectures**
I	**Introduction of E-Accounting :** Concept of Business and Profession, Types of Accounts, Rule Accounts. 1. Converting the Business Transaction into Journal according to the golden rules. 2. Concept of Ledger Trail Sheet and Final Accounting.	20
II	**Income Tax :** 1. Introduction of Income Tax : Importance Concept and definitions. 2. Theoretical knowledge of various heads of Income Tax.	15
III	**Computation of Taxable Income** : 1. Procedure of tax assessment and types of tax assessment. 2. TDS and Tax Refund Procedure.	20
IV	**GST :** 1. Introduction, Important terms. 2. Structure and Classification of GST 3. Concept of impact tax credit.	15
V	**Supply :** 1. Meaning, Scope, Place and Time of supply. 2. Computation of Assessable value under GST. **Practical :** • Filing of ITR • Application process of PAN • Procedure ITR Challan • Payment of TDS • Registration under GST	20

PART-C : Learning Resources
Textbooks, Reference Books, Other Resources
Suggested Readings :
Textbooks : 1.HC Mehrotra and Prof V.P. Agrawal, "Income Tax Law & Accounts" Sahitya Bhawan Publications, Agra 2. Shripal Sakhlecha, "Income Tax Law and Accounts" Satish Printer Indore. 3. HC Mehrotra and Prof VP Agrawal, "GST & Customs duty" Sahitya Bhawan Publications, Agra. 4. Shripal Sakhlecha, "Goods & services tax and Custom Duty" Satish Printer Indore. 5. Modi, Gupta and Gupta, "Goods and Services Tax and Custom Duty", SBPD Publication, New Agra. **Reference Books :** 1. Singhania V.K. "Students Guide to Income Tax", Taxmann publication, New Delhi. 2. Singhania V.K. "GST & Customs Law", Taxmann Publication, new Delhi. 3. Bansal K.M. "GST & Customs law", Taxmann publication, New Delhi.
Suggestive digital platform web links
1. https//www.gst.gov.in 2. https//www.icmai.in 3. https//www.cleartax.in
Suggested equivalent online course
NPTEL Course :…….. SWAYAM Course : ……

Part D: Assessment and Evaluation			
External Assessment (UE)	Max. Marks. 60	Min. Marks: 24	U.E. Time 3 Hours
Internal Assessment	Max. Marks. 40	Min. Marks. 14	
Total	100		

Awadhesh Pratap Singh University, Rewa (M.P.)

Structure for UG Programme : UGC CBCS System

(As Per Ordinance 14-A)

Papers Offered by the Department of Commerce Under 4 Years CBCS Course of B.Com (Honours/Research)

PART-A: INTRODUCTION

Program: UG	Class: B.Com (Honours/Research)	Semester : III	Session : w.e.f. 2021-22
Subject: **Commerce**			
1.	Course Code	……..(To be filled by Exam Cell)	
2.	Course Title	Personal Financial Planning	
3.	Course Type [SEC(F)/SEC(V)]	VOCATIONAL (Course type : Title of SEC paper)	
4.	Pre-Requisite (if any)	OPEN FOR ALL	
5.	Course learning outcomes (CLO)	After completing this course student will be able to: • Know the concept of the Personal Financial Planning. • Obtain the theoretical knowledge of Personal Financial Planning • Achieve information relating life insurance. • Know the concept of investment and mutual fund.	
6.	Credit value	4(L/P)	

Part-B : Content of the Course

Total No. of Lectures Tutorials (in hours per week): L-6		
Total No. of Lectures: L-90 (Lecture of one hour)		
Module	Topic	No. of Lecture
I	**Personal Financial Planning** Meaning, objectives, process, The concept of Time Value of Money and its application in financial planning.	20
II	**Personal Tax Planning** Basis of tax assessment for an individual deductions and reliefs available to an individual avenues for tax savings for an individual.	20
III	**Life Insurance** Tools for financial planning different scheme and their implications, benefits and limitations.	15
IV	**The Housing Decision-** factors to be considered, modes or finance, benefits and limitations, procedural and legal aspects.	15
V	**Other investment** avenues such as stocks, books, mutual funds, real estate etc. and financial planning. Various financial institutions and modes of personal financing.	20

PART-C : Learning Resources

Textbooks, Reference Books, Other Resources

1. Personal Finance with Connect Plus, 10th Edition, jack R Kapoor, Les R.Diabay, Robert J Hughes, TMH
2. 16 Personal Finance Principles Every investor should know by Manish Chauhan.
3. Simplified Financial Management by Vinay Bhagwat, The Time Group.

Suggestive digital platform web links

1. https//www.gst.gov.in
2. https//www.icmai.in
3. https//www.cleartax.in

Part D: Assessment and Evaluation			
External Assessment (UE)	Max. Marks. 60	Min. Marks: 24	U.E. Time 3 Hours
Internal Assessment	Max. Marks. 40	Min. Marks. 14	
Total	100		

1.	HARSH URMALIYA	RAMAYAN PRASAD	
2.	REETESH MISHRA	RAM DEO MISHRA	
3.	SHIVANK SHUKLA	KRISHNA KUMAR SHUKLA	
4.	ANJALI PATEL	ARVIKND KUMAR PATEL	
5.	PRACHI VERMA	PRABHAKAR VERMA	
6.	TANMAY SINGH	HARENDRA SINGH	
7.	ANUSHKA SINGH BAGHEL	HARICHARAN SINGH	
8.	KIRTI SINGH ARAKH	PAVAN KUMAR SINGH	
9.	NIKITA MISHRA	SANJEEV MISHRA	
10.	KAJAL SEN	ABHINESH SEN	
11.	N YASHA SINGH PATEL	VINOD SINGH	
12	SATYAM PANDEY	SOMDATT PANDEY	
13	AATMA KOL	RAMSAKHA KOL	
14	KUSHUMKALI BUNKAR	PAPPU KORI	
15	SIMRAN MISHRA	VIPIN BIHARI MISHRA	
16	ASHU SINGH	JEETENDRA SINGH	
17	SHRADDHA SINGH CHAOUHAN	SHANKAR SINGH CHOUHAN	
18	SHIVANI DWIVEDI	VIJAY DWIVEDI	
19	VIKRAM BAGHEL	KESHAV PRATAP SINGH	
20	DEVANSHI DWIVEDI	YADVENDRA PRASAD DWIVEDI	
21	ROHIT PRAJAPATI	RAMAKANT PRAJAPATI	
22	GOURAV DWIVEDI	DHEERENDRA PRASAD DWIVEDI	
23	SWATI SHUKLA	BHOOPENDRA SHUKLA	
24	HIMANSHU PANDEY	AWADHSHARAN PANDEY	
25	SAHIL ATHYA	DHARMENDRA ATHYA	

26	SONAM BAGHEL	GYANENDRA SINGH	
27	RISHABH PANDEY	PUSHPENDRA PANDEY	
28	RAJENDRA MAJHI	PARASNATH MAJHI	
29	SHIVANSHI MISHRA	VIVEK MISHRA	
30	PRACHI PANDEY	SANDEEP KUMAR PANDEY	
31	SHIVANSHU TIWARI	SARWDANAND TIWARI	
32	ANKUR SINGH	RAJEEV LOCHAN SINGH	
33	VIKASH BAGHEL	NARENDRA PRATAP SINGH	
34	RASHMI MISHRA	MANOJ KUMAR MISHRA	
35	SHIVANI MISHRA	SHASHIKANT MISHRA	
36	PRITI VISHWAKARMA	SHRILAL VISHWAKARMA	
37	JESHIKA PATEL	GPVIND PRASAD PATEL	
38	PRANSHU PATEL	RAJENDRA KUMAR PATEL	
39	VIVEK TIWARI	VISHNU PRASAD TIWARI	
40	RAJ RAWAT	SANT KUMAR RAWAT	
41	NIHARIKA SINGH	TARUNENDRA SINGH	
42	SHUBH CHAURASIYA	RAJ KUMAR CHAURASIYA	
43	RAHUL DWIVEDI	DINESH DWIVEDI	
44	SAHU ANURADHA PRADEEP	PRADEEP KUMAR SAHU	
45	NEERAJ JAISWAL	OM PRAKASH JAISWAL	
46	SHAILJA TRIPATHI	ARVIND TRIPATHI	
47	GHANISTH DWOVEDI	RAJESH DWIVEDI	
48	RAJU GUPTA	KAMLESH GUPTA	
49	ASTHA MISHRA	VIJAY MISHRA	
50	TUSAR NAMDEV	SHIVSHANKAR NAMDEV	
51	SHRISTI SINGH	PUSHPRAJ SINGH	
52	KISHAN GUPTA	RAJESH GUPAT	
53	NISTHA MISHRA	VIRENDRA KUMAR MISHRA	
54	MUSKAN SINGH	PRAMOD SINGH	
55	DEVANSHI PANDEY	DHARMENDRA PANDEY	
56	ROMA SEN	SANTOSH SEN	
57	VANDANA TIWARI	SURYAMANI TIWARI	
58	VIPIN KOL	RAM PRASAD KOL	
59	ANJALI GAJUTAM	MANOJ GAUTAM	
60	SAMARTH PANDEY	RAVINDRA PANDEY	
61	NIKHIL SONDHIYA	CHANDRABALIE SONDHIYA	
62	RAM KISHOR CHAURASIYA	SHIV PRASAD CHAURASIY	
63	PRIYA OJAH	KRISHNA KANT OJHA	
64	SANSKAR AGNIHOTRI	AJEET AGNIHOTRI	
65	ANUBHAV SINGH	JAI SINGH	
66	GARIMA PANDEY	GHANSHYAM PANDEY	

Important Notice (महत्वपूर्ण निर्देश)

- वश्व वद्यालय के शैक्ष णक वभागों के स्नातकोत्तर कोर्स MCA/M.Com./M.Tech/MSW/MBA/M.A./M.Sc के छात्रों को सू चत कया जाता है नय मत एटीकेटी के परीक्षा/भूतपूर्व/फार्म ऑनलाईन भरने की सु वधा वश्व वद्यालय के पोर्टल पर उपलब्ध करा दी गई है।उपरोक्त कोर्स के समस्त छात्र ऑनलाईन परीक्षा फार्म प्रस्तुत कर सकते है। परीक्षा फार्म भरने की अंतिम तिथी एवं अन्य सूचना हेतु क्लिक करें।
- सभी छात्रों को नामांकन परीक्षा फार्म भरने हेतु वश्व वद्यालय के पोर्टल / पर पंजीयन करवाना अनिवार्य है।
- छात्र पोर्टल पर पंजीयन हेतु Student Registration पर क्लिक करें।
- Student Registration में छात्र को अपने वश्व वद्यालय में प्रवेश का वर्ष, कोर्स तथा अपना कॉलेज संस्थान चयन कर सर्च करने पर/Application/Enrollment Number के साथ नाम, जन्म दिनांक एवं अन्य जानकारी प्रर्द शत होगी।
- प्रर्द शत सूची में से छात्र अपने Application/Enrollment Number तथा अन्य जानकारी को सेलेक्ट कर पंजीयन फार्म भर सकते है। साथ ही छात्र पोर्टल पर अपना लॉ गन पासवर्ड बना सकते है।
- सफलता पूर्वक पंजीयन उपरांत छात्र अपने लॉ गन ID जो क Application/Enrollment Number होगा तथा छात्र द्वारा बनाये गये Password के माध्यम से पोर्टल पर लॉ गन कर अपना नामंकन फॉर्म भर सकते है। पोर्टल पर लॉ गन करने के लए छात्र Student login पर क्लिक करें।
- नामांकन शुल्क का आनलाईल भुगतान पूर्ण करने पर ही छात्रों का नामांकन पूर्ण माना जावेगा।

- पोर्टल से सम्बं धत कसी भी तकनीकी सहयाता के लए छात्र हेल्पलाइन नंबर -9685921293 पर कॉल कर सकते हे या Email:apssuport.rewa22@gmail.com के माध्यम से सहयाता प्राप्त कर सकते हे।

Awadhesh Pratap Singh University, Rewa (M.P.)

Structure for UG Programme : UGC CBCS System

(As Per Ordinance 14-A)

Papers Offered by the Department of Commerce Under 4 Years CBCS Course of B.Com (Honours/Research)

PART-A: INTRODUCTION

Program: UG	Class: B.Com (Honours/Research)	Semester : IV	Session : w.e.f. 2021-22
Subject: **Commerce**			
1.	Course Code	……..(To be filled by Exam Cell)	
2.	Course Title	Income Tax Law and practices	
3.	Course Type	Major (MJ-4)	
4.	Pre-Requisite (if any)	No	
5.	Course learning outcomes (CLO)	After the successful completion of the course, the student shall be able to: • understand the basic concepts of Income Tax Act and determine the Residential status of different persons. • identify the five heads in which income is categorized and compute total income. • understand clubbing procedures, aggregate income after set-off and carry forward oflosses and deduction allowed under the income tax act and further to compute taxable income tax act and further to compute taxable income and tax liability of individuals. • file online return.	
6.	Credit value	6 (L)	

Part-B : Content of the Course

Total No. of Lectures + Tutorials (one hours per week) L-6 Hrs		
Total No. of Lectures: L-90 (Lecture of one hour)		
Module	Topic	No. of Lecture
I	**General Introduction of Indian Income Tax Act. 1961 :** Brief History, Basic Concepts, Income, Agriculture income, Casual Income, previous Year, Assessment year, Gross Total Income, Total Income, Person, Assesses, Exempted Income. Residential Status and Tax Liability, Keywards : income, casual income, assessment year, previous year	18
II	**Computation of Income (I) :** Income from Salary Income from house property Keywards : Salary, House property	18
III	**Computation of Income (II) :** Income from Business and Profession Capital Gains Income from other Sources. Keywards : income from business. income from profession, capital gain	18
IV	**Different Provisions (I) :** set off and carry forward of losses, deduction from gross total income: rebatesand reliefs, clubbing of income, aggregation of income, computation of total income and tax liability of and individual Keywards : gross total income, total income	18
V	**Different Provisions (II) :** Assessment Procedure, Tax Deduction & Collection Number (TAN), Permanent Account Number (PAN) Tax Deduction At Source, (TDS) Advance Payment of Tax, Income Tax Authorities, Appeal, Revision and Penalties, E-Filing of Return. Keywards : TAN, PAN	18

PART-C : Learning Resources
Textbooks, Reference Books, Other Resources
Suggested Readings :
Textbooks : 1. Sakhlecha Shripal, Income Tax Law and Practices, Satish Printers Indore 2. Mehrotra and Goyal, Income Tax Law an Practices, Sahitya bhawan Publication Agra. 3. Jain R.K. Income Tax Law and Practices, SBPD Publication Agra. **Reference Books :** 1. Ahuja Girish and Gupta Ravi, Systematic Approach to Income Tax, Bharat Law House, Delhi. 2. Singhania VGinod K. and Singhania Monica, Students Guide to Income Tax, Taxmann publication Pvt. Ltd, New Delhi.
Suggestive digital platform web links

1. https;//incometaxindia.gov.in
2. https;//www.incometaxindiaefiling.gov.in
3. https;//www.taxmann.com
4. https;//taxguru.in/

Part D: Assessment and Evaluation			
External Assessment (UE)	Max. Marks. 60	Min. Marks: 24	U.E. Time 3 Hours
Internal Assessment	Max. Marks. 40	Min. Marks. 14	
Total	100		

Awadhesh Pratap Singh University, Rewa (M.P.)

Structure for UG Programme : UGC CBCS System

(As Per Ordinance 14-A)

Papers Offered by the Department of Commerce Under 4 Years CBCS Course of B.Com (Honours/Research)

PART-A: INTRODUCTION

Program: UG	Class: B.Com (Honours/Research)	Semester : IV	Session : w.e.f. 2021-22
Subject: **Commerce**			
1.	Course Code	……..(To be filled by Exam Cell)	
2.	Course Title	Cost Accounting	
3.	Course Type	Minor (MN-4)	
4.	Pre-Requisite (if any)	No	
5.	Course learning outcomes (CLO)	After the successful completion of the course, the student shall be able to: • familiar with the concept of cost accounting. • understand the relationship between cost and financial accounting. • facilitating the idea and meaning of material and labour cost control in an industry with pricing issues. • aware of the concept of various overheads occurring in the factory. • expand his knowledge about remuneration and incentives. • collect knowledge about preparation of cost sheet from practical point of view and calculate tender/quote price. • equipped with knowledge about the contract cost of a particular contract. • know what are the basics of process costing of a product. • acquired knowledge about service cost especially transport cost. • in a position to keep a record of the cost and reconcile the difference, if any.	
6.	Credit value	6 (L)	

Part-B : Content of the Course

Total No. of Lectures + Tutorials (one hours per week) L-6 Hrs		
Total No. of Lectures: L-90 (Lecture of one hour)		
Module	Topic	No. of Lecture
I	**Introduction :** Meaning, objectives and advantages of cost accounting, Difference between cost accounting and financial accounting; Cost concepts and classifications; Elements of cost; Installation of a costing system, Role of a Cost Accountant in an organization. Keywards :costing, elements of cost, installation of costing system.	18
II	**Elements of Cost-1 : Materials :** Material/inventory control techniques. Accounting and control of purchases, storage and issue of materials, Methods of pricing of materials issues-FIFO, LIFO, Simple Average, Weighted Average, Replacement, Treatment of Material Losses. Labour : Accounting and Control of Labour Clost. Time Keeping and Time Booking. Concept and Treatment of Idle Time, Over Time, Labour Turnover and Fringe Benefits. Methods of Wage Payment and The Incentive Schemes- Halsey, Rowan, Taylor's Differential Piece Wage. Keywards : A, B, C system; EOQ, bin-card, control ratios, job evaluation.	18
III	**Elements of Cost-2 :** Overheads : and Development Expenses Activity Based Cost Allocation. Classification, Allocation, Apportionment and Absorption of Overheads; Under-and Over-Absorption; Capacity Levels and Costs; Treatments of Certain Items in Costing Like Interest on Capital, Packing Expenses, Bad Debts, Research Keywards : departmentalization, machine hour rate.	18
IV	**Methods of Costing :** Unit Costing : Definition, Objectives, Elements of Cost, Methods, Cost Sheet, Statement of Cost, Production Account, Calculation of Estimates, Tender and Quotation Price. Contract Costing: Meaning, Features, Contract Ledger, Determination of profit or Loss on Complete and Incomplete Contract, Job Costing : Preamble, Features, Objectives, Advantages, Procedure of Job Costing, Batch Costing. Keywards : direct expenses, work-in-progress, cost of goods sold, certified work, reserve for contingencies, escalation clause, construction contracts.	18
V	**Process Costing and Record Keeping of Cost :** Process Costing : Meaning, Characteristics, Scope, Preparation of Process Cost Account, Process Wastage and Treatment, Joint and Bye-products-Methods, Inter-Process Profits. Record keeping of Cost : Book Keeping in Cost Accounting-Integral and Non-Integral Systems, Reconciliation of Cost and Financial Accounts. Keywards : treatment of wastage, log book, running charges, cost ledger, memorandum reconciliation account.	18
Note – Minimum 70% of numerical questions should be asked.		

PART-C : Learning Resources
Textbooks, Reference Books, Other Resources
Suggested Readings :
Textbooks : 1. Jain, S.P. and K.L. Narang. Cost Accounting : Principles and Methods, Kalyani Publishers 2. Arora, M.N. Cost Accounting-Principles and Practice. Vikas Publishing House, New Delhi. 3. Iyengar, S.P. Cost Accounting, Sultan Chand & Sons. 4. Jhamb H.V., Fundamentals of Cost Accounting, Ane Books Pvt.Ltd 5. Agrawal M.L. & Gupta K.L., Sahity Bhawan Publications, Agra. **Reference Books :** 1. Arora M.N. (Author) Cost Accounting (For B.Com-Sem.4, Dehli University), Kindle Edition. 2. Gupta M.P. Cost Accounting Text and Problems: Texts and Problems, Kindle Edition. 3. Tulsian P.C. & Tulsian Bharat (Author) Cost Accounting Format : Kindle Edition.
Suggestive digital platform web links
1. https;/www.edx.org/learn/cost-accounting. 2. https;//www.coursera.org/project/introduction-cost-accounting.
Suggested equivalent online course
NPTEL Course : https://onlinecourses.nptel.ac.in/ SWAYAM Course : Cost Accounting : By Prof. Varadraj Bapat/ IIT Bombay

Part D: Assessment and Evaluation			
External Assessment (UE)	Max. Marks. 60	Min. Marks: 24	U.E. Time 3 Hours
Internal Assessment	Max. Marks. 40	Min. Marks. 14	
Total	100		

Awadhesh Pratap Singh University, Rewa (M.P.)

Structure for UG Programme : UGC CBCS System

(As Per Ordinance 14-A)

Papers Offered by the Department of Commerce Under 4 Years CBCS Course of B.Com (Honours/Research)

PART-A: INTRODUCTION

Program: UG	Class: B.Com (Honours/Research)	Semester : IV	Session : w.e.f. 2021-22
Subject: **Commerce**			
1.	Course Code	……..(To be filled by Exam Cell)	
2.	Course Title	Management Accounting	
3.	Course Type (Core Course/Discipline Specific Elective/Generic Elective)	Generic Elective Course-1 (own fully)	
4.	Pre-Requisite (if any)	No	
5.	Course learning outcomes (CLO)	After successful completion of the course the student shall be able to: • Understand the basic concepts of management accounting. • Understand the relationship between management and accounting. • facilitating the idea and meaning of financial statements. • Aware of the position of business through ratio analysis techniques. • expand his knowledge about cash position and working capital changes. • know what are the basics of process costing of product. • make the students develop competence with their usage in managerial decision.	
6.	Credit value	4 (L)	

Part-B : Content of the Course

Total No. of Lectures + Tutorials (one hours per week) L-6 Hrs		
Total No. of Lectures: L-90 (Lecture of one hour)		
Module	Topic	No. of Lecture
I	Management Accounting : Meaning, nature and scope and Functions of management accounting; Role of management accounting in decision making management accounting vs financial accounting and cost accounting. Tools and techniques of management accounting.	18
II	Financial Statement : Meaning; Limitations of financial statements; Objectives and methods of financial statements analysis; Ratio analysis; Classification of ratios Profitability ratios, turnover ratios and Financials ratios; Advantages of ratios analysis; Limitations of accounting ratios.	18
III	Funds Flow Statement, Cash Flow Statement, as per Indian Accounting Standard 3.	18
IV	Absorption and Marginal Costing : Marginal and differential costing as a tool for decision making make or buy; Change of product mix; Pricing; Break even analysis; Exploring new markets; shutdown decisions.	18
V	Budgetary Control : Meaning of budget and Budgetary control; Objectives; Merits and limitations; Types of budgets; Fixed and flexible budgeting; Control Ratios, Zero base budgeting; performance budgeting. Standard Costing and Variance Analysis : Meaning of Standard cost and standard costing; Advantage and application; Variance Analysis; meaning of standard cost and standard costing; Advantages and application; Variance analysis material; and Labour variance.	18
	1. In this paper 70% shall be numerical & 30 % shall be theoretical questions. 2. At least 15 lectures for each unit are compulsory.	

PART-C : Learning Resources
Textbooks, Reference Books, Other Resources
Suggested Readings :
1. Arora, M.M. : Cost Accounting-Principles and practices; Vikas, New Delhi. 2. S.P. Gupta-Management Accounting 3. M. Agrawal- Management Accounting 4. R.S. Khandwal- Management Accounting 5. Shashi Gupta- Management Accounting

Part D: Assessment and Evaluation			
External Assessment (UE)	Max. Marks. 60	Min. Marks: 24	U.E. Time 3 Hours
Internal Assessment	Max. Marks. 40	Min. Marks. 14	
Total	100		

Awadhesh Pratap Singh University, Rewa (M.P.)

Structure for UG Programme : UGC CBCS System

(As Per Ordinance 14-A)

Papers Offered by the Department of Commerce Under 4 Years CBCS Course of B.Com (Honours/Research)

PART-A: INTRODUCTION

Program: UG	Class: B.Com (Honours/Research)	Semester : IV	Session : w.e.f. 2021-22
Subject: **Commerce**			
1.	Course Code	……..(To be filled by Exam Cell)	
2.	Course Title	Investment Management	
3.	Course Type (Core Course/Discipline Specific Elective/Generic Elective)	Vocational Course	
4.	Pre-Requisite (if any)	No	
5.	Course learning outcomes (CLO)	After successful comptetion of the course the student shall be able to: • Understand the basic concepts of management. • Understand the relationship between management and Investment. • Facilitating the idea and meaning of Investment Management. • Aware a business through the Risk & securities. • Expand his knowledge about efficient market hypothesis. • Make the students develop competence with their usage in portfolio investment.	
6.	Credit value	4 (L)	

Part-B : Content of the Course

Total No. of Lectures + Tutorials (one hours per week) L-6 Hrs		
Total No. of Lectures: L-90 (Lecture of one hour)		
Module	Topic	No. of Lecture
I	Management : Meaning, nature and importance, Functions and Principles of management. Management Vs Administration Professionalisation of managenent. Development of management thoughts : Contribution of Taylor and Fayol Management by exception. Management by objectives.	18
II	Planning and decision making organisation; Meaning, Principles, Structure Departmentalization Direction, Control process & Methods.	18
III	Investment management : meaning, Nature, objectives and process of investment. Category and alternatives of Investment, negotiable and non-negotiable investment.	18
IV	Measurement of return & risk, Systematic and unsystematic risk, Security risk and return analysis. Security analysis : Fundamental, Economic, Industrial and Technical analysis.	18
V	Efficient market hypothesis: Weak, Sami strong and strong and strong market, capital assets pricing model. Portfolio Evaluation: Evaluation: Jenson, Shape and Traner Model.	18

PART-C : Learning Resources
Textbooks, Reference Books, Other Resources
Suggested Readings :
1. Drucker Peter F : Management Challenges for the 21st Century: Butterworth Heinemann 2. Weihrich and Koontz, et al : Essentials of Managemet; Tata Mcgraw Hill, New Delhi. 3. Fred Luthans: Organizational Behaviour, McGraw hill New York. 4. Louis A. Allen : Management and Organisation; McGraw Hill, Tokyo. 5. R.P. Rastogi, Investment Management 6. P.Pendian Security Analysis & Port Folio Management 7. Fischar-Ronold Security Analysis & Port Folio Management.

Part D: Assessment and Evaluation			
External Assessment (UE)	Max. Marks. 60	Min. Marks: 24	U.E. Time 3 Hours
Internal Assessment	Max. Marks. 40	Min. Marks. 14	
Total	100		

Awadhesh Pratap Singh University, Rewa (M.P.)

Structure for UG Programme : UGC CBCS System

(As Per Ordinance 14-A)

Papers Offered by the Department of Commerce Under 4 Years CBCS Course of B.Com (Honours/Research)

PART-A: INTRODUCTION

Program: UG	Class: B.Com (Honours/Research)	Semester : IV	Session : w.e.f. 2021-22
Subject: **Commerce**			
1.	Course Code	……..(To be filled by Exam Cell)	
2.	Course Title	Digital Marketing	
3.	Course Type (Core Course/Discipline Specific Elective/Generic Elective)	Vocational Course	
4.	Pre-Requisite (if any)	No	
5.	Course learning outcomes (CLO)	After completing this course will be able to: • Understand digital marketing, importance thereof, meaning of web site and levels of web site, Difference between blog, portal & website. • Learn about SMO (Social Media Optimization) like Facebook, Twitter, LinkedIn, Tumblr, Pinterest and other social media services optimization. • understand paid tools like Google AdWords, Display advertising techniques. • Learn and apply hands on experience on tools useful to SEO for analysis on website traffic, keyword analysis and learn Email marketing and Ad Designing.	
6.	Credit value	4 (L)	

Part-B : Content of the Course

Total No. of Lectures + Tutorials (one hours per week) L6 Hrs		
Total No. of Lectures: L-90 (Lecture of one hour)		
Module	Topic	No. of Lecture
I	**Introduction to Digital Marketing :** Meaning of Digital Marketing, Differences from Tranditional Marketing, Return of Investments on Digital Marketing Vs Tranditional Marketing, E Commerce, Tools used for successful marketing, SWOT Keywards :Titles, Metatags	18
II	**Analysis of business for digital marketing :** Meaning of Blogs, Websites, portal and their differences, Visibility, Visitor Engagement, Conversion Process, Retention, Performance Evaluation. Keywards :Blog, Websites and Visibility.	18
III	**Search Engine Optimization (SEO) :** On page optimization techniques, off page optimization techniques, preparing reports, creating search compaigns, Creating Display Campaigns. Keywards : Verbal Communication, Non-Verbal Communication, Intra personal and Inter personal communication.	18
IV	**Social Media Optimization (SMO) :** Introduction to social media marketing, advanced Facebook marketing, WordPress Blog creation, Twitter marketing, LinkedIn Marketing, Instagram Marketing, Social Media Analytical Tools. Keywards : Google Analytics.	18
V	**Website Traffic Analysis** : Affiliate Marketing and Ad Designing : Google Analytics, Online Reputation Management, EMail Marketing, Affiliate Marketing, Understatnding AdWords Algorithm, Advertisement Designing. Keywards : Ad Design, Social Media, Affiliate, Analytics, SMO.	18

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PART-C : Learning Resources
Textbooks, Reference Books, Other Resources
Suggested Readings :
Textbooks : 1. Ahuja Vandana (2016) Digital Marketing. Oxford University PressISBN : 9780199455447 2. Sainy Romi, Nargundkar Rajendra (2018) Digital Marketing : Cases from India, Notion Press ISBN 9781644291931, 1644291932.
Suggestive digital platform web links

1. https;/www.wordstream.com/link
2.building:~:text=Building%20links%20is%20one%20of,build%20links%20to%20your%20site.
3. https;//www.targetinternet.com/the-top-32-most-useful-digital-marketing-links/
4. https://digitalmarketingphilippincs.com/8-strategic-steps-to-natural-link-building/
5. https://www.the-web-guys.com/digital-marketing/

Suggested equivalent online course
NPTEL Course : https://nptel.ac.in/courses/110/105/110105142/ SWAYAM Course :https://onlinecourses.swayam2.ac.in/ugc19_hs26/preview

Part D: Assessment and Evaluation			
External Assessment (UE)	Max. Marks. 60	Min. Marks: 24	U.E. Time 3 Hours
Internal Assessment	Max. Marks. 40	Min. Marks. 14	
Total	100		

Awadhesh Pratap Singh University, Rewa (M.P.)

Structure for UG Programme : UGC CBCS System

(As Per Ordinance 14-A)

Papers Offered by the Department of Commerce Under 4 Years CBCS Course of B.Com (Honours/Research)

PART-A: INTRODUCTION

Program: UG	Class: B.Com (Honours/Research)	Semester : IV	Session : w.e.f. 2021-22
Subject: **Commerce**			
1.	Course Code	……..(To be filled by Exam Cell)	
2.	Course Title	Human Resources Management	
3.	Course Type (Core Course/Discipline Specific Elective/Generic Elective)	Generic Elective Course-1 (own fully)	
4.	Pre-Requisite (if any)	No	
5.	Course learning outcomes (CLO)	After successful competition of the course the student shall be able to: • To understand and appreciate the importance of the human resources vis-a-vis other resources of the organisation. • To familiarize the students with methods and techniques of HRM. • To equip them with the application of the HRM tools in real world business situations.	
6.	Credit value	4 (L)	

Part-B : Content of the Course

Total No. of Lectures + Tutorials (one hours per week) L-6 Hrs		
Total No. of Lectures: L-90 (Lecture of one hour)		
Module	Topic	No. of Lecture
I	Human Resources Management : Context and Concept of People Management in a Systems Perspective-Organisation and Functions of the HR and Personnel Department_HR. Structure and Strategy; Role o Government and Personnel Enironmen t including MNCs.	18
II	Recruitment and Selection : Human Resource Information System {HRIS}-Manpower Planning-Selection-Induction & Orientation-Performance and Potential Appraisal-Coaching and Mentoring-HRM issues and practices in the context of Outsourcing as a strategy.	18
III	Human Resources Development-Training and Development Methods-Design & Evaluation of T&D Programmes-Gareer Development-Promotions and Transfers-Personnel Empowerment including Delegation-Retirement and other Separation Processes.	18
IV	Financial Compensation-Productivity and Morale-Principal Compensation issues management-Job Evaluation-Productivity, Employee Morale and Motivation-sprees Management-Quality of Work life.	18
V	Building relationships-Facilitating Legislative Framework-Trade Unions-Managing Conflicts-Disciplinary Process-Collective Bargaining-Workers Participation in Management-Concept, Mechanisms and Experiences.	18

PART-C : Learning Resources
Textbooks, Reference Books, Other Resources
Suggested Readings :
1. Venkata Ratnam C.S. & Srivastava B.K. Personnel Management and Human Resources, Tata Mc-Graw Hill, New Delhi 2. Aswwathappa, Human Resource Management, Tata Mc-Graw Hill, New Delhi, 2010 3. Garry Dessler & Varkkey, Human Resource Management, Pearson, New Delhi,2009 4. Alan Price, Human Resource Management, Cengage Learning, New Delhi,2007 5. Pravin Durai, Human Resource Management, Pearson, New Delhi,2010 6. Snell, Bohlander & Vohra, Human Resources Management, Cengage, New Delhi, 2010

Part D: Assessment and Evaluation			
External Assessment (UE)	Max. Marks. 60	Min. Marks: 24	U.E. Time 3 Hours
Internal Assessment	Max. Marks. 40	Min. Marks. 14	
Total	100		

Awadhesh Pratap Singh University, Rewa (M.P.)

Structure for UG Programme : UGC CBCS System

(As Per Ordinance 14-A)

Papers Offered by the Department of Commerce Under 4 Years CBCS Course of B.Com (Honours/Research)

PART-A: INTRODUCTION

Program: UG	Class: B.Com (Honours/Research)	Semester : IV	Session : w.e.f. 2021-22
Subject: **Commerce**			
1.	Course Code	……..(To be filled by Exam Cell)	
2.	Course Title	Income Tax Law and practices	
3.	Course Type	Major (MJ-4)	
4.	Pre-Requisite (if any)	No	
5.	Course learning outcomes (CLO)	After the successful completion of the course, the student shall be able to: • understand the basic concepts of Income Tax Act and determine the Residential status of different persons. • identify the five heads in which income is categorized and compute total income. • understand clubbing procedures, aggregate income after set-off and carry forward oflosses and deduction allowed under the income tax act and further to compute taxable income tax act and further to compute taxable income and tax liability of individuals. • file online return.	
6.	Credit value	6 (L)	

Part-B : Content of the Course

Total No. of Lectures + Tutorials (one hours per week) L-6 Hrs		
Total No. of Lectures: L-90 (Lecture of one hour)		
Module	Topic	No. of Lecture
I	**General Introduction of Indian Income Tax Act. 1961 :** Brief History, Basic Concepts, Income, Agriculture income, Casual Income, previous Year, Assessment year, Gross Total Income, Total Income, Person, Assesses, Exempted Income. Residential Status and Tax Liability, Keywards : income, casual income, assessment year, previous year	18
II	**Computation of Income (I) :** Income from Salary Income from house property Keywards : Salary, House property	18
III	**Computation of Income (II) :** Income from Business and Profession Capital Gains Income from other Sources. Keywards : income from business. income from profession, capital gain	18
IV	**Different Provisions (I) :** set off and carry forward of losses, deduction from gross total income: rebatesand reliefs, clubbing of income, aggregation of income, computation of total income and tax liability of and individual Keywards : gross total income, total income	18
V	**Different Provisions (II) :** Assessment Procedure, Tax Deduction & Collection Number (TAN), Permanent Account Number (PAN) Tax Deduction At Source, (TDS) Advance Payment of Tax, Income Tax Authorities, Appeal, Revision and Penalties, E-Filing of Return. Keywards : TAN, PAN	18
Note – Minimum 70% of numerical questions should be asked.		

PART-C : Learning Resources
Textbooks, Reference Books, Other Resources
Suggested Readings :
Textbooks : 1. Sakhlecha Shripal, Income Tax Law and Practices, Satish Printers Indore 2. Mehrotra and Goyal, Income Tax Law an Practices, Sahitya bhawan Publication Agra. 3. Jain R.K. Income Tax Law and Practices, SBPD Publication Agra. **Reference Books :** 1. Ahuja Girish and Gupta Ravi, Systematic Approach to Income Tax, Bharat Law House, Delhi. 2. Singhania VGinod K. and Singhania Monica, Students Guide to Income Tax, Taxmann publication Pvt. Ltd, New Delhi.
Suggestive digital platform web links

1. https;//incometaxindia.gov.in
2. https;//www.incometaxindiaefiling.gov.in
3. https;//www.taxmann.com
4. https;//taxguru.in/

Awadhesh Pratap Singh University, Rewa (M.P.)

Structure for UG Programme : UGC CBCS System

(As Per Ordinance 14-A)

Papers Offered by the Department of Commerce Under 4 Years CBCS Course of B.Com (Honours/Research)

PART-A: INTRODUCTION

Program: UG	Class: B.Com (Honours/Research)	Semester : IV	Session : w.e.f. 2021-22
Subject: **Commerce**			
1.	Course Code	……..(To be filled by Exam Cell)	
2.	Course Title	Cost Accounting	
3.	Course Type	Minor (MN-4)	
4.	Pre-Requisite (if any)	No	
5.	Course learning outcomes (CLO)	After the successful completion of the course, the student shall be able to: • familiar with the concept of cost accounting. • understand the relationship between cost and financial accounting. • facilitating the idea and meaning of material and labour cost control in an industry with pricing issues. • aware of the concept of various overheads occurring in the factory. • expand his knowledge about remuneration and incentives. • collect knowledge about preparation of cost sheet from practical point of view and calculate tender/quote price. • equipped with knowledge about the contract cost of a particular contract. • know what are the basics of process costing of a product. • acquired knowledge about service cost especially transport cost. • in a position to keep a record of the cost and reconcile the difference, if any.	
6.	Credit value	6 (L)	

Part-B : Content of the Course

Total No. of Lectures + Tutorials (one hours per week) L-6 Hrs		
Total No. of Lectures: L-90 (Lecture of one hour)		
Module	Topic	No. of Lecture
I	**Introduction :** Meaning, objectives and advantages of cost accounting, Difference between cost accounting and financial accounting; Cost concepts and classifications; Elements of cost; Installation of a costing system, Role of a Cost Accountant in an organization. Keywards :costing, elements of cost, installation of costing system.	18
II	**Elements of Cost-1 : Materials :** Material/inventory control techniques. Accounting and control of purchases, storage and issue of materials, Methods of pricing of materials issues-FIFO, LIFO, Simple Average, Weighted Average, Replacement, Treatment of Material Losses. Labour : Accounting and Control of Labour Clost. Time Keeping and Time Booking. Concept and Treatment of Idle Time, Over Time, Labour Turnover and Fringe Benefits. Methods of Wage Payment and The Incentive Schemes- Halsey, Rowan, Taylor's Differential Piece Wage. Keywards : A, B, C system; EOQ, bin-card, control ratios, job evaluation.	18
III	**Elements of Cost-2 :** Overheads : and Development Expenses Activity Based Cost Allocation. Classification, Allocation, Apportionment and Absorption of Overheads; Under-and Over-Absorption; Capacity Levels and Costs; Treatments of Certain Items in Costing Like Interest on Capital, Packing Expenses, Bad Debts, Research Keywards : departmentalization, machine hour rate.	18
IV	**Methods of Costing :** Unit Costing : Definition, Objectives, Elements of Cost, Methods, Cost Sheet, Statement of Cost, Production Account, Calculation of Estimates, Tender and Quotation Price. Contract Costing: Meaning, Features, Contract Ledger, Determination of profit or Loss on Complete and Incomplete Contract, Job Costing : Preamble, Features, Objectives, Advantages, Procedure of Job Costing, Batch Costing. Keywards : direct expenses, work-in-progress, cost of goods sold, certified work, reserve for contingencies, escalation clause, construction contracts.	18
V	**Process Costing and Record Keeping of Cost :** Process Costing : Meaning, Characteristics, Scope, Preparation of Process Cost Account, Process Wastage and Treatment, Joint and Bye-products-Methods, Inter-Process Profits. Record keeping of Cost : Book Keeping in Cost Accounting-Integral and Non-Integral Systems, Reconciliation of Cost and Financial Accounts. Keywards : treatment of wastage, log book, running charges, cost ledger, memorandum reconciliation account.	18
Note – Minimum 70% of numerical questions should be asked.		

PART-C : Learning Resources
Textbooks, Reference Books, Other Resources
Suggested Readings :
Textbooks : 1. Jain, S.P. and K.L. Narang. Cost Accounting : Principles and Methods, Kalyani Publishers 2. Arora, M.N. Cost Accounting-Principles and Practice. Vikas Publishing House, New Delhi. 3. Iyengar, S.P. Cost Accounting, Sultan Chand & Sons. 4. Jhamb H.V., Fundamentals of Cost Accounting, Ane Books Pvt.Ltd 5. Agrawal M.L. & Gupta K.L., Sahity Bhawan Publications, Agra. **Reference Books :** 1. Arora M.N. (Author) Cost Accounting (For B.Com-Sem.4, Dehli University), Kindle Edition. 2. Gupta M.P. Cost Accounting Text and Problems: Texts and Problems, Kindle Edition. 3. Tulsian P.C. & Tulsian Bharat (Author) Cost Accounting Format : Kindle Edition.
Suggestive digital platform web links
1. https;/www.edx.org/learn/cost-accounting. 2. https;//www.coursera.org/project/introduction-cost-accounting.
Suggested equivalent online course
NPTEL Course : https://onlinecourses.nptel.ac.in/ SWAYAM Course : Cost Accounting : By Prof. Varadraj Bapat/ IIT Bombay

Awadhesh Pratap Singh University, Rewa (M.P.)

Structure for UG Programme : UGC CBCS System

(As Per Ordinance 14-A)

Papers Offered by the Department of Commerce Under 4 Years CBCS Course of B.Com (Honours/Research)

PART-A: INTRODUCTION

Program: UG	Class: B.Com (Honours/Research)	Semester : IV	Session : w.e.f. 2021-22
Subject: **Commerce**			
1.	Course Code	……..(To be filled by Exam Cell)	
2.	Course Title	Management Accounting	
3.	Course Type (Core Course/Discipline Specific Elective/Generic Elective)	Generic Elective Course-1 (own fully)	
4.	Pre-Requisite (if any)	No	
5.	Course learning outcomes (CLO)	After successful comptetion of the course the student shall be able to: • Understand the basic concepts of management accounting. • Understand the relationship between management and accounting. • facilitating the idea and meaning of financial statements. • Aware of the position of business through ratio analysis techniques. • expand his knowledge about cash position and working capital changes. • know what are the basics of process costing of product. • make the students develop competence with their usage in managerial decision.	
6.	Credit value	4 (L)	

Part-B : Content of the Course

Total No. of Lectures + Tutorials (one hours per week) L-6 Hrs		
Total No. of Lectures: L-90 (Lecture of one hour)		
Module	Topic	No. of Lecture
I	Management Accounting : Meaning, nature and scope and Functions of management accounting; Role of management accounting in decision making management accounting vs financial accounting and cost accounting. Tools and techniques of management accounting.	18
II	Financial Statement : Meaning; Limitations of financial statements; Objectives and methods of financial statements analysis; Ratio analysis; Classification of ratios Profitability ratios, turnover ratios and Financials ratios; Advantages of ratios analysis; Limitations of accounting ratios.	18
III	Funds Flow Statement, Cash Flow Statement, as per Indian Accounting Standard 3.	18
IV	Absorption and Marginal Costing : Marginal and differential costing as a tool for decision making make or buy; Change of product mix; Pricing; Break even analysis; Exploring new markets; shutdown decisions.	18
V	Budgetary Control : Meaning of budget and Budgetary control; Objectives; Merits and limitations; Types of budgets; Fixed and flexible budgeting; Control Ratios, Zero base budgeting; performance budgeting. Standard Costing and Variance Analysis : Meaning of Standard cost and standard costing; Advantage and application; Variance Analysis; meaning of standard cost and standard costing; Advantages and application; Variance analysis material; and Labour variance.	18
	1. In this paper 70% shall be numerical & 30 % shall be theoretical questions. 2. At least 15 lectures for each unit are compulsory.	

PART-C : Learning Resources
Textbooks, Reference Books, Other Resources
Suggested Readings :
1. Arora, M.M. : Cost Accounting-Principles and practices; Vikas, New Delhi. 2. S.P. Gupta-Management Accounting 3. M. Agrawal- Management Accounting 4. R.S. Khandwal- Management Accounting 5. Shashi Gupta- Management Accounting

Awadhesh Pratap Singh University, Rewa (M.P.)

Structure for UG Programme : UGC CBCS System

(As Per Ordinance 14-A)

Papers Offered by the Department of Commerce Under 4 Years CBCS Course of B.Com (Honours/Research)

PART-A: INTRODUCTION

Program: UG	Class: B.Com (Honours/Research)	Semester : IV	Session : w.e.f. 2021-22
Subject: **Commerce**			
1.	Course Code	……..(To be filled by Exam Cell)	
2.	Course Title	Investment Management	
3.	Course Type (Core Course/Discipline Specific Elective/Generic Elective)	Vocational Course	
4.	Pre-Requisite (if any)	No	
5.	Course learning outcomes (CLO)	After successful comptetion of the course the student shall be able to: • Understand the basic concepts of management. • Understand the relationship between management and Investment. • Facilitating the idea and meaning of Investment Management. • Aware a business through the Risk & securities. • Expand his knowledge about efficient market hypothesis. • Make the students develop competence with their usage in portfolio investment.	
6.	Credit value	4 (L)	

Part-B : Content of the Course

Total No. of Lectures + Tutorials (one hours per week) L-6 Hrs		
Total No. of Lectures: L-90 (Lecture of one hour)		
Module	Topic	No. of Lecture
I	Management : Meaning, nature and importance, Functions and Principles of management. Management Vs Administration Professionalisation of managenent. Development of management thoughts : Contribution of Taylor and Fayol Management by exception. Management by objectives.	18
II	Planning and decision making organisation; Meaning, Principles, Structure Departmentalization Direction, Control process & Methods.	18
III	Investment management : meaning, Nature, objectives and process of investment. Category and alternatives of Investment, negotiable and non-negotiable investment.	18
IV	Measurement of return & risk, Systematic and unsystematic risk, Security risk and return analysis. Security analysis : Fundamental, Economic, Industrial and Technical analysis.	18
V	Efficient market hypothesis: Weak, Sami strong and strong and strong market, capital assets pricing model. Portfolio Evaluation: Evaluation: Jenson, Shape and Traner Model.	18

PART-C : Learning Resources
Textbooks, Reference Books, Other Resources
Suggested Readings :
1. Drucker Peter F : Management Challenges for the 21st Century: Butterworth Heinemann 2. Weihrich and Koontz, et al : Essentials of Managemet; Tata Mcgraw Hill, New Delhi. 3. Fred Luthans: Organizational Behaviour, McGraw hill New York. 4. Louis A. Allen : Management and Organisation; McGraw Hill, Tokyo. 5. R.P. Rastogi, Investment Management 6. P.Pendian Security Analysis & Port Folio Management 7. Fischar-Ronold Security Analysis & Port Folio Management.

Awadhesh Pratap Singh University, Rewa (M.P.)

Structure for UG Programme : UGC CBCS System

(As Per Ordinance 14-A)

Papers Offered by the Department of Commerce Under 4 Years CBCS Course of B.Com (Honours/Research)

PART-A: INTRODUCTION

Program: UG	Class: B.Com (Honours/Research)	Semester : IV	Session : w.e.f. 2021-22
Subject: **Commerce**			
1.	Course Code	……..(To be filled by Exam Cell)	
2.	Course Title	Digital Marketing	
3.	Course Type (Core Course/Discipline Specific Elective/Generic Elective)	Vocational Course	
4.	Pre-Requisite (if any)	No	
5.	Course learning outcomes (CLO)	After completing this course will be able to: • Understand digital marketing, importance thereof, meaning of web site and levels of web site, Difference between blog, portal & website. • Learn about SMO (Social Media Optimization) like Facebook, Twitter, LinkedIn, Tumblr, Pinterest and other social media services optimization. • understand paid tools like Google AdWords, Display advertising techniques. • Learn and apply hands on experience on tools useful to SEO for analysis on website traffic, keyword analysis and learn Email marketing and Ad Designing.	
6.	Credit value	4 (L)	

Part-B : Content of the Course

Total No. of Lectures + Tutorials (one hours per week) L6 Hrs		
Total No. of Lectures: L-90 (Lecture of one hour)		
Module	Topic	No. of Lecture
I	**Introduction to Digital Marketing :** Meaning of Digital Marketing, Differences from Tranditional Marketing, Return of Investments on Digital Marketing Vs Tranditional Marketing, E Commerce, Tools used for successful marketing, SWOT Keywards :Titles, Metatags	18
II	**Analysis of business for digital marketing :** Meaning of Blogs, Websites, portal and their differences, Visibility, Visitor Engagement, Conversion Process, Retention, Performance Evaluation. Keywards :Blog, Websites and Visibility.	18
III	**Search Engine Optimization (SEO) :** On page optimization techniques, off page optimization techniques, preparing reports, creating search compaigns, Creating Display Campaigns. Keywards : Verbal Communication, Non-Verbal Communication, Intra personal and Inter personal communication.	18
IV	**Social Media Optimization (SMO) :** Introduction to social media marketing, advanced Facebook marketing, WordPress Blog creation, Twitter marketing, LinkedIn Marketing, Instagram Marketing, Social Media Analytical Tools. Keywards : Google Analytics.	18
V	**Website Traffic Analysis** : Affiliate Marketing and Ad Designing : Google Analytics, Online Reputation Management, EMail Marketing, Affiliate Marketing, Understatnding AdWords Algorithm, Advertisement Designing. Keywards : Ad Design, Social Media, Affiliate, Analytics, SMO.	18

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PART-C : Learning Resources
Textbooks, Reference Books, Other Resources
Suggested Readings :
Textbooks : 1. Ahuja Vandana (2016) Digital Marketing. Oxford University PressISBN : 9780199455447 2. Sainy Romi, Nargundkar Rajendra (2018) Digital Marketing : Cases from India, Notion Press ISBN 9781644291931, 1644291932.
Suggestive digital platform web links

1. https;/www.wordstream.com/link
2.building:~:text=Building%20links%20is%20one%20of,build%20links%20to%20your%20site.
3. https;//www.targetinternet.com/the-top-32-most-useful-digital-marketing-links/
4. https://digitalmarketingphilippincs.com/8-strategic-steps-to-natural-link-building/
5. https://www.the-web-guys.com/digital-marketing/

Suggested equivalent online course
NPTEL Course : https://nptel.ac.in/courses/110/105/110105142/ SWAYAM Course :https://onlinecourses.swayam2.ac.in/ugc19_hs26/preview

Awadhesh Pratap Singh University, Rewa (M.P.)

Structure for UG Programme : UGC CBCS System

(As Per Ordinance 14-A)

Papers Offered by the Department of Commerce Under 4 Years CBCS Course of B.Com (Honours/Research)

PART-A: INTRODUCTION

Program: UG	Class: B.Com (Honours/Research)	Semester : IV	Session : w.e.f. 2021-22
Subject: **Commerce**			
1.	Course Code	……..(To be filled by Exam Cell)	
2.	Course Title	Human Resources Management	
3.	Course Type (Core Course/Discipline Specific Elective/Generic Elective)	Generic Elective Course-1 (own fully)	
4.	Pre-Requisite (if any)	No	
5.	Course learning outcomes (CLO)	After successful competition of the course the student shall be able to: • To understand and appreciate the importance of the human resources vis-a-vis other resources of the organisation. • To familiarize the students with methods and techniques of HRM. • To equip them with the application of the HRM tools in real world business situations.	
6.	Credit value	4 (L)	

Part-B : Content of the Course

Total No. of Lectures + Tutorials (one hours per week) L-6 Hrs		
Total No. of Lectures: L-90 (Lecture of one hour)		
Module	Topic	No. of Lecture
I	Human Resources Management : Context and Concept of People Management in a Systems Perspective-Organisation and Functions of the HR and Personnel Department_HR. Structure and Strategy; Role o Government and Personnel Enironmen t including MNCs.	18
II	Recruitment and Selection : Human Resource Information System {HRIS}-Manpower Planning-Selection-Induction & Orientation-Performance and Potential Appraisal-Coaching and Mentoring-HRM issues and practices in the context of Outsourcing as a strategy.	18
III	Human Resources Development-Training and Development Methods-Design & Evaluation of T&D Programmes-Gareer Development-Promotions and Transfers-Personnel Empowerment including Delegation-Retirement and other Separation Processes.	18
IV	Financial Compensation-Productivity and Morale-Principal Compensation issues management-Job Evaluation-Productivity, Employee Morale and Motivation-sprees Management-Quality of Work life.	18
V	Building relationships-Facilitating Legislative Framework-Trade Unions-Managing Conflicts-Disciplinary Process-Collective Bargaining-Workers Participation in Management-Concept, Mechanisms and Experiences.	18

PART-C : Learning Resources
Textbooks, Reference Books, Other Resources
Suggested Readings :
1. Venkata Ratnam C.S. & Srivastava B.K. Personnel Management and Human Resources, Tata Mc-Graw Hill, New Delhi 2. Aswwathappa, Human Resource Management, Tata Mc-Graw Hill, New Delhi, 2010 3. Garry Dessler & Varkkey, Human Resource Management, Pearson, New Delhi,2009 4. Alan Price, Human Resource Management, Cengage Learning, New Delhi,2007 5. Pravin Durai, Human Resource Management, Pearson, New Delhi,2010 6. Snell, Bohlander & Vohra, Human Resources Management, Cengage, New Delhi, 2010

DEPARTMENT OF BUSINESS ECONOMICS

AWADHESH PRATAP SINGH UNIVERSITY, REWA

Syllabus CBCS

M.A. Business Economics

Ist and IInd Semester System 2020-21

IIIrd and IVth Semester System 2020-21

Registrar

Awadhesh Pratap Singh University

Rewa(M.P.)

SCHEME OF EXAMINATION for M. A. BUSINESS ECONOMICS
M.A. Ist - IVth SEMESTER 2020 – 2021 ONWARDS CBCS PATTERN

Semester	Paper No.	Nomenclature	Type of Course	Theory / External Assessment		Internal Assessment		Total Marks	Credit Points
				Max	Min	Max	Min		
I	101	Business Economics – I	CC	60	24	40	14	100	04
	102	Statistics : Theory & Practice – I	CC	60	24	40	14	100	04
	103	Business Environment & Business Policy– I	CC	60	24	40	14	100	04
	104	International Economics I	GE	60	24	40	14	100	04
	105	Comprehensive Viva – Voce	CC	Minimum Passing Marks–35				100	04
II	201	Business Economics – II	CC	60	24	40	14	100	04
	202	Statistics : Theory & Practice – II	CC	60	24	40	14	100	04
	203	Business Environment & Business Policy– II	CC	60	24	40	14	100	04
	204	International Economics – II	GE	60	24	40	14	100	04
	205	Comprehensive Viva – Voce	CC	Minimum Passing Marks–35				100	04
III	301	Economics of Growth and Planning – I	CC	60	24	40	14	100	04
	302	Financial Management – I	CC	60	24	40	14	100	04
	303-A 303-B	Personnel Management OR Marketing Management	DEC	60	24	40	14	100	04
	304	Indian Economic Policy	GE	60	24	40	14	100	04
	305	Comprehensive Viva – Voce	CC	Minimum Passing Marks–35				100	04
IV	401	Economics of Growth and Planning – II	CC	60	24	40	14	100	04
	402	Financial Management – II	CC	60	24	40	14	100	04
	403-A 403-B	Industrial Relations OR Marketing Research	DEC	60	24	40	14	100	04
	404	Agriculture Economics	GE	60	24	40	14	100	04
	405	Comprehensive Viva – Voce	CC	Minimum Passing Marks–35				100	04

CC Core Course **GE Generic Elective** **DEC Discipline Centric Elective**

DEPARTMENT OF BUSINESS ECONOMICS
AWADHESH PRATAP SINGH UNIVERSITY, REWA

The School of Studies in Business Economics was established in March, 1979, under the able leadership of our founder Prof. V.C. Sinha by Awadhesh Pratap Singh, University, Rewa. This is the second University in India and the first in the state, which had introduced Business Economics as post-graduate programme, the first being Delhi. There has been a long standing demand by the various organizations for trained graduates who have a sound back ground of economic principles and their applications in day-to-day life. The study of Business Economics develops the basic concepts used for decision making for both short and long run planning. It also examines the relationships useful in predicting the consequences of decisions and effects of economic environment on the behavioral pattern of firms.

Faculty:

The following are the member of the teaching faculty:

1. Dr. N.P. Pathak, M.A.,Ph.D., Professor & Head
2. Dr. Rajeev Dube, M.A., Ph.D., Professor
3. Dr. Sunil Kumar, M.A., M. Phil, Ph.D., Full Time Faculty
4. Smt. Ashama Parauha, M.A., M. Phil, Full Time Faculty

Aims:

Emphasis in Business Economics is on application of economic analysis and widely usable quantitative tools. The study of Business Economics revolves around two areas: (1) study of economics and quantitative tools and (2) study of the application of economic analysis and statistical tools to a few functional aspects of the business organisations.

Objective:

Thus the emphasis is not only on mastering the detailed aspects of Economics but also on developing the abilities and methods needed to help the decision makers for solving their problesm Business Economic has been looked to provide more rigorous analytical approaches in solving problems. To fulfill these aims, the following objectives have been laid down:

1. To train young men and women and women in the techniques of quantitative method and economic analysis,
2. To prepare them to take staff positions in government and private sector companies and research organizations,
3. To contribute to the improvement of the decision making skills and administrative competence of practicing managers.
4. To develop knowledge through original research-both applied and conceptual relevant to the business management and administration.
5. To provide assistance and proper directions in solving the business problems through consultancy services.

Programme : M. A. Business Economics
Programme Code :.....
Duration : 4 Semesters (Two Year)
Number of Seats : 60
Eligibility : Graduation all Subject
Age Limit : No age limit
Admission Procedure :

The admission will be done as per merit of qualifying examinations.

DEPARTMENT OF BUSINESS ECONOMICS
AWADHESH PRATAP SINGH UNIVERSITY, REWA

Semester Course of M. A. Business Economics Based on CBCS

Vision of the Department :

The teaching in the department in on lecture based. However, seminars and discussions take place as and when required. The principal discipline of study includes: Micro Economics, Business Environment and Business policy, Statistics, International Economics, Economics of Growth, Planning & Project Evaluation, Financial Management, Personnel Management & Industrial Relations, Marketing Management & Research, General Economics, Indian Economic Problems and Research Methodology and dissertation/project report.

Library, Laboratories and Equipments :

There are approximately 3000 books related to the subject in the Central Library apart from these the department is having a U.G.C. Library which contains 500 books. Beside this, we have a Departmental Association through which some text books were purchased in past. The department has 30 Computer, 01 over head Projector, V.C.R. Photocopier, slide Projector, T.V. and L.C.D Projector.

Paper Scheme :

Semester	Paper No.	Nomenclature	Type of Course	Theory / External Assessment		Internal Assessment		Total Marks	Credit Points
				Max	Min	Max	Min		
I	101	Business Economics – I	CC	60	24	40	14	100	04
	102	Statistics : Theory & Practice – I	CC	60	24	40	14	100	04
	103	Business Environment & Business Policy– I	CC	60	24	40	14	100	04
	104	International Economics I	GE	60	24	40	14	100	04
	105	Comprehensive Viva – Voce	CC	Minimum Passing Marks–35				100	04

DEPARTMENT OF BUSINESS ECONOMICS
AWADHESH PRATAP SINGH UNIVERSITY, REWA

PROGRAMME OUTCOME (POs)

PO #	PROGRAMME OUTCOME
PO1	**Critical Thinking:** Take accurate actions after identifying the features that of economic frame our thinking and actions, check out the degree to which these assumptions are correct and valid, and look at our thoughts and decisions (intellectual, organizational, and economical) from different aspects.
PO2	**Effective Learning:** Speaking, reading, writing and listening clearly in person and through electronic media in economic, and make meaning of the world by connecting people, ideas, books, media and technology.
PO3	**Social Interaction:** To elicit economic views of others, mediate disagreements and help reach conclusions.
PO4	**Effective Citizenship:** Demonstrate empathetic social concern and equity-centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
PO5	**Ethics:** To recognize different value of economics and scientific methods and to including understand the moral dimensions of the decisions, and managerial accept to the responsibilities for themselves.
PO6	**Environment and Sustainability:** To understand the issues related to environmental studies and sustainable development.
PO7	**Self-directed and Life-long Learning:** Acquire the ability to engage in independent and life-long learning in the wider subject matter of socio-technological and economic changes.

PROGRAMME SPECIFIC OUTCOME (M.A. Business Economics)

PSO #	PROGRAMME SPECIFIC OUTCOME
PSO 1	To gain a functional knowledge of theoretical concepts and practical knowledge and their applications in day-to-day life.
PSO 2	To integrate the gained knowledge with various contemporary and evolving areas in business economics like managerial economics, Indian economy, National Income, GDP, Banking, Poverty & Finance etc.
PSO 3	To understand, analyze, plan and implement qualitative as well as quantitative analytical synthetic and phenomenon-based problems in business economics
PSO 4	Provide opportunities in academics, research and Industry.

M.A. First Semester : 2020 - 2021

CC : Paper 101 : Business Economics – I

Unit - I

Meaning & Definitions of Business Economics its nature and Scope. Managerial Economics Role and responsibility. Business firms. Business Economics and its relationship with other Subjects.

Unit -II

Consumer's Equilibrium and Marginal Utility Analysis. Consumer Surplus. Elasticity of Demand. Types determinants and measurement. Demand forecasting its techniques and demand forecasting for a new product.

Unit - III

Indifference Curve Analysis. Theory of Revealed Preference. Recent development in theory of Consumer Demand.

Unit -IV

Isoproduct Curve Analysis. Production Function.. Law of Returns. Production Function with one Variable input. Return to scale.

Unit -V

Concept of Production cost. Monetary Cost, Real Cost and Opportunity Cost, Cost in Short Run and Long Run. Fixed Cost, Variable Cost, Marginal Cost and Average Cost and its relationship.

S.No.	Course Name	Course Code
	Semester-I	
101	**Business Economics-I**	**MABE-101**
Course Out Come		
CO1	Student will be capable to apply demand analysis and consumer surplus to examine the impact of government regulation and it also enable them to explain determinants of demand.	
CO2	Responses of market and the benefits of exchange.	
CO3	It provides knowledge regarding the formulation of broad economic policies that maximize the level of investment.	
CO4	Providing economic growth.	
CO5	Development to achieve sustainability.	

Books Recommended:

* E.J. Shapiro-Macro Economic Analysis
* W.H. Bransin-Macro Economic Theory and Policy
* M.I. Jhingan-Macro Economic Theory
* M.C. Vaishya-Macro Economic Theory
* Sunil Bhaduri-Macro Economic Analysis

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M.A. First Semester : 2020 - 2021

CC : Paper 102 : Theory and Practice of Statistics – I

Unit- I

(i) Meaning , Definition, Characteristics and Scope of Statistics.

(ii) Functions, Uses, Importance and Distrust of Statistics.

(iii) Statistical Investigation Plan.

(iv) Collection of Statistical Data.

(v) Classification and tabulation of data.

Unit- II

(i) Statistical Averages- Arithmetic Average or Mean, Median, Mode, Geometric Mean, Harmonic Mean.

(ii) Dispersion and Skeueeness.

Unit -III

(i) Diagrammatic Representation.

(ii) Graphic Presentation

(iii) Index Number.

Unit- IV

(i) Correlation : Concept and Importance

(ii) Methods of Correlation

(a) Mathematical Method

(b) Graphic Method

(iii) Regression and Ratio.

Unit V

(i) Population censes.

(ii) Agricultural Statistics.

(iii) Statistical Organisation in India.

102	Statistics : Theory & Practice--I	MABE-102
Course Outcome		
CO1	The subject provides knowledge in using statistical methods to the students.	
CO2	The scholars involved in social science research activities.	
CO3	It instill in the belief that statistics is important for scientific research.	
CO4	To apply various parametric and non-parametric tests in the real life of case situation.	
CO5	To make decisions under uncertain business situations.	

Book Pecommeded:-

1. K. C. Nagar : Theory and Practice of Statistics

2. S.P. Gupta : *Theory and Practice of Statistics*

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M.A. First Semester : 2020 - 2021

CC : Paper 103 : Business Environment & Policy – I

Unit-I

Meaning & Concept of Business Economics, features, significance and need of study of the Business Environment. Type of Business Environment.

Unit-II

Economic Environment of Business, Meaning, Definitions, Significance, Elements of Economics Environment. Economic Systems and Business Environment.

Unit-III

Political & Legal Environment of Business. Factors of Business. Govt. & Business Environment. Roles of the Govt., Legal Environment & Changing Dimensions of Legal Environment.

Unit-IV

Meaning of Socio- Cultural Environment. Main factors of Social Environments. Characteristics of Socio Cultural values. Impact of Social and Cultural Values. Attitude and Importance of Attitude. Social Responsibility of Business.

Unit-V

Dualism in Indian Society. Problems of uneven distribution Income Emerging Rural Sector in India. Consumerism in India.

103	**Business Environment and Business Policy-I**	**MABE-103**
Course Outcome		
CO1	As environmental problem are the burning issues of present day. The study of environmental economics will be helpful to them to know the methods of controlling environment pollution and thereby to achieve sustainable development.	
CO2	To provide knowledge of business environment, professional and human values and ethical system at general level.	
CO3	To gain knowledge about business environment.	
CO4	To know the history of sustainable development ideas and understanding the sustainable development.	
CO5	To become familiar with contemporary Environmental Problems.	

Books Recommended:-

1. Sankar U. Edition 2001, Environment forms oxford University press, New Delhi.
2. Tietenbory T. (1994) Environment Economics Harper adlins New york.
3. Kal Stad C.D. (1999), Busi. Env. & Policy, oxford University Press New Delhi.
4. Hanley N.J.F. Shogern & White (1987), Environmental Economics in theory & Practises Macmillan.
5. Francis- Cherumilam, Business Environment text & case Himalaya publishing house. New Delhi.

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M.A. First Semester : 2020 - 2021

GE : Paper 104 : International Economics – I

Unit-I

(i) International Economics – Meaning, Nature, Need and Importance.

(ii) International and Inter-regional Trade- Meaning, Nature, Need and Importance and Effects.

(iii) Comparisons between International and Inter-regional Trade. Ohlin's view.

(iv) International and Inter-regional Trade and Economic Development.

Unit-II

(i) Theories of International Trade: Causes of their emergence.

(ii) Classical Theories of International Trade.

(iii) Theory of Comparative Cost by Ricardo.

(iv) Modification in the Theory of Comparative Cost.

Unit-III

(i) Opportunity Cost Doctorine by Haberler.

(ii) Demand and Supply Theory by Mill.

(iii) Modern Theory by Heckscher- Ohlin

(iv) Effects of International Trade on National Income and Foreign Trade Multiplier.

Unit-IV

(i) Balance of Payments and Balance of Trade. Meaning, Differences and Composition.

(ii) Disequilibrium in the balance of Payments Causes, Measures for correction it.

(iii) Terms of Trade- Meaning and Types.

(iii) Terms of Trade and Economic Development.

Unit-V

(i) Commercial Policy- Free Trade and Protection, Meaning and argument in favor and against.

(ii) Various methods of protection.

(iii) Tariff- Meaning, Clarification and effects.

(iv) Import Quotas.

104	International Economics-I	MABE-104
Course Outcome		
CO1	To provide strong theoretical background to the students on the subject of international trade.	
CO2	It also helpful to understand the empirical aspects such as trade reforms and their impact on India economy.	
CO3	Enable the students the pattern and nature of international economics, trade and their contribution to economic development.	
CO4	It also enables learners to know the role of public authorities in raising revenue and its spending.	
CO5	Further it concentrates of on economic institutions.	

Books Recommended.

1. Bertil Ohlin, Inter- Regional and International Trade
2. G.V. Haberler, Theory of International Trade.
3. Kindel Berger, International Economics.
4. M.L. Jhingan, International Economics.
5. Jai Prakash, Antarrarhtriya Arthashastra. (Hindi)
6. G.C. Singhai, Antarrarhtriya Arthashastry. (Hindi)
7. V.D. Nagar & G.S.Sharma, Antarrarhtriya Arthashastry. (Hindi)
8. V.C. Sinha , Antaranhtriya Arthashartra (Hindi)
9. Varshneya, Antarrashtriya Vypar (Hindi)

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Paper Scheme :

Semester	Paper No.	Nomenclature	Type of Course	Theory / External Assessment		Internal Assessment		Total Marks	Credit Points
				Max	Min	Max	Min		
II	201	Business Economics – II	CC	60	24	40	14	100	04
	202	Statistics : Theory & Practice – II	CC	60	24	40	14	100	04
	203	Business Environment & Business Policy– II	CC	60	24	40	14	100	04
	204	International Economics – II	GE	60	24	40	14	100	04
	205	Comprehensive Viva – Voce	CC	Minimum Passing Marks–35				100	04

M.A. Second Semester : 2020 - 2021

CC : Paper 201 : Business Economics – II

Unit - I

Perfect Competition, Price and Output Determination. Monopoly and discriminating mon0poly, Price & Output Determination. Imperfect Competition Price and Output Determination. Monopolistic Competition (Edward Chamberlain)

Unit- II

Difference between Imperfect and Monopolistic Competition. Excess Capacity under Imperfect and Monopolistic Competition. Duopoly. Oligopoly.

Unit -III

Theories of Distribution. Factor Pricing under Perfect Competition.

Unit -IV

Profit, Nature, kind of Profit. Theories of Profit. Dynamic Theory, Innovation Theory, Risk and Uncertainty Theory & Monopoly. Theory by P. Suigee.

Unit- V

Concept of Welfare, Determinants of Welfare, Pigou's Welfare Economics, pareto's Welfare Economics, New Welfare Economics.

201	Business Economics-II	MABE-201
Course Outcome		
CO1	Understand the economic behaviour of individuals, firms and markets.	
CO2	It is mainly to equip the students in a rigorous and comprehensive understanding with the various aspects of consumer behaviour and demand analysis, production theory and behaviour of costs, the theory of traditional markets and equilibrium of firm.	
CO3	They understand the role of the power and politics in an organisation and develop the rational political behaviour.	
CO4	It studies the welfare economic concepts and definitions relating to present contemporary society.	
CO5	It explain the principles of measuring income inequality, poverty and social exclusion.	

Books Recommended:

* E.J. Shapiro-Macro Economic Analysis
* W.H. Bransin-Macro Economic Theory and Policy
* M.I. Jhingan-Macro Economic Theory
* M.C. Vaishya-Macro Economic Theory
* Sunil Bhaduri-Macro Economic Analysis

M.A. Second Semester : 2020 - 2021

CC : Paper 202 : Theory and Practice of Statistics – II

Unit – I

(i) Interpolation and Extrapolation: Concept, Assumptions, Difference between Interpolation and Extrapolation, Methods of Interpolation and Extrapolation (a) Graphic (b) Algebraic.

(ii) Analysis of time series: Concept and Components, Method of measuring trends method of measuring trends method of measuring short-term fluctuations.

Unit - II

Probability: Simple and Compound: Addition Theorem. multiplication of Probability, Conditional Probability, Probability of at least one event, Beronoulli's mathematical expect ion.

Unit - III

Association of Attributes and Chi-square: Determination of unknown. Class frequencies : Consistency of Data; Association of Attributes: Measurement of Association of Attributes, Positive Association: Illusory association Co-officient of Contingency.

Unit - IV

(i) Theoretical Frequency Distribution; Binomial Distribution, Normal Distribution and Poisson Distribution.

(ii) Business forecasting, Theories of business Forecasting, business bar meters.

Unit - V

Sampling of variables- Large Samples. Sampling of Variable- Small Samples, variance ratio Test- F-Test

202	**Statistics : Theory & Practice-II**	**MABE-202**
Course Outcome		
CO1	Aims to familiarize the students with basic statistical techniques.	
CO2	Whole syllabus is divided in to five units.	
CO3	Descriptive and inferential statistics, with major emphasis on inferential statistics.	
CO4	To bring out clearly the importance of statistics in solving different research problems.	
CO5	This subject provides some knowledge in statistical methods to the students and the scholars involved in social science research activities.	

Book Pecommeded:-

1. K. C. Nagar : Theory and Practice of Statistics

2. S.P. Gupta : *Theory and Practice of Statistics*

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M.A. Second Semester : 2020 - 2021

CC : Paper 203 : Business Environment & Policy – II

Unit-I

Natural Environment :- Technological Environment innovation. Impact of Technology on Globalization.

Unit-II

Demographic Environment:- Population size falling birth rate and Changing occupation structure, Population Policy.

Unit-III

Monetary and Fiscal Policies. The Union Budget, Finance of Union and State. Importance of the Budget.

Unit-IV

Planning and development of Agriculture, phases of development. Agriculture Marketing. Agriculture Price Policy.

Unit-V

Global Environment GATT, WTO and Global Liberalization. Multinational Corporations, Merits and Demerits, Multinationals in India.

203	Business Environment and Business Policy-II	MABE-203
Course Outcome		
CO1	Course is meant to provide students an exposure to different debates and approaches in environmental economics.	
CO2	It also provides theoretical and applied understanding on diverse frameworks of national and global environmental problems, analytical tools, instructional and regulatory mechanisms etc.	
CO3	To understand the linkages between Environmental Degradation and Economic Development.	
CO4	To become familiar with contemporary Environmental Problems.	
CO5	To become familiar with various methods of measurement of Environmental Resources.	

Books Recommended:-

1. Sankar U. Edition 2001, Environment forms oxford University press, New Delhi.
2. Tietenbory T. (1994) Environment Economics Harper adlins New york.
3. Kal Stad C.D. (1999), Busi. Env. & Policy, oxford University Press New Delhi.
4. Hanley N.J.F. Shogern & White (1987), Environmental Economics in theory & Practises Macmillan.
5. Francis- Cherumilam, Business Environment text & case Himalaya publishing house. New Delhi.

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M.A. Second Semester : 2020 - 2021

GE : Paper 204 : International Economics – II

Unit-I

(i) Dumping – Meaning, Objectives and Measures.
(ii) Foreign Exchange- Meaning and Types.
(iii) Exchange Rate– Determinants and Theories of Exchange determination.

Unit-II

(i) Exchange Control, Meaning, Objectives and Methods.
(ii) Price stability. Exchange Stability
(iii) State Trading Corporation.
(iv) Bilateral and Multilateral Trading.

Unit-III

(i) International Monetary Fund.
(ii) IBRD
(iii) International development Association.
(iv) Asian Development Bank

Unit-IV

(i) World Trade Organisation
(ii) European Common Market.
(iii) Multi National Corporation
(iv) SAARC.

Unit-V

(i) Foreign Trade in India- Composition, Direction, Diversification and Recent Trends.
(ii) EXIM Policy.
(iii) Indies, Balance of Payments
(iv) Tariff Policy of India

204	International Economics-II	MABE-204
Course Outcome		
CO1	conceptually explain and analyze the trade theories , investment theories, exchange rate theories and regional trading and their impact on economic welfare and businesses	
CO2	analyze and apply the different exchange rate regimes' impact on businesses in general and energy sector.	
CO3	Analyze, apply and integrate the opening up economies of developing countries like India through and multilateral route (WTO) and their impacts on Businesses in general and energy sector.	
CO4	Analyze , apply and integrate all constituents of environment and their impact on decision about finalizing the location of business in other countries	
CO5	To provide the students with thorough analytical understanding of international business environment.	

Books Recommended.

1. Bertil Ohlin, Inter- Regional and International Trade

2. G.V. Haberler, Theory of International Trade.

3. Kindel Berger, International Economics.

4. M.L. Jhingan, International Economics.

5. Jai Prakash, Antarrarhtriya Arthashastra. (Hindi)

6. G.C. Singhai, Antarrarhtriya Arthashastry. (Hindi)

7. V.D. Nagar & G.S.Sharma, Antarrarhtriya Arthashastry. (Hindi)

8. V.C. Sinha , Antaranhtriya Arthashartra (Hindi)

9. Varshneya, Antarrashtriya Vypar (Hindi)

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Paper Scheme :

Semester	Paper No.	Nomenclature	Type of Course	Theory / External Assessment		Internal Assessment		Total Marks	Credit Points
				Max	Min	Max	Min		
III	301	Economics of Growth and Planning – I	CC	60	24	40	14	100	04
	302	Financial Management – I	CC	60	24	40	14	100	04
	303-A 303-B	Personnel Management OR Marketing Management	DEC	60	24	40	14	100	04
	304	Indian Economic Policy	GE	60	24	40	14	100	04
	305	Comprehensive Viva – Voce	CC	Minimum Passing Marks–35				100	04

M.A. Third Semester : 2021 - 2022

CC : Paper 301 : Economics of Growth & Planning – I

Unit-I

Meaning and characteristics of under developed countries. Problems and difficulties of under developed countries. The concept and meaning of Economic Growth Difference between growth & development. Modern Economic growth.

Unit-II

Theories of economic growth- Adam smith, Ricardo malthus. Theory of economic growth of Karl Marx.

Unit-III

Economic growth model of Harrod and Domar, Theory of Capital Accumulation –Joan Robinson.

Unit-IV

Rostow's stages of Economic Growth, Mahalnobis Model. The Doctrine of Balanced and unbalanced growth. Lewis Model of unlimited supply of labour.

Unit-V

Problem of Capital formation in under-developed countries. Population and Economic Growth.

Semester-III		
301	**Economics of Growth and Planning-I**	**MABE-301**
Course Outcome		
CO1	Understanding the basic facts of economic growth.	
CO2	Comprehension of relationship between growth and development.	
CO3	Familiarity with the wide-ranging policy issues and theories in growth economics.	
CO4	Understanding the interactions of the basic tenets of growth theories and those of debt with the drivers of globalization.	
CO5	It makes the students to understand the aspect of economic development process in various countries.	

Books Recommended:-

1. Meir & Baldwin-Economic Development, Theory & Policy (Bombay, Asia Publishing House)
2. Agrawal & Singh – The Economics of under development (Bombay-Oxford University Press)

3. Banjamin Higgins- Economic Development Principle Prakashan & Policies- Cahat Book Depot. Allahabad.
4. Singh D. Bright- Economics of Development (Bombay, Asia Publishing House)
5. Author Lewis- The Theory of Economic growth (Allen and Unwinn)
6. Gunnar myrdal :- Asian- Drama: An Enquiry in to poverty of Nations (India Edition ludhian- Kalyani Publishing House.
7. Rostov. w.w.: The stager of Economic Growth (Cambridge University –Press)
8. Bhagwati M. Jagdish & Desai Padma : Indian Planning for under stabilization Oxford University press)
9. Raj. K.N. : Indian economic growth Performance and prospective. (Allied Publishers.
10. Sinha V.C. & Pathak N.P. : Vyayasik Arithshastra
11. Charan D. wadhwa : Some problems of Indians Economic Policy, (Delhi, Taltak MC Growhills)
12 Tandan B.C. Eco. Planning Theory & Peachier Chaitanya Punishing house Allahabad.
13. Sharma & varshney: Managerial Economic Deep & deep publication New Delhi.

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M.A. Third Semester : 2021 - 2022

CC : Paper 302 : Financial Management – I

Unit-I

Nature, Scope and Objective of Financial Management. Role of Financial Function in Business Organization and Objective of Finance Function.

Unit-II

Project Planning and Feasibility Reports, Techniques of Appraisal- Capital Budgeting- Pay Bock Period Method. Average rate of Return Method. Present Value Method and internal rate of return method.

Unit-III

Cost of Capital: Concept of Cost of Capital, Significance of Cost of Capital. Capital expenditure, Determination of Cost of capital, Computation of cost of individual Capital components, Weighted average cost of capital.

Unit-IV

Financial Plan and Capitalization, Capital structure, Determinants leverage – financial operation and Combined, Theories of optimal capital structure.

Unit-V

Sources of long term- Funds, Owned Capital and debt. Capital sources- medium term funds, Short term funds.

302	**Financial Management-I**	**MABE-302**
Course Outcome		
CO1	Demonstrate the applicability of the concept of Financial Management to understand the managerial Decisions and Corporate Capital Structure.	
CO2	Apply the Leverage and EBIT, EPS Analysis associate with Financial Data in the corporate.	
CO3	Analyse the complexities associated with management of cost of funds in the capital Structure.	
CO4	Demonstrate how the concepts of financial management and investment, financing and dividend policy decisions could integrate while identification and resolution of problems.	
CO5	Demonstrate how risk is assessed.	

Books Recommended:

Kulkarini, P.V.: Financial Management –(Bombay, Himalaya Publishing House) Srivastava R.M.: Essentials of Business firm–(Bombay, Himalaya Publishing House). Pandey, I.M.: Financial Management- N. Delhi, Vikas Publishing House) Keown, Scott, Petty and Martin: Basic financial Management (U.S.A.), P.H.I.) Van Horn : Financial Management & Policy (U.S.A., P.H.I.) Khan & Jain: Financial Management (Delhi, Tata MC Graw Hill Publishing House Kuchhal, S.C.: Financial Management Allahabad, Chaitanya Publishing Horse). Solomon, E.: Theory of Financial Management (New York, Harps & Row).

1. Ramesh, M.S.: A key to financial management (Ludhiayana), Kalyani Publishing)
2. Kulshreshtha: Vittiya Arthahsstra (Agra-Sahitsh Bhawan (Hindi)
3. Upadhyaya, K.M.: Financial Mangement (Ludhiayana)' Kalyani Publishing House).
4. Chandra, Prasanna: Financial Management (Delhi, Tata, MC-Graw Hill.).
5. Home J.C.V. : Fundamental of financial management

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M.A. Third Semester : 2021 - 2022

DEC : Paper 303 (A) : Personnel Management

Unit-I

(i) Personnel Management- Meaning, Scope, Objectives, Functions.

(ii) Principles and Philosophy of Personnel Management

(iii) Relationship of Personnel Management with other branches of Social sciences.

(iv) Functions, Responsibilities and Qualifications of Personnel Manager.

Unit-II

(i) Recruitment Procedure

(ii) Job Analysis

(iii) Job evaluation

(iv) Performance Appraisal.

Unit-III

(i) Selection, induction, promotion, Demotion, transfer and other activities.

(ii) Training and Development – Aims methods and process.

(iii) Absenteeism (iv) Labor turnover

Unit-IV

(i) wage and salary Administration.

(ii) Methods of wage payments.

(iii) Incentives and non- Incentives methods of wage payments

Unit-V

(i) Grievance (ii) Leadership (iii) Communication (iv) Group Dynamics. `

303A	**Financial Management-I**	**MABE-303**
Course Outcome		
CO1	Meaning, concept, function, & importance of personnel management, role of a personnel manager, personnel policies	
CO2	Meaning, concept, need & types of manpower planning. Meaning and concept of job analysis, job description & job specification. Recruitment & selection.	
CO3	Meaning, need, method & importance for training and development.	
CO4	Meaning, Objective, method of performance appraisal, meaning and types of transfer, meaning and basis of promotion and separation	
CO5	Meaning purpose & principle of wage & salary administration, Methods of wage payment	

Books Recommended:

1 Personal Management' by C.B. Mamoria & V. S. P. Rao- Himalaya Publishing House.
2 Personal Management &Industrial Relations by P.C.Tripathi-S.chand & Sons.
3 Industrial relation, Trade Union & Labour Relation by G.P. Sinha & PRN Sinha, Pearson.
Recommended Readings :
4. Dessler, Gary, "Human Resource Management", New Delhi, Pearson Education Asia.
5. Durai, Pravin, "Human Resource Management," New Delhi, Pearson.
6. Noe, Raymond A., Hollenbeck, John R, Gerhart, Barry, Wright, Patrick M., "Human Resource Management: Gaining a Competitive Advantage," New Delhi, McGraw-Hill.
7. Mathis, Robert L. and Jackson, John H., "Human Resource Management," New Delhi, Thomson.
8. Gomez, Meja, Balkin, Cardy, "Managing Human Resources," New Delhi, Pearson Education.
9. Aswathappa, K., "Human Resource Management", Text and Cases. New Delhi, Tata McGraw – Hill.
10. Snell, Scott, and Bohlander, George, "Human Resource Management," New Delhi, Cengage Learning.
11. Mamoria and Rao, "Personnel Management", New Delhi, Himalaya Publishing House.

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M.A. Third Semester: 2021 - 2022

DEC : Paper 303 (B) : Marketing Management

Unit-I

Marketing Management- Meaning, Nature, Scope, Importance of Marketing, Place of Marketing Management in business firm as well as in economy, Marketing concepts - traditional and modern, selling v/s Marketing, Marketing Mix., Marketing Environment.

Unit-II

Consumer Behavior- Nature, Scope and significance of consumer Behavior, Market Segmentation-Concept and importance, Bases of Market Segmentation, consumer Protection Act.

Unit-III

Product- Concept of Product, Product planning and Development, Product life cycle, Packaging – meaning, Role and functions, Brand Name and Trade Mark, After sales Service.

Unit-IV

Price- Importance of price in marketing mix, Factors affecting Price, Distribution channels concept and role, Types of distribution channels, Factors affecting choice of a distribution channel, Retailer and whole sales, Physical distribution of goods.

Unit-V

Promotion- Methods of Promotion, Optimum Promotion Mix., Advertising Media- their relative merits and limitation, Characteristics of an effective advertisement, Personal Selling, Qualities of successful sales person, Functions of salesman.

303B	**Marketing Management**	**MABE-303-B**
Course Outcome		
CO1	Students will be able to identify the scope and significance of Marketing In Domain Industry.	
CO2	Students will be able to examine marketing concepts and phenomenon to current business events In the Industry.	
CO3	Students will be able to coordinate the various marketing environment variables and interpret them for designing marketing strategy for business firms.	
CO4	Students will be able to illustrate market research skills for designing innovative marketing strategies for business firms.	
CO5	Students will be able to practice marketing communication skills relevant to the corporate world.	

1. Kotler, Philip, Marketing Mamagement, New York: Prentice Hall Publishing, 2000
2. Cravens, Hills and Woodruff, Marketing Management, Richards D. Irwin, 1988
3. Pillai, R.S.N. and Bagavathi, Marketing Management : Principles and Practices, New Delhi: S.Chand Co., 1998

M.A. Third Semester : 2021 - 2022

GE : Paper 304 : Indian Economic Policy

Unit I

Trend and Structure of National Income ;
Demographic Features and Indicators of Development ;
Poverty and Inequality : Policy Implications ;
Employment and Unemployment: Policy Implications .

Unit II

Planning in India: Objectives, Strategies and Evaluation;
Economic Reforms in India;
Critique of Economic Reforms;

Unit III

Agricultural Growth, Productivity Trends and Crop Patterns;
Issues and Concerns in Indian Agriculture;
Industrial Sector in Pre-reform Period; Industrial Sector in Post-reform Period;

Unit IV

Infrastructure; Indian Financial System: Money Market and Monetary Policy;
Capital Market in India and Working of SEBI;

Unit V

Foreign Trade and Balance of Payment; India and International Institutions;
Multinational Corporations and Foreign Capital;
Government Finance : Union and States;
Fiscal Federalism in India and latest Finance Commission.

304	**Indian Economic Policy**	**MABE-304**
Course Outcome		
CO1	grasp the necessity and importance of the fiscal, trade, investment, financial policies undertaken in the post-independent period	
CO2	be able to explain the reasons of inflation in the Indian economy and inflation control measures	
CO3	understand how services sector, formal and informal have developed, particularly with the growth of banking, insurance and services.	
CO4	be able to explain the policies and performance in industry-output, employment, productivity growth, the importance of small-scale industry, performance of PSEs, FDI and economic reforms in Indian industry	
CO5	acquire an understanding about the basic characteristics of the Indian economy Policy, the structural composition of its national income	

1. Sen, R.K. and . Chatterjee (2001), Indian Economy : Agenda for 21st Century. – Dhar,
2. P.K., Indian Economy- Its growing dimensions, Kalyani Publishers, New Delhi (Latest Edition)
3. Mishra, S.K. and V.K. Puri Indian Economy - 1st Development Experience, Himalaya Publishing House, Mumbai, Latest Edition. – Economic Surveys, Government of India, various issues. – Reserve Bank of India, Report on Currency and Finance (Annual).

Paper Scheme :

Semester	Paper No.	Nomenclature	Type of Course	Theory / External Assessment		Internal Assessment		Total Marks	Credit Points
				Max	Min	Max	Min		
IV	401	Economics of Growth and Planning – II	CC	60	24	40	14	100	04
	402	Financial Management – II	CC	60	24	40	14	100	04
	403-A OR 403-B	Industrial Relations OR Marketing Research	DEC	60	24	40	14	100	04
	404	Agriculture Economics	GE	60	24	40	14	100	04
	405	Comprehensive Viva – Voce	CC	Minimum Passing Marks–35				100	04

M.A. Fourth Semester : 2021 - 2022

CC : Paper 401 : Economics of Growth & Planning– II

Unit-I

Advent of Economic punning its Growth & necessity meaning, Prerequisites of economic planning. Types of Planning, Problems and priorities of Planning.

Unit-II

Plan formulation and resources. Mobilization Problem of control in Planned economy. Incentives and Efficiency in Planned economy.

Unit-III

Achievement and failures of Economic Planning. Recent trends in Indias planning. New Economic Policy. Some recent changes in Economy.

Unit-IV

Planning Techniques- Input/Output Analysis. Linear Programming. The concept of capital output Ratio.

Unit-V

Investment Criteria in Economic development. Project evaluation and its different methods. Cost Benefit Analysis.

401	Economics of Growth and Planning-II	MABE-401
Course Outcome		
CO1	To explain development economic growth theories, international trade development theories, and related economic development theories.	
CO2	Learn hardcore economic prescriptions to development, concerns hitherto relegated to background like education, health, sanitation and infrastructural development, have found a place of pride in explaining the preference of various economies.	
CO3	Fundamental foundation of basic growth and development issues, approaches and models.	
CO4	The paper attempts to discuss the structure and change in variables.	
CO5	It helps to understand the overall static and dynamic perspectives of the economy in a purely theoretical perspective.	

Books Recommended:-

1. Meir & Baldwin-Economic Development, Theory & Policy (Bombay, Asia Publishing House)
2. Agrawal & Singh – The Economics of under development (Bombay-Oxford University Press)

3. Banjamin Higgins- Economic Development Principle Prakashan & Policies- Cahat Book Depot. Allahabad.
4. Singh D. Bright- Economics of Development (Bombay, Asia Publishing House)
5. Author Lewis- The Theory of Economic growth (Allen and Unwinn)
6. Gunnar myrdal :- Asian- Drama: An Enquiry in to poverty of Nations (India Edition ludhian- Kalyani Publishing House.
7. Rostov. w.w.: The stager of Economic Growth (Cambridge University –Press)
8. Bhagwati M. Jagdish & Desai Padma : Indian Planning for under stabilization Oxford University press)

M.A. Fourth Semester : 2021 – 2022

CC : Paper 402 : Financial Management – II

Unit-I

Management of Working Capital : Concept need and influencing factors Marketing, underwriting and distribution of securities, management of cash Management of Cash flowes, methods of Accelerating cash in flows, methods of Slowing cash out flows, determining of level of cash Balance, optimum investment in securities.

Unit-II

Management of Inventory: Determining the optimum level of Inventory, determining order point determining the degree of control, ABC Analysis. Management of Receivables: An overview, Dimensions of Receivables, Formulation of credit Policies, execution of credit policies and formulation of collection policies and their execution.

Unit-III

(i) Ratio Analysis: Meaning of Ratio Analysis, Significance of Ratios as a tool of financial analysis.

(ii) Fund Flow statement: Concept of fund flow statement, Significance of funds flow statement.

(iii) Cash flow statement: circulation of cash, significance of uses of cash flow statement, Preparation of cash flow statement,

Unit-IV

Dividend and Retained earning: Dividend policy decisions, Policies regarding retained earning, Bonus share or stock dividend- meaning utility and guidelines for issue.

Unit-V

Profit planning and Cost volume profit analysis (Break even analysis), Capital markets and its institutions, Control on Capital issues.

402	**Financial Management-II**	**MABE-402**
Course Outcome		
CO1	Explain the concept of fundamental financial concepts, especially time value of money.	
CO2	Apply capital budgeting projects using traditional methods	
CO3	Analyze he main ways of raising capital and their respective advantages and disadvantages in different circumstances	
CO4	Integrate the concept and apply the financial concepts to calculate ratios and do the capital budgeting	
CO5	Enhancing student's ability in dealing short-term dealing with day-to-day working capital decision; and also longer-term dealing, which involves major capital investment decisions and raising long-term finance.	

Books Recommended:

Kulkarini, P.V.: Financial Management –(Bombay, Himalaya Publishing House)

Srivastava R.M.: Essentials of Business firm–(Bombay, Himalaya Publishing House). Pandey, I.M.: Financial Management- N. Delhi, Vikas Publishing House)

Keown, Scott, Petty and Martin: Basic financial Management (U.S.A.), P.H.I.) Van

Horn : Financial Management & Policy (U.S.A., P.H.I.) Khan & Jain: Financial Management (Delhi, Tata MC Graw Hill Publishing House Kuchhal, S.C.: Financial Management Allahabad, Chaitanya Publishing Horse). Solomon, E.: Theory of Financial Management (New York, Harps & Row).

1. Ramesh, M.S.: A key to financial management (Ludhiayana), Kalyani Publishing)
2. Kulshreshtha: Vittiya Arthahsstra (Agra-Sahitsh Bhawan (Hindi)
3. Upadhyaya, K.M.: Financial Mangement (Ludhiayana)' Kalyani Publishing House).
4. Chandra, Prasanna: Financial Management (Delhi, Tata, MC-Graw Hill.).
5. Home J.C.V. : Fundamental of financial management

M. A. Fourth Semester: 2021 – 2022

DEC : Paper 403 (A) : Industrial Relations

Unit-I

Industrial Relations : Objectives, Nature, Importance, Approaches, Parties and strategy of Industrial Relations.

Unit-II

(i) Industrial unrest : Meaning and causes

(ii) Impact of industrial unrest on economy

(iii) Industrial Disputes: Meaning, Causes and types.

Unit-III

(i) Concept and significance of Industrial Peace.

(ii) Collective Bargaining.

(iii) Workers Participation in Management

(iv) Other methods of Industrial peace.

Unit-IV

(i) Trade Union: Need for Emergence, Objectives, Nature, Function, of Trade Union.

(ii) History of Trade Union.

(iii) Trends and legal Aspects of Trade Union,

(iv) Trade Union Movement in India.

Unit-V

(i) Industrial Working conditions and its impact on Employees, Health and Safety.

(ii) Social Security act in India.

(iii) Mines Safety Act.

(iv) Act for women and child labor.

403A	**Financial Management-II**	**MABE-403A**
Course Outcome		
CO1	Meaning & concept of Industrial Relation and Trade Union.	
CO2	Health, safety and welfare facilities, Social security	
CO3	Meaning, need, method & importance for training and development.	
CO4	Meaning, Objective, method of performance appraisal, meaning and types of transfer, meaning and basis of promotion and separation.	
CO5	Meaning, concept, need & types of manpower planning. Meaning and concept of job analysis, job description & job specification. Recruitment & selection.	

REFERENCES :

1. Chand, K.V.K., Industrial relations
2. Manoppa, A., Industrial relations, TMH, 1999
3. Laldas D.K., Industrial relations in India
4. Manohar Lal, Industrial Relations & Labour Legislation
5. Yoder, Dale and others, Personnel Management & Industrial Relations, New Delhi, Prentice Hall, 1959
6. Mamoria,C.B., Industrial Labour and Industrial Relations in India, Kitab Mahal, 1975
7. Mamoria, Mamoria and Gankar, Dynamics of Industrial Relations, Bombay: Himalaya Publishing, 2001.

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M. A. Fourth Semester: 2021 - 2022

DEC : Paper 403 (B) : Marketing Research

Unit-I

Marketing Research- Meaning, Aims, Objective, Scope, Need, Importance and Organization of Marketing Research, Process of Marketing Research, Difference between Marketing Research and marketing Information System.

Unit-II

Application of Marketing Research, Specialised fields and techniques, Sales forecasting, Meaning and Methods, Product Research Meaning and methods.

Unit-III

Test Marketing, Advertising Research Planning and Procedure, Motivational Research- Meaning and Methods.

Unit-IV

Internal Business Records and their uses, External Research, Sampling- Meaning advantages, Merits, demerits and Methods of Sampling.

Unit-V

Collection and Analysis of Marketing Research Questionnaires Designing, Collection of Data, Tabulation of Data, Analysis of Data, Interpretation and Report writing.

403B	**Marketing Research**	**MABE-403B**
Course Outcome		
CO1	To understand the concepts of marketing management	
CO2	To learn about marketing process for different types of products and services	
CO3	To understand the tools used by marketing managers in decision situations	
CO4	To understand the marketing environment	
CO5	Students will demonstrate strong conceptual knowledge in the functional area of marketing management.	

Reference Books :

1. Essentials of Marketing Research By S.A.Chunawala – Himalaya Publishing House.
2. Marketing Research By B.S.Goel - Pragati Prakashan, Meerut (UP)
3. Marketing Management by Kotler, keller, koshy, Jha, (13th Edition Pearson.)

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M. A. Fourth Semester : 2021 - 2022

GE : Paper 404: Agriculture Economics

Unit-I

Agricultural Economics and Economic Development: Definition of agricultural Economics, its scope and nature; Regional disparities in Indian agriculture; Difference between Agriculture and Industry; Need for a separate study of Agricultural Economics. Agriculture and Economic Development: Role of agriculture in Economic Development; Contribution of industry to the development of agriculture; Interdependence ·of agriculture and industry.

Unit-II

Approaches to Agriculture Development: Schultz, Mellor, Boserup, Lewis and Ranis-Fie.

Unit-III

Economics of Agriculture Production: The Production Function; Factor - Product Relationship; Factor - Factor Relationship, Product - Product Relationship. Equilibrium of the capitalist form, peasant family farm and share tenant farm.

Unit-IV

Agricultural Credit: Importance of agricultural credit; Sources (formal and informal), problems and Government policies since Independence. Capital formation in the rural sector - savings, assets and credits. Issues in Agriculture price policy: objectives of Agricultural Price Policy; Main elements of Agricultural Price Policy; Agricultural Price Policy in India: Its evolution; objectives of Price policy in India; Important constitution of Agriculture Price Policy in India; Critical Evaluation of India's Agriculture Price Policy; Need for Revision of Agricultural Price Policy in India.

Unit-V

The New Economic Policy and Indian Agriculture: Macro Economic Stabilization measures; structural Adjustments in the Agricultural Sector. World Trade Organization and Indian Agriculture; Model of Production Debate: Private V /s Public investment in Agriculture; Trends in public and private investment in Indian Agriculture.

404	**Agriculture Economics**	**MABE-404**
Course Outcome		
CO1	Sensitize the overall development and engine of growth in agriculture. Draw distinctive features of rural and urban economy or agricultural and non-agricultural which can influence the whole economy	
CO2	Learn and identify the opportunities open/available in those flourishing sectors such as horticulture, fishing and floriculture and forestry. Find new investment opportunities to add income and employment.	
CO3	Understand limited resources available in the economy. Realize the need to exploit and utilize through development and improvement of production techniques.	
CO4	Make them aware of the availability of rich natural endowments to achieve sustainable agricultural development. With this knowledge they can challenge the problems of unemployment, inequality, shortage of food productions, poverty and be useful to compete advanced agricultural economies.	
CO5	Gain knowledge of the causes of regional variations in productivity and production, social and economic inequality, size of land holdings and lack of quality inputs etc. and suggest appropriate measures for the whole economy	

References :

1. Bilgrami, S.A.R. (1996): Agricultural Economics, Himalayas Publishing House, Delhi.
2. Dantwala, M.L. et al., (1991): Indian Agricultural Development since Independence, Oxford & IBH, New Delhi.
3. Gaurav Datt and Ashwani Maharaj C (2014), Datt and Sundaram's Indian Economy, S.Chand & Co., New Delhi.
4. Government of India, Economic Survey, Annual (2014), New Delhi.
5. Gualti, A. and T.Kelly (1999): Trade Liberalisation and Indian Agriculture, Oxford University Press, New Delhi.
6. Kahion, A.S. and Tyagi D.D. (1983): Agriculture Price Policy in India, Allied Publishers, New Delhi.
7. Memoria C.B (2013) Agricultural Problem in India.
8. Rao, C.H. Hanumanth (1975): Agricultural Growth, Rural Poverty and Environmental Degradation in India, Oxford University Press, New Delhi.
9. Sadhu and Singh (2013) Fundamentals of Agricultural Economics, Himalaya, New Delhi

DEPARTMENT OF COMMERCE

AWADHESH PRATAP SINGH UNIVERSITY, REWA

Syllabus CBCS
M.Com
Ist and IInd Semester System 2020-21
IIIrd and IVth Semester System 2020-21

Registrar
Awadhesh Pratap Singh University
Rewa(M.P.)

SCHEME OF EXAMINATION for M. COM.
CBCS PATTERN

Semester	Paper No.	Nomenclature	Type of Course	Theory / External Assessment		Internal Assessment		Total Marks	Credit Points
				Max	Min	Max	Min		
I	101	Management Concepts	CC	60	24	40	14	100	04
	102	Business Environment	CC	60	24	40	14	100	04
	103	Advanced Accounting	CC	60	24	40	14	100	04
	104	Cost Analysis and Control	GE	60	24	40	14	100	04
	105	Comprehensive Viva – Voce	CC	Minimum Passing Marks–35				100	04
II	201	Corporate Legal Framework	CC	60	24	40	14	100	04
	202	Organisational Behaviour	CC	60	24	40	14	100	04
	203	Advanced Statistical Analysis	CC	60	24	40	14	100	04
	204	Functional Management	GE	60	24	40	14	100	04
	205	Comprehensive Viva – Voce	CC	Minimum Passing Marks–35				100	04
III	301	Managerial Economics	CC	60	24	40	14	100	04
	302	Tax Planning and Management	CC	60	24	40	14	100	04
	303-A OR 303-B	Entrepreneurship Skill Development OR Marketing Management	DEC	60	24	40	14	100	04
	304	Accounting for Managerial Decisions	GE	60	24	40	14	100	04
	305	Comprehensive Viva – Voce	CC	Minimum Passing Marks–35				100	04
IV	401	Corporate Accounting	CC	60	24	40	14	100	04
	402	Cost Administration and Control	CC	60	24	40	14	100	04
	403-A OR 403-B	Accounting Theory OR Financial Management	DEC	60	24	40	14	100	04
	404	Institutional Accounting	GE	60	24	40	14	100	04
	405	Comprehensive Viva – Voce	CC	Minimum Passing Marks–35				100	04

CC Core Course **GE** Generic Elective **DEC** Discipline Centric Elective

Programme Outcomes

M. Com. (CBCS)

PROGRAMME
OUTCOME

PO #	PROGRAMME OUTCOME
PO1	**Critical Thinking:** Take innovative steps after identifying the characteristics of accounting frame towards thinking and formed in to actions to check out the outcome as per these assumptions are correct and valid, and look at our business ideas and Managerial decisions (intellectual, organizational, and economical) from different perspectives.
PO2	**Effective Communication:** Speaking, reading, writing and listening clearly in person and with the help of an electronic media in English and in one Indian language and make meaning of the world by communicating with people, ideas, books, media and high technology in this madam era.
PO3	**Social Interaction:** Extractive view of others, mediate disagreements and help to reach the accwater in advance accounting and managerial decisions conclusions.
PO4	**Ethics :** To acknowledge the different value systems including your own, to understand the ethical dimensions of business decisions and accept in the responsibilities for them selves.
PO5	**Environment and Sustainability:** To understand the subject matter towards commercial and managerial contexts and for the sustainable developments.
PO6	**Self-directed and Life-long Learning:** Achieving the ability to engage in independent and life-long learning in the broadest context of commerce and industry.

PROGRAMME SPECIFIC OUTCOME (M. Com.)

PSO #	PROGRAMME SPECIFIC OUTCOME
PSO 1	To achieve the functional knowledge of theoretical concepts and practical aspects of commerce and their applications in the day-to-day life.
PSO 2	To integrate the gained knowledge with saved contemporary and evolving areas in organizational management accounting analytical and all business activities relating the commercial study.
PSO 3	To understand, analyze, plan and to implement qualitative as well as quantitative methods and scientific analytical which is based on problems in commericial and managerial activities.
PSO 4	To provide opportunities to a great extent level in academics, research or Industries or companies.

Course Outcome (COs) M.Com

S.No.	Course Name	Course Code
Semester-I		
101	**Advance Accounting**	**MC-101**
	Course Outcomes	
CO1	To impart knowledge of a theoretical foundation for the preparation and presentation of financial statement.	
CO2	To inculcate the understanding of rules of measurement and reporting relating to various types of business entities.	
102	**Management Concept**	**MC-102**
	Course Outcomes	
CO1	To describe the role of strategic management and the concept of management process.	
CO2	To understand about the techniques to scan an environment and the role of environment scanning in hurdle less strategic management of an organization.	
CO3	To understand the importance of strategy formulation and strategy implementation.	
CO4	To understand and formulate different strategies at business and corporate level.	
CO5	To analyse how organizations make decisions in response to rapid changes that occur due to environmental changes.	
103	**Business Environment**	**MC-103**
	Course Outcomes	
CO1	To provide knowledge of business environment, professional and human values and ethical system at general level.	
CO2	To gain knowledge about business and environmental practices.	
CO3	Ability to start their own business.	
CO4	Ability to work in MNCs as well as pvt. and public companies	
CO5	To develop team work, leadership and managerial and administrative skill.	
104	**Cost Analysis & Control**	**MC-104**
	Course Outcomes	
CO1	To measure the cost benefit analysis.	
CO2	To determine the true costs of each of the programme under analysis. (Services & or products)	
CO3	To Depict the overall financial position of the business.	
Semester-II		
201	**Organizational Behaviour**	**MC-201**

Course Outcomes		
CO1	It gives the basic concept of the organisational behaviour.	
CO2	Develop the basic understanding of the individual behaviour it helps to understand the personality of others and adopt it if it seems to good.	
CO3	Develop the perceptual concept among the students and a technique of learning even if is so tough.	
CO4	It enhances knowledge of the various aspects of the individual life positions and ego state and accordingly reacts to them.	
CO5	They come to know the importance of the group and how to take decision as group.	
202	**Advance Statistical Analysis**	**MC-202**
Course Outcomes		
CO1	To develop logical reasoning ability in decision making.	
CO2	To apply various parametric and non-parametric tests in the real life case situation.	
CO3	To make decisions under uncertain business situations.	
CO4	To bring out clearly the importance of statistics in solving different research problems.	
203	**Corporate Legal Framework**	**MC-203**
Course Outcomes		
CO1	The students will be familiarized with the concept of corporate governance and the role and importance of its stakeholders.	
CO2	The student will also be able to appreciate the principles, theories and models of corporate governance.	
CO3	Familiarized with the legislative framework of corporate governance in India.	
CO4	The student will be versed in the fundamental concepts of different aspect of income tax.	
CO5	The students can understand Income Tax system properly and can get the knowledge of different tax provisions.	
204	**Functional Management**	**MC-204**
Course Outcomes		
CO1	To develop knowledge about business finance and the background of Accounting and Management.	
CO2	To make students aware about the challenges and opportunities of Financial Management.	
Semester-III		
301	**Managerial Economics**	**MC-301**
Course Outcomes		
CO1	Develop an understanding of the applications of managerial economics.	

CO2	To provide knowledge and develop understanding of methods of audit in specialized areas.	
CO3	To provide knowledge of cooperative societies audits	
302	**Managerial Economics**	**MC-302**
Course Outcomes		
CO1	To provide understanding of Direct Taxes and to learn the rules and their applications to different business situation.	
CO2	To make aware about the principles underlying the Service Tax.	
CO3	To familiarize with basic concepts of VAT, Excise Duty and Customs Duty.	
303	**Accounting for Managerial Decision**	**MC-303**
Course Outcomes		
CO1	Understand and describe strategic management accounting	
CO2	Make decisions based on customer profitability using activity costing	
CO3	Incorporate risk and uncertainty in project appraisal.	
304	**Entrepreneurship Skill & Development**	**MC-304**
Course Outcomes		
CO1	To acquaint students with the aspects related with understanding the entrepreneurial frameworks and the elements of and entrepreneurial ecosystem	
CO2	To educate about creating value proposition and to carry out market research.	
CO3	To describe and familiarize students with aspects of business model development	
CO4	To introduce functional plans of building teams and customer acquisition	
CO5	To familiarize students with legal aspects pertaining to entrepreneurship and avenues of investment.	
Semester-IV		
401	**Accounting Theory**	**MC-401**
Course Outcomes		
CO1	Know the development in accounting theory, financial reporting and disclosure practices at the national and international level	
CO2	Explain terms such as incomes, revenues, expense, losses and gains.	
CO3	Understand valuation of assets and liabilities and depreciation accounting according to different methods.	
CO4	Understand valuation of intangible assets	
CO5	Learn accounting standards and their construction, the state of the art developments in accounting standards worldwide and in India	

402	**Cost Administration & Control**	**MC-402**
Course Outcomes		
CO1	To acquaint the students with current trends in Business Administration	
CO2	To impart knowledge of various approaches to management	
CO3	To aware students about cross-cultural management system	
403	**International Accounting**	**MC-403**
Course Outcomes		
CO1	To impart knowledge about the scope, importance and functions of institutional accounting.	
404	**Corporate Accounting**	**MC-404**
Course Outcomes		
CO1	Describe the basic understanding and issuing principles & Procedures of Accounting Standards, Ind As & IFRS	
CO2	Interpret and illustrate the Investment Accounts with relevant accounting standard.	
CO3	Explain accounting for Voyage Accounts, & Royalty Accounts.	
CO4	Learn the deep insight of all the accounting aspects of liquidation of company	
CO5	Describe accounting treatments for corporate events like amalgamation, Reconstruction and Restructuring and interpreting the relevance of various accounting regulations and provisions related to such events in context of existing legal and regulatory environment.	

M. Com. Semester – I
CC : Paper – 101: Management Concepts

MaximumMarks:60

Unit-I:

Introduction: Concept of Management, Scope and Nature of Management, Approaches tomanagement,Human relation, Behavioral and systemapproach.

Unit-II:

Planning: Concept of Planning, Objectives and components of planning, Nature andProcessofPlanning,determinationofobjectives.ManagementbyobjectivesManagement by exception, concepts, nature and process of decision-making. Theoriesofdecision-making.

Unit-III:

Organizing: Concept, objectives and element of organization, process and principlesoforganization.Organizationstructureandcharts,spanofManagement,DelegationofAuthority,CentralizationandDecentralization.

Unit-IV:

Directing: Concept,Nature,Scope,PrinciplesandTechniquesofDirection,Communication concept, Process Channel and Media of Communication. Barriers toeffectivecommunication, Buildingeffective communication system.

Unit-V:

Controlling: Concept, objectives, nature and process of control, levels and areas ofcontrol.Variouscontroltechniques.Z-TheoryofManagement,Managementeducation in India: Objectives,Present positionand difficulties.

Course Outcome (COs)

101	**Management Concept**	**MC-101**
Course Outcomes		
CO1	To describe the role of strategic management and the concept of management process.	
CO2	To understand about the techniques to scan an environment and the role of environment scanning in hurdle less strategic management of an organization.	
CO3	To understand the importance of strategy formulation and strategy implementation.	
CO4	To understand and formulate different strategies at business and corporate level.	
CO5	To analyse how organizations make decisions in response to rapid changes that occur due to environmental changes.	

M. Com. Semester – I
CC : Paper – 102: Business Environment

MaximumMarks:60

Unit-I

*TheoreticalFrameworkofBusinessEnvironment:*Concept,Significanceandnatureof business environment; Elements of environment -internal and external; Changingdimensionsofbusinessenvironment,Liberalisation, Privatisationand Globalisation.

Unit-II

*EconomicEnvironmentofBusiness:*Significanceandelementsofeconomicenvironment; Economic systems and business environment; Economic planning inIndia;Governmentpoliciesindustrialpolicyandlicensingpolicy,fiscalpolicy,monetarypolicy,EXIMpolicy.

Unit-III

Political and Legal Environment of Business: Monopolistic Restricted Trade Practice(MRTP) Act, Foreign Exchange Management Act (FEMA), Consumer Protection-Act,PatentLaws.

Unit-IV

*SocioCultural&InternationalEnvironment:*Socialresponsibilityofbusiness,Characteristic,Components,Scope,relationshipbetweensocietyandbusiness,Targetsofsocio-culturalbusinessEnvironment,SocialGroups,WorldTradeOrganisation(WTO),InternationalMonetaryFund(IMF),ForeignInvestmentinIndia.

Unit-V

Technological Environment: Concept, Online Channels, Online Services, AdvantageofOnlineservices,E-commerce,IndianconditionsofEcommerce,ElectronicBanking, Franchise Business.

Course Outcome (COs)

102	**Business Environment**	**MC-102**
Course Outcomes		
CO1	To provide knowledge of business environment, professional and human values and ethical system at general level.	
CO2	To gain knowledge about business and environmental practices.	
CO3	Ability to start their own business.	
CO4	Ability to work in MNCs as well as pvt. and public companies	
CO5	To develop team work, leadership and managerial and administrative skill.	

M. Com. Semester – I
CC : Paper – 103 : Advanced Accounting

MaximumMarks:60

Unit-I:

FinalAccounts (Advancedwith adjustment).

Unit-II:

BankReconciliationStatement,RectificationofErrorsAccountingfornonprofitOrganisation.

Unit-III:

AccountingfromIncompleteRecord,Accountingfor InsuranceClaim.

Unit-IV:

InvestmentA/c, VoyageA/c, Insolvency A/c.

Unit-V:

Dissolutionofpartnershipfirmincludingsales of Firmand amalgamation.

Course Outcome (COs)

103	**Advance Accounting**	**MC-103**
Course Outcomes		
CO1	To impart knowledge of a theoretical foundation for the preparation and presentation of financial statement.	
CO2	To inculcate the understanding of rules of measurement and reporting relating to various types of business entities.	

M. Com. Semester – I
GE : Paper – 104 : Cost Analysis and Control

MaximumMarks:60

Unit-I:

Variouscostconcept,Costcentreandcostunit,MethodsandtechniquesofCosting.Installation ofcostingsystem,Methodsofinventorycontrol,overheads.

Unit-II:

ProcessAccountingJointproductandbyproduct,Equivalentproductionandinterprocessp rofit,OperatingCost.

Unit-III:

MarginalCosting:Concepts,BreakEvenAnalysis,Uniformcostingandinterfirmcompariso n.Useof ManagerialCostinginbusinessDecision.

Unit-IV:

Budgetary Control: Basic concepts, Preparation of functional budget: Cost Audit,Objectives and Advantages.

Unit-V:

StandardCosting and Variance Analysis.

Course Outcome (COs)

104	**Cost Analysis & Control**	**MC-104**
Course Outcomes		
CO1	To measure the cost benefit analysis.	
CO2	To determine the true costs of each of the programme under analysis. (Services & or products)	
CO3	To Depict the overall financial position of the business.	

M. Com. Semester – II
CC : Paper – 201 : Corporate Legal Framework

MaximumMarks:60

Unit-I:

The Companies Act, 1956 (Relevant Provisions): Definition, types *of* companies,Memorandum of association; Articles of association; Prospectus; Share capital andmembership,Meetingsandresolutions;Companymanagement;Managerialremuneration;Winding up and dissolution of companies.

Unit-II:

The Negotiable Instruments Act, 1881: Definition, types of negotiable instruments,Negotiation; Holder and holder in due course, Payment in due course; Endorsementandcrossingofcheque;Presentation of negotiable instruments.

Unit-III:

MRTP Act 1969: monopolistic trade practices; Restrictive trade practices; Unfairtradepractices.

Unit-IV:

*TheconsumerprotectionAct,1986:*salientfeatures;DefinitionofConsumerrightofconsumer;Grievanceredressalmachinery.

Unit-V:

RegulatoryEnvironmentforInternationalBusiness;FFMA,WTO:Regulatoryframework of WTO, basic principles and its character, WTO provisions relating topreferential treatment to developing countries; regional groupings, technical standard,anti-dumping duties and other NTBs. Custom valuation and dispute settlement, TRIPand TRIMS.

Course Outcome (COs)

201	**Corporate Legal Framework**	**MC-201**
Course Outcomes		
CO1	The students will be familiarized with the concept of corporate governance and the role and importance of its stakeholders.	
CO2	The student will also be able to appreciate the principles, theories and models of corporate governance.	
CO3	Familiarized with the legislative framework of corporate governance in India.	
CO4	The student will be versed in the fundamental concepts of different aspect of income tax.	
CO5	The students can understand Income Tax system properly and can get the knowledge of different tax provisions.	

M. Com. Semester – II
CC : Paper – 202 : Organisational Behavior

MaximumMarks:60

Unit-I:

Conceptoforganization,Typesandsignificance,OrganizationGoalanditsdeterminants.OrganizationBehaviour-Concept,NatureandSignificance,OrganizationBehaviour models.

Unit-II:

Personality: Concept, Theories, Determinants and importance, Perception: Concept,Process, Managerial Applications. Learning: Concept, Components, affecting factorsand theories.

Unit-III:

Motivation: Meaning types and important elements, Theories of Motivation, AttitudesandValues:Concept,factors,significanceandTheories.

Unit-IV:

NatureofinterpersonalBehaviour,TransactionalAnalysis,ConceptofGroup,Theoriesofgroupformation,Groupcohesiveness,PowerandAuthority.

Unit-V:

Organizational Conflicts: Causes and suggestions. Developing sound organizationalclimate,Managementofchange,ConceptandProcessofOrganizationalDevelopment.

Course Outcome (COs)

202	**Organizational Behavior**	**MC-202**
Course Outcomes		
CO1	It gives the basic concept of the organisational behaviour.	
CO2	Develop the basic understanding of the individual behaviour it helps to understand the personality of others and adopt it if it seems to good.	
CO3	Develop the perceptual concept among the students and a technique of learning even if is so tough.	
CO4	It enhances knowledge of the various aspects of the individual life positions and ego state and accordingly reacts to them.	
CO5	They come to know the importance of the group and how to take decision as group.	

M. Com. Semester – II
CC : Paper – 203 : Advanced Statistical Analysis

MaximumMarks:60

Unit-I:

TheoryofProbability-ProbabilityDistributions,Binomial,PoissonandNormal Distribution.

Unit-II:

Theoryof Sampling andTest of Signification.

Unit-III:

AnalysisofVariance(includingonewayandtwowayclassification), Chisquare Test.

Unit-IV:

Interpolationand Extrapolation. Association of Attributes.

Unit-V:

RegressionAnalysis,StatisticalDecisionTheory:DecisionunderRiskandUncertainty,D ecisionTree Analysis.

Course Outcome (COs)

203	**Advance Statistical Analysis**	**MC-203**
Course Outcomes		
CO1	To develop logical reasoning ability in decision making.	
CO2	To apply various parametric and non-parametric tests in the real life case situation.	
CO3	To make decisions under uncertain business situations.	
CO4	To bring out clearly the importance of statistics in solving different research problems.	

M. Com. Semester – II
GE : Paper – 204 : Functional Management

MaximumMarks:60

Unit-I:

*FinancialManagement:*Concept,NatureandObjectives,FunctionsofFinancialManager, Financial Planning, Nature, Need and influencing factors, Characteristics ofa sound financial plan.

Unit-II:

Capitalization,ConceptandTheories,Overandundercapitalization,Capitalstructure, Balanced Capital Structure, Trading on Equity, Leverage: Financial andOperatingleverage.

Unit-III:

Concept of Marketing Management, Nature and Scope of marketing, Functions ofmarketingmanagement,Marketingmix.

*AdvertisingManagement:*MeaningObjectives,functionsandscope,mediaofadvertising, Selecting an advertising media Essential of a good advertising copy,MeaningofSalesPromotion,importance,limitationsandmethodsofsalespromotion.

Unit-IV:

Concept of Personal Management, Functions, Scope and Importance, Signification ofman-power planning, Sources of recruitment, Characteristics of a good recruitmentpolicy, Concept of selection, Selection procedure, Importance of employee training,methodsof training.

Unit-V:

*ProductionManagement:*Concept,Importance,Scopeandfunctions.Typesofproduction systems, Concept of production planning, objectives, elements and steps.Procedure of production control, Process of new product development, Concept ofproductdiversification,standardization,simplification andspecialization.

Course Outcome (COs)

204	**Functional Management**	**MC-204**
Course Outcomes		
CO1	To develop knowledge about business finance and the background of Accounting and Management.	
CO2	To make students aware about the challenges and opportunities of Financial Management.	

M. Com. Semester – III
CC : Paper – 301 : Managerial Economics

MaximumMarks:60

Unit-I:

NatureandScopeofManagerialeconomics,ManagerialEconomistRoleandResponsibilities, fundamental economic concepts Incremental Principle, OpportunityCost Principle, Discounting Principle, Equi-Marginal Principle, Profit MaximizationTheory.

Unit-II:

DemandAnalysis,ElasticityofDemand,itsMeaningandImportance,PriceElasticity,IncomeElasticity,CrossElasticity.TheoryofConsumerChoice,IndifferenceApproach, Revealed Preference Theory.

Unit-III:

ProductionFunction,LawofVariableProportions,LawofReturnstoScale.

Unit-IV:

Business Cycles: Nature and Phases, Theories of Business Cycles, Non-MonetaryTheoriesandMonetaryTheoriesofSchumpeter,Hicks,Hayek,HawtreyandSamuelson.

Unit-V:

ProfitManagement-MeasurementofProfit,ConceptofRiskandUncertainty,-uProfit Planningand Forecasting.

Course Outcome (COs)

301	**Managerial Economics**	**MC-301**
Course Outcomes		
CO1	Develop an understanding of the applications of managerial economics.	
CO2	To provide knowledge and develop understanding of methods of audit in specialized areas.	
CO3	To provide knowledge of cooperative societies audits	

M. Com. Semester – III
CC : Paper – 302 :Tax Planning and Management

MaximumMarks:60

Unit-I:

Concept of Tax Planning: Meaning, Scope, Importance, Objectives of Tax Planning,TaxAvoidance and Tax Evasion. Tax Planning and Tax Management.

Unit-II:

AreasofTaxPlanning: Ownership Aspect,ActivityAspects &LocationalAspects,NatureoftheBusiness&TaxPlanning.

Unit-III:

TaxPlanningandSettingupNewBusiness:DeductionsAvailabletoNewIndustrialUndertakings,Amalgamation,MergerandTaxPlanning.SpecialTaxProvisions - Tax Provisions Relating to Free Trade zones, Infrastructure Sector &BackwardAreas.TaxIncentivesforExporters.

Unit-IV:

Tax Planning and Financial Decisions: Capital Structure Decision Dividend, InterCorporate Dividend, Bonus Shares, Purchase of Assets Out of Own Funds or Out ofBorrowed Funds.

Unit-V:

TaxManagement: Introduction,DifferencebetweenTaxPlanningandTaxManagement,AreasofTaxManagement,ReturnofIncomeandAssessment,Penalties and Prosecutions,AppealsandRevisions.

Course Outcome (COs)

302	**Tax Planning and Management**	**MC-302**
Course Outcomes		
CO1	To understand the concepts of marketing management	
CO2	To learn about marketing process for different types of products and services	
CO3	To understand the tools used by marketing managers in decision situations	

M. Com. Semester – III

DEC : Paper – 303 (A): Entrepreneurship Skill Development

MaximumMarks:60

Unit-I:

*Theentrepreneur:*Definition,emergenceofentrepreneurialclass;theoriesofentrepreneurship, socio-economic environment and entrepreneur. Characteristics ofentrepreneurleadership,risktaking,decisionmakingandbusinessplanning.

Unit-II:

*Promotionofaventure:*Opportunityanalysis,externalenvironmentalforces-economic,social,technological,Competitivefactors,legalrequirementsforestablishment of a newunitandraisingfunds.

Unit-III:

*EntrepreneurialBehaviour:*Innovationandentrepreneurship,entrepreneurialbehaviour,socialresponsibility.

Unit-IV:

Entrepreneurial development programme: Entrepreneurial development Programmerelevance and achievements, role of government in organising such programmes.Critical evaluation.

Unit-V:

Entrepreneurship and Industrial development: Planning growth of industrial activitiesthrough industrial! Policy of the government, role of industrial estates, Role of centreand state level promotional service and financial institutions. Role of developmentbanks.

Course Outcome (COs)

303A	**Entrepreneurship Skill & Development**	**MC-303A**
Course Outcomes		
CO1	To acquaint students with the aspects related with understanding the entrepreneurial frameworks and the elements of and entrepreneurial ecosystem	
CO2	To educate about creating value proposition and to carry out market research.	
CO3	To describe and familiarize students with aspects of business model development	
CO4	To introduce functional plans of building teams and customer acquisition	
CO5	To familiarize students with legal aspects pertaining to entrepreneurship and avenues of investment.	

M. Com. Semester III
DEC : Paper 303 (B) : Marketing Management

MaximumMarks:60

Unit-I

Marketing Management- Meaning, Nature, Scope, Importance of Marketing, Place of Marketing Management in business firm as well as in economy, Marketing concepts - traditional and modern, selling v/s Marketing, Marketing Mix., Marketing Environment.

Unit-II

Consumer Behavior- Nature, Scope and significance of consumer Behavior, Market Segmentation-Concept and importance, Bases of Market Segmentation, consumer Protection Act.

Unit-III

Product- Concept of Product, Product planning and Development, Product life cycle, Packaging – meaning, Role and functions, Brand Name and Trade Mark, After sales Service.

Unit-IV

Price- Importance of price in marketing mix, Factors affecting Price, Distribution channels concept and role, Types of distribution channels, Factors affecting choice of a distribution channel, Retailer and whole sales, Physical distribution of goods.

Unit-V

Promotion- Methods of Promotion, Optimum Promotion Mix., Advertising Media- their relative merits and limitation, Characteristics of an effective advertisement, Personal Selling, Qualities of successful sales person, Functions of salesman.

Course Outcome (COs)

404	**Marketing Management**	**MC-404**
Course Outcomes		
CO1	To impart knowledge about the scope, importance and functions of institutional accounting.	
CO2	To understand the concepts of marketing management	
CO3	To learn about marketing process for different types of products and services	
CO4	To understand the tools used by marketing managers in decision situations	

M. Com. Semester – III

GE : Paper – 304 : Accounting For Managerial Decisions

MaximumMarks:60

Unit-I:

*ManagementAccounting:*Itsmeaning,natureandimportance.DifferenceofManagement accounting with Cost Accounting and Financial accounting Rate anddutiesof Management Accountant.

Unit-II:

NatureandLimitationsofFinancialStatements,Needsandobjectivesoffinancialanalysis, **RatioAnalysis:**Profitability,ActivityandFinancialRatios.

Unit-III:

FundFlowanalysisandCashFlaw analysis, Application of A.S.3

Unit-IV:

Nature and Characteristics of Long terms investment Decision, Methods ofRankingInvestment proposals.

Unit-V:

ManagementReportingSystem,TypesofReports,ResponsibilityAccounting,Con ceptof Management Audit.

Course Outcome (COs)

304	**Accounting for Managerial Decision**	**MC-304**
Course Outcomes		
CO1	Understand and describe strategic management accounting	
CO2	Make decisions based on customer profitability using activity costing	
CO3	Incorporate risk and uncertainty in project appraisal.	

M. Com. Semester – IV
CC : Paper – 401 :Corporate Accounting

MaximumMarks:60

Unit-I:

IssueandForfeitureofsharesaccountingforRedemptionofPreferenceShareandDebenture,BuybackofEquityShare,BonusShares.

Unit-II:

CompanyFinalAccountsAS-4,AS-5,DisposalofProfit.

Unit-III:

Mergerof CompaniesAS-14

Unit-IV:

InternalReconstructionofaCompany,Liquidationofacompany.

Unit-V:

ValuationofGoodwillandShare.

Course Outcome (COs)

401	**Corporate Accounting**	**MC-401**
Course Outcomes		
CO1	Describe the basic understanding and issuing principles & Procedures of Accounting Standards, Ind As & IFRS	
CO2	Interpret and illustrate the Investment Accounts with relevant accounting standard.	
CO3	Explain accounting for Voyage Accounts, & Royalty Accounts.	
CO4	Learn the deep insight of all the accounting aspects of liquidation of company	
CO5	Describe accounting treatments for corporate events like amalgamation, Reconstruction and Restructuring and interpreting the relevance of various accounting regulations and provisions related to such events in context of existing legal and regulatory environment.	

M. Com. Semester – IV
CC : Paper – 402 :Cost Administration and Control

MaximumMarks:60

Unit-I:

ApplicationofMarginalCosting,Keyfactoranalysis,Profitplanning,optimumproductmix,MakeorBuydecision,Pricefixation,Discontinuanceofproduct,Diversificationofproductline, Acceptanceofneworder,closedowndecision.

Unit-II:

*BudgetingProcess:*BudgetManual,ZeroBaseBudget,Planning,Programming,Budgeting system, Performance Budgeting, Disposal of variance in standard costing,TransferPricing: Meaning, necessity and methods.

Unit-III:

*PricingStrategy:*Factorsinfluencing,productpricing,Pricingdecisionprocess,*Pricing Methods:* Cost plus pricing, Standard cost pricing, Marginal, cost pricing,Pricing for target rate of return; Added value, Method of Pricing, Differential costpricing, Going rate pricing, Opportunity cost pricing, Administered Pricing, Exportpricing, Skimming and penetration pricing policy, Price discrimination target pricing,Non financial factors of pricing.

Unit-IV:

Costreductionandcostcontrol,costcontrolprocess,CostReductionProcess,PlanningforcostReductionTechniquesforcostcontrolandreduction,ValueAnalysis, Inventorycontrol Techniques.

Unit-V:

TOM is costing, Material Requirement Planning, Manufacturing Resource PlanningProduct Life Cycle Costing, Project Life Cycle Costing, Feedback control system,ActivityBasedcosting,Targetcosting,EnterprisesResourcePlanning,Synergy,Benchmarking,BPO.

Course Outcome (COs)

402	**Cost Administration & Control**	**MC-402**
Course Outcomes		
CO1	To acquaint the students with current trends in Business Administration	
CO2	To impart knowledge of various approaches to management	
CO3	To aware students about cross-cultural management system	

M. Com. Semester – IV
DEC : Paper–403(A): Accounting Theory

MaximumMarks:60

Unit-I:

*Accounting:*asinformationsystem,asalanguagefactorsinfluencingaccountingenvironment.Accountingandeconomicdevelopment.ConceptofAccountingTheory. Role and classification of Accounting Theory. Approaches of AccountingTheory.

Unit-II:

AccountingPostulates,ConceptandPrinciples,G.A.A.P.,AccountingPolicies.RevenueRecognition,StudyofAS9,ConceptofExpenses,Gainandlosses.

Unit-III:

Revenue Measurement and its relevance, various concept of Income: Accounting concept,Economic concept and capital maintenance concept, Operating and Non-operating activities,Conceptofcomprehensive Income,Prior perioditems andextraordinaryitems.

Unit-IV:

Conceptual study of Accounting for Changing prices, Segment Reporting, SocialAccounting.

Unit-V:

InterimReporting,ConceptualHumanResourceAccounting,ValueAddedReporting.EnvironmentalAccounting and reporting.

Course Outcome (COs)

403A	**Accounting Theory**	**MC-403A**
Course Outcomes		
CO1	Know the development in accounting theory, financial reporting and disclosure practices at the national and international level	
CO2	Explain terms such as incomes, revenues, expense, losses and gains.	
CO3	Understand valuation of assets and liabilities and depreciation accounting according to different methods.	
CO4	Understand valuation of intangible assets	
CO5	Learn accounting standards and their construction, the state of the art developments in accounting standards worldwide and in India	

M. Com. Semester – IV
DEC : Paper–403(B):Financial Management

MaximumMarks:60

Unit-I

Management of Working Capital : Concept need and influencing factors Marketing, underwriting and distribution of securities, management of cash Management of Cash flowes, methods of Accelerating cash in flows, methods of Slowing cash out flows, determining of level of cash Balance, optimum investment in securities.

Unit-II

Management of Inventory: Determining the optimum level of Inventory, determining order point determining the degree of control, ABC Analysis. Management of Receivables: An overview, Dimensions of Receivables, Formulation of credit Policies, execution of credit policies and formulation of collection policies and their execution.

Unit-III

(i) Ratio Analysis: Meaning of Ratio Analysis, Significance of Ratios as a tool financial analysis.
(ii) Fund Flow statement: Concept of fund flow statement, Significance of funds flow statement.
(iii) Cash flow statement: circulation of cash, significance of uses of cash flow statement, Preparation of cash flow statement.

Unit-IV

Dividend and Retained earning: Dividend policy decisions, Policies regarding retained earning, Bonus share or stock dividend- meaning utility and guidelines for issue.

Unit-V

Profit planning and Cost volume profit analysis (Break even analysis), Capital markets and its institutions, Control on Capital issues.

Course Outcome (COs)

403B	**Functional Management**	**MC-403B**
Course Outcomes		
CO1	To develop knowledge about business finance and the background of Accounting and Management.	
CO2	To make students aware about the challenges and opportunities of Financial Management.	

M. Com. Semester – IV
GE : Paper – 404 : Institutional Accounting

Maximum Marks:60

Unit-I:

Accountingforholdingcompany.

Unit-II:

AccountingforBankandInsuranceCompany (includingLife Insurance).

Unit-III:

DoubleAccounts System.

Unit-IV:

AccountingforCo-operativesocieties,HotelAccounting.

Unit-V:

GovernmentAccounting.

Course Outcome (COs)

404	***Institutional Accounting***	**MC-404**
Course Outcomes		
CO1	To impart knowledge about the scope, importance and functions of institutional accounting.	

AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

Ph.D. COURSE WORK STRUCTURE

BUSINESS ECONOMICS

2018-19

Syllabus of Pre. Ph.D. Course Work 2018 –19

Business Economics (08)

Research Methodology — Paper-I

Unit-I

Nature of Social Research: Meaning and Definitions, Motivating Factors of Research Basic Assumption and Reasons of Studying Social Research pure and Applied Research, Interplay Between Theory and Research Methodology, Problems in Inter- Disciplinary Research.

Unit-II

Nature of Study: Panel Studies, Case Studies, Area Studies and other Methods. Problems of Formulation and Research Design, Hypothesis and Concepts- Design of Experiment, Explanatory Descriptive and Controlled Experiment.

Unit-III

Selection of Universe: Units of Study Sampling, Types of Sources of Data With Spl. ref. to Primary and Secondary Data. The Technique of Data Collection: Content Analysis, Observation. Questionnaires and Schedules- Use of Projective Techniques. Use of Mechanical Aids- Tape Recorder Punch cards Verifiers etc.

Unit-IV

Statistical Methods:

Measures of Central Tendency Dispersion, Skewness and Kurtosis. Elementary Theory of Probability Binomial, Poisson and Normal Distributions. Simple Co-relation and Progression Analysis. Statistical Inferences- Applications, Sampling Distributions (T, X2 and F Tests), ANOVA Tests, Sampling of Attributes Testing of Hypothesis. Index Numbers and Time Series Analysis. Sampling and Census Methods Types of Sampling and Errors.

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Nathak

28/6/19

Syllabus of Pre. Ph.D. Course Work 2018 –19

Business Economics

Computer Applications — Paper-II

Unit-I

History, Generation of Computers, Characteristics, Capabilities and Limitations, Classification of Computers and types of Digital computers. Hardware, Software, Types of software. Generations of Computer, Languages : High and low level languages, Types of Translators (Compiler, Interpreter and Assembler), Components of Computer system. Introduction of various input/output devices: Keyboard, mouse, MICR, OCR, OMR, Bar Code, Scanner, VDU, Impact and Nonimpact printers, storage units : Bits and Bytes; Introduction to primary and secondary Memory

UNIT–II

Windows : Introduction, windows desktop, start button, taskbar, recycle bin, switching between programs and windows, managing files, folders and objects, windows explorer, creating shortcuts, control panel; sharing information among applications, network neighbourhood, sharing folders and printers. Internet, Web browser, Search Engines

UNIT–III

MS WORD : Working with Headers, Footers, tabs, tables, sorting, Working with graphics: Importing graphics, Sizing and Cropping graphics, Drawing objects, Text in Drawings (Word Art), Pictures using Drawing objects, Rotating and Flipping Objects, Templates, Wizards, Spelling Checker, Autocorrect, Autotext, Introduction to Mail Merge; Creating Tables of Contents and Index, Captions, Index, References, Insert Citation, Bibliography

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Nathak

28/6/19

Syllabus of Pre. Ph.D. Course Work 2018 –19

Business Economics

General Economics *Paper-III*

Unit-I

Micro Economic Analysis:

Demand Analysis- Marahallian, Hicksian and Revealed Preference Approaches. Theory of Production and Costs, Pricing and Output under different Form's of Market Structure. Theory of Games-Two Person, Zero-Sum Game Pure and Mixed Strategy Sudden Points, Solution. Factor Pricing Analysis Linear Programming and Input-Output Analysis. Elements of General Equilibrium and New Welfare Economics.

Unit-II

Macro-Economic Analysis.

Determination of Output and Employment Classical Approach, Keynesian Approach Consumption Hypothesis. Demand for Money- Fisher and Cambridge Versions, Approaches of Keynesian Friedman, Patinkin, Baumol and Tobin. Supply of Money Determinants of Money Supply, High Powered Powered Money, Money Multiplier. Phillips Curve Analysis. Business Cycles- Models of Samuelson, Hicks and Kaldor. Macro- Economic Equilibrium- Relative Roles of Monetary and Fiscal Policies.

Unit-III

International Economics-

Theories of International Trade: Empirical Verification and Reliance. International Trade Under Imperfect Competition. Term of Trade and Economic Growth- Scular Deterioration of Terms of Trade. Hypothesis- A Critical Review. Equilibrium/ Disequilibrium in Balance of Payment- Traditional, Absorption and Monetary Approaches for Adjustment in the balance of payment: Foreign Trade Multiplier. Impact of Tariffs, Partial and General Equilibrium Analysis; Political Economy of Non- Tariff Barriers. Theory of Regionalism of Global Level Collapse of Bretton- Wood System. Recent Monetary Reforms. Trade Policy and Reforms in India.

23/6/19

Unit-IV

Development and Planning:-

Economic Growth, Economic Development and Sustainable Development Importance of Institutions- Government and Market- Perpetuation of Under Development Vicious Circle of Poverty, Circular Causation, Structural View of Under Development- Measurement of Development Con- ventional, HDI and Quality of Like in Dices. Theories of Development- Classical Maxy and Schumpeter, Economic Growth- Harrod- Domar Model Instability of Equilibrium, Neoclassical Growth- Solow's Model Steady State Growth. Approaches to Development: Balanced Growth Critical Minimum Effort, Big Push, Unlimited Supply of Labour, Unbalance Growth, Low Income Equilibrium Trap. Indicators and Measurement of Poverty. Importance of Agriculture and Industry in Economic Development- Choice of techniques and appropriate Technology- Investment Criteria- Elementary Idea of Cost Benefit Analysis. Trade and Aid- International Trade as Engine f Growth- Globalization and LDC'S. Objective and Role of Monetary and Fiscal Policies in Economic Development. Techniques of Planning, Plan Models in India, Planning in a Market Oriented Economy.

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28/6/19

AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

Ph.D. COURSE WORK STRUCTURE

COMMERCE

2018-19

Syllabus of Pre. Ph.D. Course Work 2018 –19 Commerce

Research Methodology Paper-I

Unit-I

Nature of Social Research: Meaning and Definitions, Motivating Factors of Research Basic Assumption and Reasons of Studying Social Research pure and Applied Research, Interplay Between Theory and Research Methodology, Problems in Inter- Disciplinary Research.

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Measures of Central Tendency Dispersion, Skewness and Kurtosis. Elementary Theory of Probability Binomial, Poisson and Normal Distributions. Simple Co-relation and Progression Analysis. Statistical Inferences- Applications, Sampling Distributions (T, X2 and F Tests), ANOVA Tests, Sampling of Attributes Testing of Hypothesis. Index Numbers and Time Series Analysis. Sampling and Census Methods Types of Sampling and Errors.

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Computer Applications Paper-II

Unit-I

History, Generation of Computers, Characteristics, Capabilities and Limitations, Classification of Computers and types of Digital computers. Hardware, Software, Types of software. Generations of Computer, Languages : High and low level languages, Types of Translators (Compiler, Interpreter and Assembler), Components of Computer system. Introduction of various input/output devices: Keyboard, mouse, MICR, OCR, OMR, Bar Code, Scanner, VDU, Impact and Nonimpact printers, storage units : Bits and Bytes; Introduction to primary and secondary Memory

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Windows : Introduction, windows desktop, start button, taskbar, recycle bin, switching between programs and windows, managing files, folders and objects, windows explorer, creating shortcuts, control panel; sharing information among applications, network neighbourhood, sharing folders and printers. Internet, Web browser, Search Engines

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Syllabus of Pre. Ph.D. Course Work 2018 –19 *Commerce*

Business Management *Paper-III*

Unit-I

Business System & Its Structure As A part Economic System, Business Concept, Objectives and Functions, Social Responsibilities of Business, Promotion & Location,

Unit-II

Management: Concept and Definition of Management, Function of Management, Nature, Scope & Importance of Management, History of Management Thoughts, Innovation in The Field of Management.

Unit-III

Forms of private Ownership Organization: Sale Proprietorship, Proprietorship Company-Meeting, proposal and Statutory Function, Prevention From Injustice and Mismanagement, SEBI with BSE & NSE

Unit-IV

Financial Management: Meaning & Definition of Financial Management, Function & Importance of Management. Over and Under Capitalization, Estimation of Long Term and Working Capital Needs Sources and Their Evolution Concept and Fundamentals of Marketing Marketing Risk, Concept and Fundamentals of Human Resources Management.

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AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

Ph.D. COURSE WORK STRUCTURE

ECONOMICS

2018-19

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Malhak

28/6/19

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Syllabus of Pre. Ph.D. Course Work 2018 –19 Economics

General Economics Paper-III

Unit-I

Micro Economic Analysis:

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Unit-III

International Economics-

Theories of International Trade: Empirical Verification and Reliance. International Trade Under Imperfect Competition. Term of Trade and Economic Growth- Seular Deterioration of Terms of Trade. Hypothesis- A Critical Review. Equilibrium/ Disequilibrium in Balance of Payment- Traditional, Absorption and Monetary Approaches for Adjustment in the balance of payment: Foreign Trade Multiplier. Impact of Tariffs, Partial and General Equilibrium Analysis; Political Economy of Non- Tariff Barriers. Theory of Regionalism of Global Level Collapse of Bretton- Wood System. Recent Monetary Reforms. Trade Policy and Reforms in India.

28/6/19

AWADHESH PRATAP SINGH UNIVERSITY, REWA (MP)

Bachelor of Computer Application (BCA)
Full-Time Eight Semester Programme
Choice Based Credit System (CBCS)
SESSION 2021-22
PROGRAMME OBJECTIVES & STRUCTURE

The BCA Programme structure is divided into eight semesters that spread over four years. The Courses are classified as major core courses, minor core courses, discipline centric electives, generic electives, ability enhancement and skill enhancement.

The semesters include **Major Core Courses** on Programming in C, Data Structures, OOPS Using C++, Computer Graphics, Java Programming, Software Engineering, Artificial Intelligence, and Cryptography & Network Security to develop multi-disciplinary foundation and what the critical thinking, analytical ability and problem solving skills of the participants. This will develop an integrative foundation by imparting an understanding of computer skills in all functional areas, mathematics & statistics applicable in the IT industry.

Minor Core Courses on Computer Fundamentals, Computer Organization, Operating System, System Software, Research Methodology and Cloud Computing have been incorporated to build a holistic approach and strong foundation of the students by demonstrating knowledge of facts, research related skills and principles in the field of Computer Application.

Discipline Specific Elective Courses (DSE) on Computer Network, Discrete Mathematics, Mobile Computing, Information Storage Management, RDBMS, Web Application Development, Internet of Things, Software Quality Assurance and Big Data Analytics & Visualization as elective areas of specialization to ensure better employability by updating their multi-professional skills have been also included.

Besides, the programme also includes courses for **Skill Enhancement (SE)** of the participants like Basic Mathematics and Personality Development & Character Building to ameliorate the professional skills of the participants and prepare them to fit suitably into their field of work.

The **Ability Enhancement (AE)** courses like English Language and Environmental Studies have been incorporated with the intention to develop the language proficiency through interactions embedded in meaningful contexts and to impart knowledge on natural processes to sustain life has been included. **Generic Elective Courses(GE)** on PC Software, Web Technology, DBMS and VB.Net are included. These courses can be opted by other students of the same level in UTD courses.

Class presentations, assignments & Co-curricular activities are an intrinsic part of the programme to give practical exposure to the participants regarding local, regional, national & global developments in the field of Computer Application. The programme structure also includes dissertation and comprehensive viva voice to gauge student's skills to execute the learned concepts into practice and examine their comprehension and conception ability.

This curriculum of BCA aims to provide enriched educational experience to the students by upgrading their stock of knowledge, skills and attitude and equipping them for a bright professional life in a complex and rapidly changing Computer Industry.

Programme Objectives POs:

The objectives of the Programme are:

- The primary objective of this program is to provide a foundation of computing principles and business practices for effectively using/managing information systems and enterprise software
- It helps students to develop the ability to identify, analyze, formulate and develop computer applications.
- To enable the students to select modern computing tools and techniques and use them with practical expertise.
- This course provides students with options to specialize in legacy application software, system software or mobile applications
- To produce outstanding IT professionals who can apply the theoretical knowledge into practice in the real world and develop standalone live projects themselves
- To provide opportunity for the study of modern methods of information processing and its applications.
- To develop among students the programming techniques and the problem-solving skills through programming
- To prepare students who wish to go on to further studies in computer application and related subjects.
- To acquaint students to Work effectively with a range of current, standard, Office Productivity software applications

Programme Outcomes

- **Critical thinking**: Take informed action after identifying the assumptions that frame our thinking and actions check out the degree to which these assumption are accurate and valid and look at our ideas and decision (intellectual, organization and personal) from different perspectives.

- **Effective Communication:** Speak, read, write and listen clearly in person and throw electronic media in English and in one Indian language, and make meaning of the word by connecting people, ideas, books, media and technology.

- **Social Interaction**: Elicit views of others, mediate disagreements and help reach conclusions in group settings.

- **Social Citizenship:** Demonstrate empathetic social concern and equity-centered national development and the ability to act with an informed awareness of issues and participate in civic life through volunteering.

- **Ethics**: Recognize different value system including your own understands the moral dimensions of your decisions and accept responsibility for them.

- **Environment and sustainability:** Understand the issues of environmental context and sustainable development.
- **Self directed and life-long learning:** Acquire the ability to engage in independent and life-long learning in the broadest context of socio-technological changes.

Programme Specific Outcomes (PSOs)

The programme is designed to

PSO 1: Acquiring knowledge on basics of Computer Science and ability to apply to design principles in the development of solutions for problems of varying complexity

PSO2: Ability to design and development of algorithmic solutions to real world problems and acquiring a minimum knowledge on statistics and optimization problems. Establishing excellent skills in applying various design strategies for solving complex problems.

PSO3: Exhibiting strong skills required to program a computer for various issues and problems of day-to-day applications with thorough knowledge on programming languages of various levels.

PSO4: Practicing of existing projects and becoming independent to launch own project by identifying a gap in solutions.

BACHELOR OF COMPUTER APPLICATION (BCA)

PROGRAMME STRUCTURE
(As per NEP 2020 & CBCS Ordinance 14 A)

1st Year

SEMESTER – I					
Course Code & Name	**Course Type**	**Theory Paper**	**Internal Assessment**	**Maximum Marks**	**Credits**
101 Programming in C 101(PR) Lab C	Major Core Th Major Core PR	60	40	100 100	4 2
102 Computer Fundamentals	Minor Core	60	40	100	6
103 PC Software 103 (PR) Lab MS Office	GE	60	40	100 100	3 1
104 Environmental Studies	AE	60	40	100	4
SEMESTER TOTAL				**600**	**20**
CUMULATIVE TOTAL				**600**	**20**

SEMESTER – II					
Course Code & Name	**Course Type**	**Theory Paper**	**Internal Assessment**	**Maximum Marks**	**Credits**
201 Data Structure 201(PR) Lab DS	Major Core Th Major Core PR	60	40	100 100	4 2
202 Computational Mathematics	Minor Core	60	40	100	6
203 Lab Web Technologies 203 (PR) Web Technologies	GE	60	40	100 100	3 1
204 English Language	AE	60	40	100	4
SEMESTER TOTAL				**600**	**20**
CUMULATIVE TOTAL				**1200**	**40**

GE: Generic Elective **AE: Ability Enhancement**

*Students may choose this course as a **Generic Elective** or may choose a Generic Elective Course offered in other UTDs at the same level or may choose a Course offered by MOOCs through SWAYAM.

The student will be awarded a Certificate in Computer Application (CCA) on successful completion of the first year.

2nd Year

SEMESTER – III					
Course Code & Name	**Course Type**	**Theory Paper**	**Internal Assessment**	**Maximum Marks**	**Credits**
301 Object Oriented Programming using C++ 301(PR) Lab C++	Major Core Th Major Core PR	60	40	100 100	4 2
302 Operating System	Minor Core	60	40	100	6
303 Database Management System 303(PR) Lab DBMS	GE	60	40	100 100	3 1
304 Probability and Statistics	SE	60	40	100	4
SEMESTER TOTAL				**600**	**20**
CUMULATIVE TOTAL				**1800**	**60**

SEMESTER – IV					
Course Code & Name	**Course Type**	**Theory Paper**	**Internal Assessment**	**Maximum Marks**	**Credits**
401 Computer Graphics 401(PR) Lab CG	Major Core Th Major Core PR	60	40	100 100	4 2
402 Software Engineering	Minor Core	60	40	100	6
403 VB .NET 403 (PR) Lab VB.NET	GE	60	40	100 100	3 1
404 Discrete Mathematics	SE	60	40	600	4
SEMESTER TOTAL				**600**	**20**
CUMULATIVE TOTAL				**2400**	**80**

GE: Generic Elective **SE: Skill Enhancement**

*Students may choose this course as a **Generic Elective** or may choose a Generic Elective Course offered in other UTDs at the same level or may choose a Course offered by MOOCs through SWAYAM.

The student will be awarded a Diploma in Computer Application (DCA) on successful completion of second year.

3rd Year

SEMESTER – V					
Course Code & Name	**Course Type**	**Theory Paper**	**Internal Assessment**	**Maximum Marks**	**Credits**
501 JAVA Programming 501(PR) Lab Java	Major Core Th Major Core PR	60	40	100 100	4 2
502 (A) Computer Network** 502 (B) Mobile Computing**	DSE	60	40	100	4
503 Personality Development & Character Building	SE	60	40	100	4
504 Field Project	Core			100	6
SEMESTER TOTAL				**500**	**20**
CUMULATIVE TOTAL				**2900**	**100**

SEMESTER – VI					
Course Code & Name	**Course Type**	**Theory Paper**	**Internal Assessment**	**Maximum Marks**	**Credits**
601 Web Application Development 601(PR) Lab Web Application Development	Major Core Th Major Core PR	60	40	100 100	4 2
602 (A) Data Mining & Warehousing ** 602 (B) Information Storage Management**	DSE	60	40	100	4
603 (A) Parallel Computing** 603 (B) Theory of Computation**	DSE	60	40	100	4
604 Internship	Core			100	6
SEMESTER TOTAL				**500**	**20**
CUMULATIVE TOTAL				**3400**	**120**

SE: Skill Enhancement DSE: Discipline Specific Elective
Students maychoose any one set of specialization Course; (Group A or B or C) as **Discipline Specific Electives.

The student will be awarded a Bachelor Degree in COMPUTER APPLICATION (BCA) on successful completion of third year.

4th Year

SEMESTER – VII					
Course Code & Name	**Course Type**	**Theory Paper**	**Internal Assessment**	**Maximum Marks**	**Credits**
701(1) Artificial Intelligence 701(PR) Lab AI	Major Core	60	40	100 100	4 2
702 (A) Internet of Things** 702 (B) Software Quality Assurance**	DSE	60	40	100	4
703 Research Methodology	Minor Core	60	40	100	4
704 Research Project	Core			100	6
SEMESTER TOTAL				**500**	**20**
CUMULATIVE TOTAL				**3900**	**140**

SEMESTER – VIII					
Course Code & Name	**Course Type**	**Theory Paper**	**Internal Assessment**	**Maximum Marks**	**Credits**
801 Big Data Analytics & Visualization	Major Core	60	40	100	6
802 Cryptography & Network Security	Minor Core	60	40	100	4
803 Internship & Dissertation	Core			100	10
SEMESTER TOTAL				**300**	**20**
CUMULATIVE TOTAL				**4200**	**160**

DSE: Discipline Specific Elective
******Student maychoose any one set of specialization Course; (Group A or B or C) as **Discipline Specific Electives**.

The student will be awarded Honors Bachelor Degree in Computer Application (BCA Honors) on successful completion of fourth year.

Credit Distribution as per the Ordinance 14 A

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		Main Faculty (as per prerequisite)			Any Faculty	Skill Enhancement Course (SEC)	Ability Enhancement Course (AEC)	Field Projects/ internship/ apprenticeship /community engagement & service	Credits	Qualification Title (Credits Requirements)
		Subject I		Subject II	Subject III					
Level	Sem	Major		Minor	Generic Elective Course	Vocational Course		#Inter/Intra Faculty		
		Core	DSE							
Level 5	1	6		6	4	-	4	-	6+6+4+4 =20	(40) Undergraduate Certificate in Main Faculty
	2	6		6	4	-	4	-	6+6+4+4 =20	
Level 6	3	6		6	4	4	-	-	6+6+4+4 =20	(80) Undergraduate Diploma in Main Faculty
	4	6		6	4	4	-	-	6+6+4+4 =20	
Level 7	5	6	4	-	-	4	-	6	6+4+4+6 =20	(120) Bachelor Degree in Main Faculty
	6	6	4+4	-	-	-	-	6	6+4+4+6 =20	
Level 8	7	6	4	4 Research Methodology	-	-	-	6	4+4+4+6 =20	(160) Bachelor Degree (Honours/Research) in Main Faculty
	8	6	-	4	-	-	-	10	6+4+10 = 20	
Total		48	16	32	16	12	8	28	160 Credits	

101: Programming in C

Max. Marks : Theory 60 IA 40

Course Objective:

To help the students to acquire basic knowledge in concepts and theory of principles of programming and to familiarize the students in the C programming language.

UNIT–I

C language programming: Flowchart, Algorithm, Introduction to C language, Character set of C-language. The structure of a simple C program; Simple I/O functions (scanf, printf, gets, puts, getchar, getche, getch); Use of semicolon, braces, parentheses, comments and newline character; Data types in C. Assignment statement, Arithmetic, Relational & Logical operators; Unary operator, sizeof operator, Conditional operators, Precedence of operators.

UNIT–II

Control structure: The if-else statements, nesting of if-else, switch statement, Loops: while and do-while loop, the for loop, Functions: User defined functions, Returning a value from a function, Local and Global variables, Parameters, Type declaration of a function, Functions with more than one parameters, Prototype of a function. Functions with arguments, functions without arguments. Storage classes.

UNIT–III

Arrays: Declaration and initialization; the break and continue statement; String and Character arrays, operations with arrays; searching in array (linear and binary). Sorting an array (Bubble, Selection and Insertion), String & String functions: sprintf, strcpy, scanf, strcat, strlen, malloc, strcmp. Two dimensional array, matrix, types of matrix – addition and product of two matrices.

UNIT–IV

Pointers: The concept of pointers, passing pointers as parameters, arrays of pointers, Pointer to pointers, Array of pointers to strings, Sorting an array, using pointers, Structures: The concept of structure, Initializing, Arrays of structures, Arrays within structures, Structures within Structures, passing structures to function, unions.

UNIT–V

Files: Files in 'C', Modes for files; Functions used in files (getc, putc, fopen, fclose, fscanf, fread, fwrite, fprintf, fseek, ftell, rewind), text versus binary files, The C preprocessor, Preliminaries of C preprocessor Directives, (#define, #undef, #include, #ifdef, #ifndef, #endif, #else, #if).

Course Outcomes:

On completion of this course, the student will be able to:

CO1: Learn, understand and trace the execution of programs written in C language.
CO2: Apply programming control structures for a given problem to create C code.
CO3: Learn and understand derived data types and develop C code using arrays and strings.
CO4: Understand user defined functions, pointers and data types to develop C code.
CO5: Learn file handling techniques and use of preprocessors in C.

Text Book(s):

1. E. Balagurusamy, Programming in ANSI C, TMH
2. Y. Kanetkar, Let us C, BPB

Reference Book(s):

1. Rajaraman, Introduction to C, PHI
2. Gottfried, Programming with C, TMH
3. Cooper, Mullish, The Spirit of C, An introduction to modern programming, Jaico Pub. House, N. Delhi.

Online Resource(s):

https://www.youtube.com/playlist?list=PLJvIzs_rP6R73WlvumJvCQJrOY3U5zq1j
https://nptel.ac.in/courses/106104128
https://nptel.ac.in/courses/106105171

101 (PR): Lab 'C'
Max. Marks: Practical 100

LIST OF PRACTICALS

1. Given the values of the variables x, y and z, write a program to rotate their values such that x has the value of y, y has the value of z, and z has the value of x
2. Write a program that reads a floating point number and then displays the right-most digit of the integral part of the number.
3. The distance between two cities (in Km) is input through the keyboard. Write a C program to convert and print this distance in meter, feet, inches and centimeter.
4. If a five-digit number is input through the keyboard, write a C program to calculate the sum of its digits without using a loop.
5. If a four-digit number is input through the keyboard, write a C program to obtain the sum of the first and last digit of this number.
6. Program to find largest and smallest numbers from four given numbers.
7. Program to find whether a year is leap or not.
8. A library charges a fine for every book returned late. For first 5 days the fine is 50 paise, for 6- 10 days fine is one rupee and above 10 days fine is 5 rupees. If you return the book after 30 days your membership will be canceled. Write a program to access the number of days the member is late to return the book and display the fine or the appropriate message.
9. Write a C program in which enter any number by the user and perform the operation of product of digits of entered number.
10. Write a C program in which enter any number by the user and perform the operation of Sum of digits of entered number.
11. Write a C Program to convert Decimal number to Binary number.
12. Find the sum of this series upto n terms 1+2+4+7+11+16+……..
13. Program to print Armstrong numbers from 1 to 10000.
14. Write a C program to perform the factorial of given number.
15. Program to calculate factorial of a number using recursion. Number being entered by the user.
16. Write a C program to generate Fibonacci series using recursion. The user enters the limit of series.
17. Write a C Program to print the reverse of an integer number entered by user
18. Program to count the number of positive, negative and zero number in the given list of numbers.
19. Program for swapping of two arrays as per indexes accordingly both array have the same size.
20. Program to read a name through the keyboard. Determine the length of the string.
21. Write a program to remove the Occurrences of "The" word from entered text.
22. Write a program to delete all the occurrences of the vowels in a given text. Assume that the text length will be of one line.
23. Write a program to copy the content of one string into another string using pointer and function.
24. Write a program to find that two strings are identical or not using pointer and function.
25. Generate a result table which consists of student id, student name, marks of three subjects and total marks. Write a program which takes input for ten students and displays the result table. Also display student information separately who got the highest total. Use structure.
26. Store information of 10 persons. Information includes name and age. But the criteria is: for the child age should be in the form of full birth date, for an adult the age should be in years only, while for aged person store age indicating the status 'O'. Use union for memory efficiency.
27. Write a program to maintain the library record for 100 books with book name, author's name, and edition, year of publishing and price of the book.
28. Write a program to copy the contents of a text file into another text file.
29. Write a program to write a structure variable in file.
30. Write a C program to demonstrate random access in a file.

Course Outcomes:

On completion of this course, the student will be able to:

CO1: Learn programming skills and trace the execution of programs written in C language.

CO2: Apply programming control structures for a given problem to create C code.

CO3: Learn and understand creation of derived data types and develop C code using arrays and strings.

CO4: Learn creation of user defined functions, pointers and data types to develop C code.

CO5: Learn programming skills for file handling techniques and use of preprocessors in C.

102: Computer Fundamentals

Max. Marks : Theory 60 IA 40

Course Objectives:

To help the students to acquire basic knowledge of Computer Fundamentals and basics of data communication.

UNIT-I

History, Generation of Computers, Characteristics, Capabilities and Limitations, Classification of Computers and types of Digital computers. Hardware, Software, types of software. Generations of Computer Languages, High and low level languages, Types of Translators (Compiler, Interpreter and Assembler)

UNIT-II

Working of a computer using block diagram, Components of Computer system, Central Processing UNIT, Address, Control and Data Bus, Arithmetic Logic UNIT, Control UNIT, storage units : Bits and Bytes; external & internal devices, Booting of PC system, Comparative study of various series of IBM PC Family.

UNIT-III

Introduction and working of various input/output devices: Keyboard, mouse, MICR, OCR, OMR, Bar Code, Audio Response UNIT, Scanner, VDU, Plotter, Impact and Nonimpact printers, Computer Output Microfilm (COM).

UNIT-IV

Introduction to primary memories (RAM, ROM, PROM and EPROM), Preliminary concept of Extended, Expanded and Virtual Memory, Registers, Counters, Storage devices: Hard disks, Floppy disks (sector, cylinder, track, seek time, latency time and response time). Number system **:** Introduction to decimal, binary, octal, hexadecimal number systems and their interconversion; Coding: (ASCII, EBCDIC, BCD, Unicode).

UNIT-V

Basics of data communication, Communication media, Methods of data transmission, modes of data transmission, Analog versus digital and serial versus parallel communication. Introduction to computer Network: Advantages, type, various LAN topologies, Distinction between LAN, WAN, MAN. Overview of Internet: www, email, ftp, telnet, chat, browser, newsgroup.

Course Outcomes:

On completion of this course, the student will be able to:

CO1: Learn and understand the characteristics & capabilities of Computers.
CO2: Learn working of computer system .
CO3: Learn and understand various Input Output devices used with computers
CO4: Understand number systems and different types of computer memories.
CO5: Learn basics of data communication.

Text Book(s):

1. Sinha, P.K.: Computer Fundamentals, BPB Publ.

Reference Book(s)

1. Jain, Satish: Introduction to Computer Science, BPB Publ.

Online Resource(s):

https://www.youtube.com/c/iit/playlists

https://www.academia.edu/2021391/Computer_Fundamentals_Lectures_1_to_5

103: PC Software

Max. Marks : Theory 60 IA 40

Course Objective:

To help the students to acquire basic knowledge of MS-Word, MS-Excel, MS-Power point and MS-Access.

UNIT–I

Introduction to Microsoft Office: The Office Manager, Sharing Information with Microsoft Office, The Clipboard, Object Linking and Embedding (OLE), Editing Linked Information, Editing Embedded Objects, Word Processing with Word for Windows: Word Basics: Undo, Redo, Repeat, Inserting Text, Replacing Text, Formatting Text, Cut, Copying from one Word Document to Another, Print, Auto format.

UNIT–II

MS WORD : Working with Headers, Footers, Endnotes, Footnotes, tabs, tables, sorting, Working with graphics: Importing graphics, Sizing and Cropping graphics with the picture command, Drawing objects, Text in Drawings (Word Art), Pictures using Drawing objects, Rotating and Flipping Objects, Callouts, Filling: Templates, Wizards: Spelling Checker, Autocorrect, Auto text, Grammar Checker, Word Count and Other Statistics, Creating Tables of Contents and Index, Macros, Introduction to Mail Merge.

UNIT–III

MS EXCEL: Overview of Excel Features, Rearranging worksheets: Excel page setup, changing column widths and row heights, auto format, manual formatting, using different styles, hiding rows and columns, working with multiple worksheets. An Introduction to excel functions, Excels chart features: Instant charts with the chart Wizard, creating charts on separate Worksheets, Resizing and Moving charts, adding chart notes and arrows, editing charts, Working with graphics in excel: creating and placing graphic objects, resizing graphics, Introduction to Excel's command Macros, using worksheets as databases.

UNIT–IV

MS POWERPOINT: Creating presentations, Auto content wizard, editing slides, Working with Text in PowerPoint, Formatting and Aligning Text; Working with graphics in PowerPoint; Importing images from the outside and drawing in PowerPoint, creating organizational charts, inserting clip arts & picture/photos in PowerPoint Presentation, Excel charts in PowerPoint, inserting table from word, Arranging, Previewing and rehearsing, transition and building effects, printing presentation elements, creating overhead transparencies.

UNIT–V

MS ACCESS : Creation of databases, tables, forms, reports & queries, use of macros & modules, creation of relationships among tables, generating simple queries using databases. Administering & securing a database, Writing expressions for queries.

Course Outcomes:

On completion of this course, the student will be able to:

CO1: To familiarize students with Office Automation and Component of Office Automation.
CO2: To make them comfortable to evaluate, select and use of MS Word for Office Automation.
CO3: To make them work on MS Excel for Office Automation.
CO4: To develop expertise in Presentation Skills using MS Power point.
CO5: To understand about databases in the context of MS Access.

Text Book(s):

1. "MS-Office 2007 Training Guide", 2nd Edition, Satish Jain, BPB Publication, 2010.
2. "Working with Personal Computer Software", 2nd Edition, Harshal A. Arolkar, S Jain, Wiley India, 2010.

Reference Book(s):

1. "Using Microsoft Office 2007", First edition,Ed Bott, Pearson Education, 2007.
2. "Learn Microsoft Office", Russell A. Shultz, BPB Publication.

Online Resource(s):

http://anucde.info/bba3a.pdf
https://algonquincollege.libguides.com/student-survival-guide/office-tutorials

103 (PR): Lab MS Office
Max. Marks: 100

LIST OF PRACTICALS

MS Word

1. Creating documents with Special effects like underline, bold, different size, font face and color.
2. Working with formatting features including; paper-size, margins, indentation.
3. Creating Paragraphs, Inserting Pictures and Graphics, Bullets and Numbering.
4. Usage of Spell check, and Find & Replace.
5. Applying Header and Footer, Endnotes, Footnotes and insertion of Table.
6. Creation of mail merge.
7. Recording Macros.

MS Excel

8. Creating Worksheets; Inserting, Deleting, Copying, Moving worksheets.
9. Excel Page setup, working with Rows, Columns and Cells.
10. Usage of formulas, Built-in functions.
11. Applying Sorting, Filtering and Data Validation.
12. Working with Charts and Graphics.
13. Macro in MS Excel

MS PowerPoint

14. Creating Presentations and adding slides.
15. Applying Templates and Themes.
16. Working with Slide size, Orientation, Presentation Views.
17. Inserting Tables, Illustrations, Text, Movie clips and Sound.
18. Applying Animations and Transitions.
19. Setting-up Slide Show.
20. Printing Slides, Outline view, Notes pages, Handouts.

MS Access

21. Creating database, tables, forms, reports and queries.
22. Applying different Data Type and Formatting.
23. Working with various Views.
24. Applying Sorting, Filtering.
25. Importing and Exporting Data.
26. Creation of Relationships among Tables.
27. Generating Queries.

Course Outcomes:

On completion of this course, the student will be able to:
CO1: To learn students with Office Automation and Component of Office Automation.
CO2: To make them comfortable to evaluate, select and use Office Software appropriate to specific tasks.
CO3: To make them work on MS Excel for Office Automation.
CO4: To develop expertise in Word Processing, Spreadsheet, and Presentation Skills.
CO5: To learn about databases in the context of MS Access.

104: ENVIRONMENTAL STUDIES

Max. Marks: Theory 60 IA 40

Course Objectives:

The aim of this course is to provide basic knowledge of the environment and familiarize with its management.

UNIT - I

Introduction to environmental studies - Multidisciplinary nature of environmental studies; Scope and importance; the need for environmental education, Concept of sustainability and sustainable development.

UNIT – II

Ecosystem-What is an ecosystem? Structure: food chains, food webs and function of ecosystem: Energy flow in an ecosystem, nutrient cycle and ecological succession, Ecological Interactions.

UNIT - III

Biodiversity - Levels of biological diversity: genetic, species and ecosystem diversity; Biogeographic zones of India; Biodiversity patterns and global biodiversity hotspots; India as a mega-biodiversity nation; Endangered and endemic species of India; Threats to biodiversity: Habitat loss, poaching of wildlife, man-wildlife conflicts, biological invasions.

UNIT - IV

Environmental Pollution and Global Environmental Issues:- Environmental pollution. Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture. Nuclear hazards and human health risks (Chernobyl, 3 mile Island, Daiichi- Fukushima). Solid waste management; Pollution Tragedies: Love canal, Bhopal Gas, Endosulfan, Minamata and Flint water

UNIT - V

Environmental Management: Policies & Practices-Environmental ethics: Role of Indian and other religions and cultures in environmental conservation. Green Politics, Earth Hour, Green Option Technologies. Environmental communication and public awareness, Role of National Green Tribunal.

Course Outcomes:

On completion of this course, the student will be able to:

CO1: To understand students about Scope and importance of Environmental studies.

CO2: To learn structure of ecosystem like food chain, energy flow and food web in ecosystem.

CO3: To understand Biodiversity and threats of Biodiversity

CO4: To understand the Environmental Pollution and Global Environmental Issues

CO5: To learn policies of Environmental Management.

Text Book(s):

1. Basu, M. and Xavier, S., Fundamentals of Environmental Studies, Cambridge University Press.
2. Mitra, A. K and Chakraborty, R., Introduction to Environmental Studies, Book Syndicate.

Reference Book(s):

1. Enger E. and Smith B., Environmental Science: A Study of Interrelationships, McGraw-Hill Higher Education.
2. Basu, R.N, Environment, University of Calcutta.

201 : DATA STRUCTURE

Max. Marks: Theory 60 IA 40

Course Objective:

The aim of this course is to provide knowledge of various data structures, operations on them & various applications and searching & sorting algorithms.

UNIT – I

Data Structure: Primitive Data Structures, Operations on Data Structures; Integer, Real number, Character Information, Logical and Pointer Information, Algorithm analysis for time and space requirements, Non-primitive data structures, Storage structure for arrays, operations on arrays; Stack : Contiguous implementation of stack, PUSH & POP, applications of stack : Various polish notations – infix, prefix, postfix, conversion using stack; Applications of stack.

UNIT – II

Queue: Implementation of queue, operations on queue, priority queue, Linear queue and circular queue, dequeue, applications of queue. General List: list and it's contiguous & linked implementation, it's drawback; singly linked list-operations on it; doubly linked list-operations on it; circular linked list; applications of linked list.

UNIT – III

Trees: Definition – height, depth, order degree, etc; Binary Tree, complete binary tree, implementation of Binary tree, Tree traversal algorithms – preorder, inorder & post order, operations on binary tree , Binary search tree, operations on binary search tree, applications of binary tree.

UNIT – IV

Graph: related definition, terminology, representation of graph, directed, undirected and weighted graph; adjacency matrix, adjacency list and adjacency set, graph traversal algorithms - depth first search, breadth first search; minimum spanning tree, Applications of Graph .

UNIT – V

Searching: Sequential search, binary search, indexed sequential search, Hashing, hash methods, collisions & its resolution techniques. Sorting: bubble sort, selection sort, quick sort, merge sort, heap sort, insertion sort and tree sort.

Course Outcomes:

On completion of this course, the student will be able to:

CO1: To Learn different operation of stack data structures, and complexity of algorithms.

CO2: To understand students about queues and linked list data structures.

CO3: Understand non linear data structure tree and algorithm for operations.

CO4: To understand graph and its applications.

CO5: Learn various searching and sorting algorithms

Text Book(s):

1. Lipschutz, Data Structure, Schaum Outline Series
2. Trembly "Introduction to Data Structure with Applications"

Reference Book(s):

1. TennenBaum A.M. & others: Data Structures using C & C++; PHI
2. Horowitz & Sahni: Fundamentals of Data Structures, Galgotia Publishers.
3. Ullman "Analysis and Design of Algorithm" TMH

Online Resource(s):

https://nptel.ac.in/courses/106/102/106102064/
https://nptel.ac.in/courses/106103069
https://nptel.ac.in/courses/106106130

201 (PR): Lab Data Structure

Max. Marks : Practical 100

LIST OF PRACTICALS

Programs based on:

1. **Array:** Insertion of element in an array , deletion of element from an array.
2. **Stack:** Array Representation and Implementation of stack, Operations on Stacks: Push & Pop, Conversion of Infix to Prefix and Postfix Expressions.
3. **Queue:** Array and linked representation and implementation of queues, Operations on Queue: Create, Add, Delete, Circular queue
4. **Linked list:** Representation and Implementation of Singly Linked List, Traversing and Searching, Inserting and Deleting of Linked List. Same operation in Doubly Linked List, Circular Linked List.
5. **Binary Search Tree:** Creation, searching and traversal.
6. **Sorting** : Selection Sort, Bubble Sort, Insertion Sort, Quick Sort, Merge Sort and Heap Sort.
7. **Searching** : Sequential search, Binary search.

Course Outcomes:

On completion of this course, the student will be able to:

CO1: To Learn different operation of stack data structures, and complexity of algorithms.
CO2: To understand students about queues and linked list data structures.
CO3: Understand non linear data structure tree and algorithm for operations.
CO4: To understand graph and its applications.
CO5: Learn various searching and sorting algorithms

202 : Computational Mathematics

Max. Marks : Theory 60 IA 40

Course Objectives:

To acquire the knowledge related to trigonometry, equations, basic statistics, mathematical logic and set theory.

UNIT - I

Trigonometry: Angles and their Measurement, values of Trigonometric ratios, Height and Distances. **Elementary Matrices** and types of Matrices.

UNIT - II

Equations: Simultaneous linear equations, Methods of solving Simultaneous equations, Quadratic equations

UNIT - III

Statistics: Frequency distribution, Measure of Central Tendency: Mean, Mode, Median,

Measures of variations: Mean Deviation, Standard Deviation.

UNIT - IV

Mathematical Logic: Statements and Notations, Connectives: Negation,Conjunction and Disjunction, Statement Formulas and truth tables, Tautologies, Tautological implications, Contradiction contingency.

UNIT - V

Set Theory: Basic concepts of set theory, notation, inclusion and equality of sets, the power set, type of sets, operations on set, Venn diagrams.

Course Outcomes:

On completion of this course, the student will be able to:

CO1: Implement trigonometry tricks solutions for measurements in real world scenarios.
CO2: Implement matrices and simultaneous equations to solve complex problems.
CO3: Use statistical tools efficiently.
CO4: Use Mathematical Logic and predicate calculus for solving problems.
CO5: The concepts of set theory for finding solutions to set related problems.

Text Book(s):

1. Business Mathematics, S.M. Shukla, Sahitya Bhawan Publication
2. Business Mathematics D.C. Agrawal, Sri Sai Publication
3. S.K. Sarkar: A Textbook of Discrete Mathematics 9/E Sarkar S.K., S. Chand, New Delhi 2016

Reference Book(s):

1. Fundamental of Statistics, ELHANCE & ELHANCE, Kitab Mahal Publication.
2. Mathematical Statistics, 8/E, Ray and H.S. Sharma, Ram Prasad and Sons
3. Business Mathematics, J.K. Singh, Himalaya Publishing House, 2017.

Online Resource(s):

http://epathshala.ncert.org.in/

203 :Web Technologies

Max. Marks : Theory 60 IA 40

Course Objectives:

To acquire knowledge related to the Internet, its security, HTML , Javascript & XML and PHP programming.

UNIT – I

Internet : History and evolution of Internet .Internet & intranet ,Basic concept of www , HTTP, FTP, URL, domain name, IP address, web browser, web server, web page, web site, Portals, email, chatting, Searching , downloading , uploading, files on internet ,Search Engines. Conferencing: voice & video conferencing. Internet Protocol:TCP/IP, three levels of Internet connectivity. ISPs, Introduction to DNS.

UNIT-II

Internet Security & HTML: Overview of internet security, access security, transaction security, security zones, digital IDS, sending / receiving signed & encrypted emails. Introduction to firewalls. web page design : static and dynamic, Introduction to HTML. HTML elements and tags, Basic Tags, Formatting tags, Form and Input Tags, List Tags, Link Tags, Meta Tags

UNIT-III

ADVANCE HTML: Working with Images,Image Tags, Style and Semantic Tags, Programming Tags, Table Tags, Frame & Frameset tags, Audio tags, Video tags, Adding controls on forms, submitting data from forms,Style Sheets: Inline CSS, External CSS, Attributes of CSS.

UNIT-IV

JavaScript & XML: introduction to client and server side scripting, introduction to Javascript, data types, operators, conditional statements, loops in Javascript, functions, arrays, objects and elements in Javascript, form validation using Javascript. Introduction to XML, Creating XML documents, specifying attributes in DTDs, accessing XML data with XML Data Island, Handling events while loading XML documents.

UNIT-V

Basics of PHP Programming: PHP Programming: Introduction – Syntax – Variables - Controls and functions – Strings -Arrays: Using Arrays, Manipulating Arrays, Associative Arrays – Advanced Array Functions; Object-Oriented Programming with PHP – Strings and Regular Expression Functions – File system and System Functions – Sessions, Cookies and HTTP; PHP and MySQL: PHP and MySQL: SQL Tutorial – MySQL Database Administration – PHP/MySQL Functions – Displaying Queries in Tables – Building Forms from Queries

Course Outcomes:

On completion of this course, the student will be able to:

CO1: Understand the Internet, basic concepts of www and search engines.
CO2 : Understand security concerns of Internet and basics of HTML
CO3 : Learn advanced HTML – creation of tables, frames and forms.
CO4 : Understand javascript & xml
CO5 : Learn basics of PHP programming

Text Book(s):

1. Html Complete : BPB Publication.

Reference Book(s):

1. Teach Yourself Internet In 24 Hours : Techmedia.
2. Internet Complete : BPB Publication.
3. HTML Blake Book: Steven Holzer.
4. The Internet :Christian Crumlish (BPB Publication).

Online Resource(s):

https://htmlcssjavascript.com/downloads/css.ppt
https://cupdf.com/document/html-css-and-javascript.html

203 (PR): LAB - Web Technologies

Max. Marks : Practical 100

LIST OF PRACTICALS

1. Write HTML to format heading in document using head tags.
2. Write HTML to create 3 x 4 table in html document and demonstrate all tags related with table.
3. Write HTML to create Hyperlink and interlink multiple page.
4. Write HTML to include audio and video files html document.
5. Write HTML to include an image and set border, height and width of that image.
6. HTML code to drop down menu.
7. Html code to create a form in document using all necessary input tags.
8. Program to make calculator using JavaScript and Html
9. Write program to slide image using array in JavaScript.
10. Write a program to validate Form using JavaScript.
11. Html code to demonstrate all Formatting Tags and Empty tags.
12. Program in PHP to print even or odd numbers.
13. PHP program to check prime numbers.
14. PHP program to print fibonacci series without using recursion and using recursion.
15. Program to connect html document with database.
16. Write a PHP program to create, open and read File.
17. Write a program to include external files.
18. Write css code to format paragraph with different attributes.
19. Html code to use frame and framesets.
20. Write a program to moving car with key event using JS.

Course Outcomes:
On completion of this course, the student will be able to:
CO1: Learn the programming skills of web pages using HTML.
CO2 : Understand security concerns of Internet and basics of HTML
CO3 : Learn advanced HTML – creation of tables, frames and forms.
CO4 : Learn dynamic web page designing using javascript & xml
CO5 : Learn basics of PHP programming

204 : ENGLISH LANGUAGE

Max. Marks : Theory 60 IA 40

Course Objective: The objectives of the course are to improve the competence of the student's basic language skills and to acquaint student with working official English Language.

UNIT-I

Language content: Structural Items: Simple, Compound and Complex Sentences, Co-ordinate clauses (with, but or, neither-no, Otherwise or else), Sub-ordinate clauses- Noun clauses- as subject object and complement. Relative clauses, (restrictive and non-restrictive clauses) Adverb Clauses (open and hypothetical, conditional: with because, though, where, so, that, as long as, as soon as) Comparative clauses (as+ adjective / adverb + as no sooner ....that)

UNIT-II

Tense: Simple present, Progressive and present perfect, Simple past, progressive and past perfect, Indication of futurity, The passive (Simple present and past, Present and perfect and to infinitive structure) , Reported speech

UNIT-III

Declarative sentences, Imperatives, Interrogative-wh-questions, yes/no questions , Exclamatory sentences. Modals (Will, shall, would, ought, to have to/have got to, can-could, may-might and need)

UNIT-IV

Verb Structures (infinitive and gerundial)

Linking devices : Note: The above language item will be introduced to express the following communicative functions: Seeking and imparting information, Expressing attitudes-intellectual and emotional Persuasion and discussion etc.

Reading Comprehension: Adequate practice should be provided in reading with understanding through graded materials prescribed in the text book. Attempt should also be made to expand the learner's vocabulary.

UNIT-V

Writing Skills: Graded practice should be provided in the basic skills of composition. The following forms of composition should be practiced.

a) Paragraph writing (150 words)
b) Letter Writing (both formal and informal)

Speaking: Contextualized vocabulary teaching and oral work should be used to strengthen the learner's acquirement of the sound distinction, stress and intonation in English.

Course Outcomes:

On completion of this course, the student will be able to:

CO1: To Understand reading, writing and over all communication skills of the participants
CO2 : To Learn students about Tense and formation of English statement.
CO3 : To Learn formation of different types of sentences
CO4 : To increase the capability of reading comprehensive.
CO5 : To Learn writing and speaking skills.

Text Book(s):

1. English Grammar & Composition by S. C. Gupta, Arihant publication
2. English Grammar & Composition by P C Wren & H Martin

Reference Book(s) :

1. Shashikumar and Dhameja-Spoken English
2. The McGraw-Hill Handbook of English Grammar and Usage by Mark Lester

301: Object Oriented Programming Using C++

Max. Marks : Theory 60 IA 40

Course Objectives:

To acquire the knowledge related to basic concepts of OOP, functions, constructors & destructors, inheritance & streams

UNIT-I

Introduction to OOP :- Procedural, Structured and Object Oriented Programming(OOP) , Basic concepts of OOP : Object, Classes, Inheritance, Polymorphism, Reusability; Benefits & applications of OOP, C++ and OOP. Characters used in C++. Basic data types, user defined data types, Structure of C++ program, use of conditional and looping statements in C++. Arrays in C++. Reference variable, operators, structures, union, enum.

UNIT-II

Functions : prototypes, default arguments, const arguments in functions, Inline functions, call by value, call by reference, function overloading. Classes and objects : Declaring a class, defining an object, data hiding and encapsulation, public and private data members & functions, friend function. Pointer to data member, pointer to member function and pointer to object, virtual function.

UNIT-III

Constructors & Destructors: Parameterized constructors, multiple constructor in a class, copy constructors, arrays of object, object as function, arguments, returning objects, the this pointer, memory allocation for objects. Operator Overloading : Unary and binary operators, type conversions.

UNIT-IV

Inheritance : Inheritance and derivation, single, multilevel, multiple, hierarchical & hybrid inheritance, constructors in multiple inheritance, private and protected inheritance. Overriding functions, virtual methods, ambiguity resolution, virtual base class. Constructors in derived class. Member classes : nesting of classes.

UNIT-V

Streams : C++ streams, stream classes, unformatted & formatted I/O operations, member functions of cin, manipulators, managing output with manipulators, user defined manipulators with arguments. Files : Classes for file stream operations, file I/O with streams, file modes, binary versus text files, binary I/O, random access, error handling during file operations, command line arguments, Exception handling.

Course Outcomes:

On completion of this course, the student will be able to:

CO1: Learn to apply object-oriented paradigm for problem solving.
CO2: Understand a suitable programming construct and learn class and objects
CO3: To learn use of constructor and destructor in real time application.
CO4: To use of Inheritance and their types.
CO5: To Understand stream and File I/O

Text Book(s):

1. E. Balagurusamy, Object Oriented Programming with C++ , TMH

Reference Book(s):

1. Yashwant Kanetkar, Let us C++, BPB
2. Jesse Liberty, Teach Yourself ANSI C++ , Techmedia
3. Robert Lafore, Object Oriented Programming in Turbo C++ , Galgotia Publications
4. Herbert Schildt, C++ Complete Reference, TMH

Online Resource(s):

https://www.youtube.com/playlist?app=desktop&list=PL0gIV7t6l2iIsR55zsSgeiOw9Bd_IUTbY
https://nptel.ac.in/courses/106105151
https://nptel.ac.in/courses/106101208

301 (PR): Lab C++

Max. Marks : Practical 100

LIST OF PRACTICALS

Write programs in C++ for

1. Program illustrating basic input/output operations using cin, cout.
2. Implementing class and objects.
3. Program for differentiating static and non static members of class.
4. Program for various types of constructor and destructors.
5. Program for default argument of function.
6. Program for object as return type.
7. Program for array of objects.
8. Program for various types of inheritance
9. Program for ambiguity problem and their solution.
10. Program for abstract class
11. Program for use of ios function.
12. Program for using manipulators.
13. Implementing function overloading.
14. Program for function overriding.
15. Implementing various constructors and destructor
16. Program illustrating overloading of various operators.
17. Program to overload + operator for adding Amount objects.
18. Program to overload - operator for difference between two DATE objects.
19. Program illustrating use of Friend function.
20. Program to demonstrate Inline function.
21. Program to demonstrate Static Member functions.
22. Program to demonstrate default arguments.
23. Program illustrating various forms of Inheritance
24. Program illustrating use of virtual functions, virtual Base Class.
25. Program illustrating use of file handling

Course Outcomes:

On completion of this course, the student will be able to:

CO1: Apply object-oriented paradigm for problem solving.

CO2: Select a suitable programming construct and in-built data structure for the given problem.

CO3: Design, develop, document, and debug modular programs.

CO4: Use recursion as programming paradigm for problem solving.

CO5: Understand stream and File I/O

302: Operating System

Max. Marks : Theory 60 IA 40

Course Objectives:

To understand the fundamental concepts of Operating Systems, process management, memory management and File and Device management.

UNIT–I

Fundamental Concepts of Operating Systems: Evolution of operating systems -Serial processing, Batch Processing, Multi -programming, Types of Operating systems- Batch operating system, Time-sharing operating systems, Real-time operating system, multitasking operating system, distributed operating system. Overview of Process Management, Memory Management, File Management, Device Management, Operating system services,

UNIT-II

Process Management : Process concept, process scheduling, operation on processes, threads, enterprises communication, basic concepts, scheduling criteria, scheduling algorithms, Multiple processor scheduling, real-time scheduling, algorithm evaluation.

UNIT-III

Inter Process Synchronization: Concurrent processes, the critical section problem, the Critical Region and Conditional Critical Region problem, Inter process synchronization, Inter process communication, Deadlock occurrence, Deadlock characterization, Deadlock prevention, Deadlock avoidance, Deadlock detection and recovery.

UNIT-IV

Memory Management: Single Process Monitor, Static Partitioned memory allocation, Swapping, Relocation. Dynamic Partitioned memory allocation, Compaction. Multiple fence register. Segmentation - Address translation, Descriptor caching. Paging, Page allocation. Virtual memory, Instruction interruptibility, Management of virtual memory, Page replacement, Replacement algorithms. Comparison of various memory management techniques with reference to Protection and shareability.

UNIT-V

File and Device Management: File system organization, File operations, Access methods, Directory structure organization, File protection - Goals of protection, Access matrix model of protection, Dynamic Protection Structure, Security encryption, Device management: Dedicated, Shared and Virtual devices, Sequential Access and Direct Access devices, Channel and Control UNITs, I/O buffering, I/O schedulers, Spooling system.

Course Outcomes:

On completion of this course, the student will be able to:
CO1**:** Describe basic functions of an Operating System.
CO2**:** Understand process management of operating system
CO3**:** Describe different techniques for managing computer resources like CPU Deadlock
CO4**:** Implement simple algorithms for managing computer memories.
CO5: Understand file and device management of the computer system.

Text Book(s):

1. Peterson & Silberschatz : Operating system concepts, Sybex.

Reference Book(s) :

1. Senart E. Madnick and J.J. Donovan : Operating Systems, McGraw Hill.
2. Milan Milenkovic : Operating Systems, Concept and Design, McGraw Hill

Online Resource(s):

https://nptel.ac.in/courses/106106144
https://nptel.ac.in/courses/106102132
https://nptel.ac.in/courses/106105214

303: Database Management System

Max. Marks : Theory 60 IA 40

Course Objectives:

To acquire the knowledge related to DBMS, RDBMS, PL/SQL and Stored functions.

UNIT-I

Basic Concept: An Introduction to database System, Advantages and limitations of DBMS. Database System Architecture, Purpose of DBMS, Data Independency. Basic File Systems: Types of file, operations on file, file activity ratio, access time, response time, volatility, file size. File Organization: Sequential, Index Sequential, Direct access. Detail design of E-R Model. Data Models: Hierarchical Model, Network Model, Relational Model and their Inter-comparison. Basic Operations of Relational Algebra: Union, Intersection, Difference, Product, Join and its types.

UNIT-II

Normalization: Relational Database Design: Integrity Constraints, Functional Dependency: Single Valued and Multivalued Functional dependence, I, II, III, Boyce Codd, IV & V Normal forms. Security & Integrity: Introduction, Access Control, Crypto Systems. The Power of SQL (Creation, Insertion, Deletion, Indexing & Modification of Databases in SQL). Logical operators, range searching, pattern matching, oracle functions, grouping data from tables in SQL, manipulating data in SQL.

UNIT-III

Data constraints: column level and table level constraints, NULL value, primary key, unique key, default value, foreign - key reference, check integrity constraints. Views: creation of views, renaming the column of a view, using view, updatable views, destroying a view. Granting Permissions: permission on the objects created by the user, granting permissions using GRANT statement, object privileges, referencing a table belonging to another user, granting permissions to another user, revoking the permissions given.

UNIT-IV

PL/SQL: introduction, performance, performance improvement, portability, PL/SQL data types, PL/SQL execution environment, PL/SQL syntax, character set, PL/SQL block structure, oracle transactions, locks, cursors, error handling in PL/SQL, stored procedures: introduction, where do procedures reside, creating a procedure, executing procedures, advantages of procedures, syntax of procedure, an application using a procedure, deleting a procedure.

UNIT-V

Stored functions: introduction, where do functions reside, how oracle creates a function, how oracle executes a function, advantages of functions, syntax for creating a stored function, an application using a function, deleting a stored function. Database triggers: introduction, use of database triggers, how to apply database triggers.

Course Outcomes:

On completion of this course, the student will be able to:

CO1: Understand concept of DBMS, data models and relational algebra.
CO2: Understand database normalizations and SQL.
CO3: Learn the use of keys in a database and granting permission to users.
CO4: Learn pl/sql commands for oracle databases.
CO5: Understand the sorting of records in a database.

Text Book(s):

1. Henry F. Korth & A. Silberschatz: Database System Concepts, MGH.
2. Ivan Bayross: Oracle Developer 2000 BPB Pub.

Reference Book(s):

1. Michael Abbey & Michael J. Corey: Oracle Beginners guide TMH.
2. Arun K. Majumdar & P. Bhattacharya: Database Management System, TMH.

Online Reference(s):

https://nptel.ac.in/courses/106106220
https://nptel.ac.in/courses/106104135
https://nptel.ac.in/courses/106/105/106105175/

303 (PR): Lab DBMS

Max. Marks : Practical 100

LIST OF PRACTICALS

The Programme to be implemented using SQL:

1.Create Table, insert data into tables, Deletion,Updation

2. Retrieval of data using SQL statements with all possible clauses.

3. Using aggregate function .

4. Using group by and having clause .

5. Write a query for Join, set operation, and nested queries.

6. Creating View .

7. Program to find the greatest of three numbers in PL/SQL.

8. Program for reverse of a number in PL/SQL.

9. Program to check numbers is odd or even in PL/SQL.

10. Program for Palindrome Number in PL/SQL .

11. Write a Program to Implement all Loop in PL/SQL .

12. Write a Program to demonstrate all decision making statements in PL/SQL .

13. Write a PL/SQL program to implement TRIGGER in the database.

14. Program in PL/SQL to handle Exceptions.

15. Program in PL/SQL to perform multiple insertions in a single request.

16. Program to Implement nested query.

17. Write a Query to demonstrate "Wildcard" characters.

18. Write a query to implement "Aliases" in SQL.

19. Write a program in PL/SQL to create function and procedure.

20. Demonstrate array in PL/SQL.

21. Program to demonstrate Declaring, Defining and Invoking a simple PL/SQL function which will compute and return the maximum of two values.

Course Outcomes:

On completion of this course, the student will be able to:
CO1: To learn creation of tables using SQL commands
CO2: To creates some queries for different operation in data base
CO3: Learn the use of keys in a database and granting permission to users.
CO4: Learn pl/sql commands for oracle databases.
CO5: To apply sorting of records in a database.

304: Probability and Statistics

Max. Marks : Theory 60 IA 40

Course Objectives:

To acquire the knowledge related to theory of probability, dispersion & distribution, curve fitting and sampling.

UNIT - I

Theory of Probability-I: Event and sample space, Probability of an event, Addition and multiplication theorem of probability, Inverse probability, Baye's Theorem, Continuous probability.

UNIT- II

Theory of Probability-II: Probability density function and its application, Standard deviation of various continuous probability distributions, Mathematical expectation, Expectation of sum and product of random variables.

UNIT - III

Dispersion and distribution: Measures of dispersion: Range and interquartile range, Mean deviation and Standard deviation, Moments, Skewness and kurtosis. Moment generating function. Theoretical distribution:Binomial, Poisson rectangular, Exponential.

UNIT - IV

Curve fitting and Correlation: Method of least squares, Curve fitting, Correlation and regression, Partial and multiple correlation (up to three variables only).

UNIT - V

Sampling : Sampling of large samples, Null and alternative hypothesis, Errors of first and second kinds, Level of significance and critical region, Test of significance based on chi's square (x2), t, F and Z distribution.

Course Outcomes:

On completion of this course, the student will be able to:
CO1: Understand and use the terminology of probability.
CO2 :Calculate probability is using the addition and multiplication rules.
CO3: Describe and calculate the mean deviation and standard deviation and range
CO4 : Calculate and interpret the correlation Coefficient.
CO5 : Interpret the student's t probability distribution Chi-square goodness-of -fit F and Z test.

Text Book(s):

1. H.C. Saxena and J.N. Kapoor: Mathematical Statistics, S. Chand and Company, 2010.
2. E. Rukmangadachari; Probability and Statistics, Pearson Edition India, 1st Edition 2012.

Reference Book(s):

1. Vijay K. Rohatgi, A.K. Md. Ehanes Saleh: Introduction to Probability and Statistics, Wiley; 3rd edition, 2015
2. S.C. Gupta and V.K. Kapoor: Fundamentals of Mathematical Statistics, Sultan Chand and Sons, 2014.

401: Computer Graphics

Max. Marks : Theory 60 IA 40

Course Objectives:

To acquire the knowledge related to computer graphics, transformations, windowing & clipping, algorithms and shading & Color models.

UNIT-I

Introduction: Applications of Computer Graphics, Raster Graphics, Fundamentals; Scan conversion, Pixel, frame, buffer, Graphics Primitives : Line, Circle, Ellipse, character generation, polygon : representation, polygon filling algorithms, antialiasing

UNIT-II

Devices: Display Devices, random scan and raster scan monitors, color CRT monitor, direct view storage tube, Plasma Panel, Hardcopy devices : printers and plotters, Input Devices : Joysticks, mouse, digitizer, scanner, camera, Transformations : Translation, scaling, rotation, Shear, Reflection, homogeneous coordinates, composite transformation, concatenation properties, Raster method of transformation.

UNIT-III

Windowing and Clipping: Window, viewport, line clipping, polygon clipping, text clipping, Window & Viewport transformation, Display file concepts & Segmentation : display File, segment table, segment creation, deletion, rename, segment display file.

UNIT-IV

Interaction: Locator & Selector devices, interactive picture construction techniques, Three Dimensions : 3D geometry, 3D display techniques, transformation, viewing parameters.

UNIT – V

Hidden surface removal : Back face removal algorithm, Z buffers algorithm, Scan line algorithm, painter's algorithm, Shading & Color Models : Diffuse illumination, point source illumination, specular reflection, refraction, shadows, colour, colour models, dithering, halftoning Curves & Surfaces : Interpolation algorithm for curve fitting, B splines, bezier curves, fractals.

Course Outcomes:

After the completion of this course, students will be able to:

CO1 : Understand the concept of computer graphics fundamentals.
CO2 : Understand the computer graphics display device and 2D transformation
CO3 : Understand computer graphics clipping and clipping algorithms.
CO4 : To learn 3D display techniques and transformation.
CO5 : Understand the basics of color model and manipulate graphics & images.

Text Book(s):

1. D. Hearn and Baker : Computer Graphics, Prentice Hall of India Pvt. Ltd.
2. Steven Harrington : Computer Graphics, MGH.

Reference Book(s):

1. Newman and R.F. Sproull: Principles on Interactive Computer Graphics, MGH.
2. W.K. Giloi : Interactive Computer Graphics, PHI.
3. R.A. Piastock and G. Kalley : Theory and Problems of Computer Graphics, MGH

Online Resource(s):

https://nptel.ac.in/courses/106102065
https://nptel.ac.in/courses/106106090

401 (PR): Lab CG

Max. Marks : Practical 100

LIST OF PRACTICALS

1.Programs for designing objects in graphics by using Library functions.
2. Programs to draw the line & circle by using DDA algorithms.
3. Programs to draw the line & circle by using Bresenham's algorithms.
4. Programs to draw the ellipse by using algorithms.
5.Programs to draw and colour the picture.
6. Programs to fill polygons by using Flood Fill method.
7. Programs to fill polygons by using Boundary Fill method.
8. Programs to fill polygons by using scan line method.
9. Programs to implement line clipping.
10. Programs to implement polygon clipping.
11.Programs for creating various type of text and font.
12.Programs for creating two dimensional object.
13. Programs to implement 2-D transformation on objects.
14.Programs to draw Bezier curve.
15.Programs to draw B-spline curve.
16. Programs to implement digital clock.
17. Programs to demonstrate traffic light with difference of time.
18. Programs to implement bouncing ball and ball color will change in every bounce.
19. Programs to draw moving car by using different shapes.
20. Programs to do basic animation by using graphics.

Course Outcomes:

After the completion of this course, students will be able to:
CO1 : Understand the line and circle drawing algorithms.
CO2 : Learn polygon filling algorithm.
CO3 : Understand computer graphics clipping and clipping algorithms.
CO4 : To learn 3D display techniques and transformation.
CO5 : Understand the basics of Bezier and B-spline curve.

402: Software Engineering

Max. Marks : Theory 60 IA 40

Course Objectives:

To acquire the knowledge related to software development life cycle models, software requirement analysis & specification, software design, coding & testing and software reliability & quality assurance.

UNIT–I

Introduction: The product and the process, program vs software products, Emergence of software engineering, software development life cycle models, classical waterfall, iterative waterfall, prototyping, evolution, spiral & RAP model, comparison of various life cycle models, project management process, process management process.

UNIT- II

Software Requirement Analysis & Specification (SRAS) : Need for software requirement specification, requirement process, requirement analysis, requirement specification, planning a software project; cost estimation, project scheduling, staffing & personnel planning, software configuration management, plans: quality assurance plan, risk management.

UNIT-III

Software Design : Criteria for Software design, software design & design principle; module level concepts: Coupling and Cohesion, design notation & specifications, design methodology, verification, object oriented design: Basic concepts, design methodology & Metrics, object oriented vs function oriented design, detailed design.

UNIT-IV

Coding and Testing : Standard guideline for coding, programming practice, testing fundamentals, unit testing, verification vs validation, black box & white box testing, functional testing, structural testing, object oriented program testing.

UNIT-V

Software reliability & quality assurance: Reliability metrics, growth and modeling, software quality management system, evolution, ISO 9000. CASE: scope and benefit, support in software life cycle, CASE tools, hardware and environmental requirements, architecture of a CASE environment. Software maintenance.

Course Outcomes :

On completion of this course, the student will be able to:

CO1: Understand the process of software development model.

CO2: Understand SRAS and project planning.

CO3: Learn software design methodology.

CO4: Learn coding and testing..

CO5: Learn Reliability and case tools.

Text Book(s):

1. Pankaj Jalote: An Integral Approach to Software Engineering, Narosa
2. Rajib Mall: Fundamental of Software Engineering, PHI

Reference Book(s):

1. Rogers Pressman: Software Engineering, a practitioner's approach, MGH
2. Richard Farley: Software Engineering Concept, TMH

Online Resource(s):

https://www.youtube.com/playlist?app=desktop&list=PLbRMhDVUMngf8oZR3DpKMvYhZKga90JVt

https://nptel.ac.in/courses/106105182

https://nptel.ac.in/courses/106101061

403 : VB.Net

Max. Marks : Theory 60 IA 40

Course Objectives:

To acquire the knowledge related to.Net Technology, framework and programming constructs, window forms and file handling.

UNIT-I

Introduction to .Net Technology, Introduction to VB.NET, Building VB.net Application, IDE, Evolution of Dot.net Framework, Keywords, Statement, Variables, Constant, Data Types, Operators, Comments, Decision Making, Looping, Array and string.

UNIT-II

Sub Procedure and Function, Creating Function, Passing Values as arguments, Creating Properties, Handling Exception, Resume Next, Resume Line, ON Error GOTO, Structure Exception Handling. Throwing Exception, Custom Exception.

UNIT-III

Classes and Objects : Types, Field, Properties, Methods and Events, Members Overloading, Overriding, Creating Class, Object, Creating Interfaces, Polymorphism, Early and Late binding, Using MyBase and MyClass Keyword, Inheritance.

UNIT-IV

Window Forms: Creating Window Forms, Controls to Form, Setting Title bars, Dialog Boxes, Handling Mouse Events, Handling Key Press Events, Controls Classes: Textbox, Labels, Buttons, Checkbox, Panels, Group Boxes, Radio Button, Drop Down, List Boxes, Combo Box, Scroll Bars, Menu, Image and other controls..

UNIT-V

File Handling: File Opening and Creating, Writing Files, Reading Binary Data, Data Access and ADO.NET: Creating Data set, Populating Dataset, Displaying data in Grids, Data access using Data Adapter Controls, Binding Data to Controls, Using Data Views.

Course Outcomes:

On completion of this course, the student will be able to:
CO1 : Learn .Net Technology.
CO2 : Understand the Visual Basic fundamentals.
CO3 : Describe the classes, interfaces & arrays.
CO4 : Learn creation of window forms & controls.
CO5 : Understand file handling and graphics in VB.

Text Book(s):

1. Steven Holzner, Visual Basic .NET Programming Black Book, Dreamtech Press

Reference Book(s):

1. Jeffrey R. Shapiro "The Complete Reference Visual Basic .NET" Tata Mcgraw Hill.
2. Rox "Beginner and Professional Edition VB.NET" Tata Mcgraw Hill.
3. Bill Evzen,Bill Hollis "Professional VB.NET 2003" Wiley Dreamtech
4. Tony Gaddis "Starting Out VB.NET PROG.2nd Edition" Wiley Dreamtech

Online Resource(s):

http://www.tmv.edu.in/pdf/Distance_education/BCA%20Books/BCA%20V%20SEM/BCA-521%20VB%20.Net.pdf

https://www.ics.uci.edu/~cs237/lectures/old/dotNETfinal.ppt

403 (PR): Lab VB.Net

Max. Marks : Practical 100

LIST OF PRACTICALS

1. Write a Program to create a String object with Properties of the String Class.
2. Program in VB.Net to access individual characters from Strings in VB.NET
3. Create a program to understand the uses of the Concat() function to append or concatenate one or more strings.
4. Program to understand the uses of Copy() function.
5. Program to print the number from 1 to 10 using the For Next loop.
6. Program to understand the uses of With End statement.
7. Program to pass the empty, a single or double parameter of Sub procedure.
8. Program to understand the concept of passing parameters by value.
9. Create a program to understand the dynamic array.
10. Program using the Try-Catch statement in VB.NET to handle the exceptions.
11. Create a simple program of Windows form control based on following Controls

A. Check Box	B. Button	C. RadioButton
D. ListBox	E. ComboBox	F. TextBox
G. Menu	H. Picture Box	I. Dialog Box
J. MDI Form	K. List View	L. Progress Bar

12. Program to display the KeyPressEvent in the VB.NET Windows Forms.
13. Create a simple program to display the use of KeyDown events in the VB.NET Windows Forms.
14. Program to display the use of KeyUp events in the VB.NET Windows Forms.
15. Console Program to add the elements of an array in VB.NET programming language.
16. Console program to take input values from the user and display them in VB.NET programming language.
17. **Course Outcomes:**
18. On completion of this course, the student will be able to:
19. CO1 : Learn .Net Technology.
20. CO2 : Understand the Basic function of .NET.
21. CO3 : Learn the classes, interfaces & arrays.
22. CO4 : Learn creation of window forms & controls.
23. CO5 : Understand file handling and graphics in .Net.

404 : Discrete Mathematics

Max. Marks : Theory 60 IA 40

Course Objectives:

To acquire the knowledge related to discrete mathematics, understanding the concepts related to boolean algebra, trees and graphs.

UNIT - I

Relation: Binary, Inverse, Composite and Equivalence relation, Equivalence classes and its properties, Partition of a set, Partial order relation, Partially ordered and totally ordered sets, Hasse Diagram.

Lattice: Definition and examples, Dual, bounded, distributed and complemented lattices.

UNIT - II

Boolean Algebra: Definition and properties, Switching circuits and its applications, Logic gates and circuits.

Boolean functions: Disjunctive and conjunctive normal forms, Bools-Expansion theorem, Minimize the Boolean function using Karnaugh Map.

UNIT - III

Graphs: Definition and types of graph, Sub graphs, Walk, Path and circuit, connected and disconnected graphs, Euler graph, Hamiltonian path and circuit, Dijkstra's algorithm for shortest path in weighted graph.

UNIT - IV

Trees: Definition and its properties, Rooted, Binary and Spanning Tree Rank and nullity of a graph, Kruskal's and Prim's Algorithm, Cut-set and its properties, Fundamental Circuit and Cut-set, Planar graphs.

Matrix representation of graphs: Incidence, Adjacency, Circuit, Cut-set path

UNIT - V

Discrete numeric and generating functions: Operations on numeric functions, Asymptotic behavior of numeric functions, Generating functions.

Recurrence Relations and recursive algorithm: Recurrence relations, Linear recurrence relations with constant coefficients, Homogeneous solutions, Particular solutions, Total solutions, Solution by the method of generating function.

Course Outcomes:

On completion of this course, the student will be able to:

CO1: Learn Relation and lattice.

CO2: Minimize the Boolean function using Karnaugh map.

CO3: Understand the Lattices and their types

CO4: Graphs, their types and its application in study of shortest path algorithms.

CO5: Understand the discrete numeric function, generating function and Recurrence Relation.

Text Book(s):

1. J.P. Tremblay and R Manohar, Discrete Mathematical Structures with Application to Computer Science, McGraw Hill Education,1st edition, 2017.
2. C.L. Liu, Elements of Discrete Mathematics, McGraw Hill Education, 4th edition 2017.
3. Narsingh Deo: Graph Theory with Applications to Engineering and Computer Science, Prentice Hall India Learning Private Limited, 1979.

Reference Book(s)

1. Seymour Lipschutz and Mark Lipson: Discrete Mathematics (Schaums Outline), McGraw Hill Education, 3rd edition, 2017
2. Edgar G.Goodaire and Michael M. Parmenter, Discrete Mathematics with Graph Theory Pearson Education Pt. Ltd. Indian Reprint, 2003.

Online Resource(s):

https://nptel.ac.in/courses/106106183
https://nptel.ac.in/courses/106103205

501 : Java Programming

Max. Marks : Theory 60 IA 40

Course Objectives:

To acquire knowledge related to the programming language Java.

UNIT- I

Introduction to Object Oriented Programming: Basic concepts, benefits of OOPS, Application of OOP, Java evolution : history, features, C, C++ & Java a comparison, Java and WWW, HW, & SW requirements for Java, Structure of simple Java program, Java tokens, statements, Java virtual machine, command line arguments, programming style, constants & variables, symbolic constants, type casting; Various operators in Java; Type conversions in expressions, operator precedence and associativity, mathematical functions.

UNIT-II

Decision making and branching; the switch statement, Loops, Defining a class, adding variables and methods, creating objects, accessing class members, constructors, method overloading, static members, nesting of methods inheritance; extending a class, overriding methods, final variables and methods, final classes, finalize methods, abstract methods and classes visibility control.

UNIT-III

Arrays, strings and vectors; Arrays, one dimensional arrays, creating an array, two dimensional arrays, strings, vectors, wrapper classes, defining interfaces, multiple inheritance, extending interfaces, implementing interfaces, accessing interface variable, Packages: Java API packages, using system packages, naming conventions, creating packages, accessing a package, using a package, adding a class to a package. Exception Handling.

UNIT- IV

Multithreaded programming; creating threads, extending the thread class, stopping and blocking a thread, thread lifecycle, using thread methods, thread exceptions, thread priority, synchronization, implementing the runnable interface. JDBC: JDBC ODBC bridge; The connectivity model; The driver manager; Navigating the resultset object contents; java.sql Package; The JDBC exception classes; Connecting to Remote database.

UNIT- V

Applet programming; Local and remote applets, preparing to write applets, building applets code, applet lifecycle, creating and executing applet, designing a web page, adding applet to HTML file, running the applet, passing parameters to applets, displaying numerical values, getting input from the user, The AWT: The class hierarchy of window fundamentals; The basic user interface components; Layout managers; The Java Event Handling Model, Adapter classes; Event classes. Key Event, Mouse Event and Windows Event.

Course Outcomes:

On completion of this course, the student will be able to:

CO1**:** Understand the object-oriented concepts – Classes, Objects, Inheritance, Polymorphism.
CO2**:** Handle program exceptions.
CO3: Design, implement, document, test, and debug a Java application consisting of multiple classes.
CO4**:** Handle input/output through files.
CO5**:** Create Java applications with graphical user interface (GUI).

Text Book(s):

1. Programming with Java a primer by E. Balagurusamy.

Reference Book(s):

1. Peter Norton's Guide to Java Programming, Techmedia Pub.
2. Mastering in Java, Techmedia Pub.schatz & Galvin
3. Core JAVA 2 Volume_I Fundamentals Sun Microsystems

Online Resource(s):

https://nptel.ac.in/courses/106105191
https://www.youtube.com/playlist?list=PLfn3cNtmZdPOe3R_wO_h540QNfMkCQ0ho

501 (PR): Lab Java

Max. Marks : Practical 100

LIST OF PRACTICALS

1. Developing, compiling and executing a simple console application in Java.
2. Programs based on loops, arrays and operators.
3. Programs based on classes and objects.
4. Programs based on method overloading.
5. Simple application based on static keywords.
6. Simple application based on the final keyword.
7. Program that illustrates the working of constructor.
8. Program for copy constructor in a java class.
9. Program based on different types of Inheritance.
10. Program based on Method Overriding, Dynamic Method Dispatch, Abstract Classes.
11. Programs based on String Handling.
12. Program based on various types of Exception Handling.
13. Program based on Wrapper class.
14. Program based on command line argument.
15. Simple application to demonstrate the working of Interface.
16. Simple application to demonstrate the working of Packages.
17. Program based on thread and thread priority.
18. Developing a Simple Applet.
19. Creating graphics in an applet.
20. An applet to demonstrate the working of Mouse Events.
21. Programs based on the usage of all AWT controls.
22. Program based on controlling various types of events in a window application.
23. A simple application to demonstrate working with Frames.
24. Program based on java database connectivity.
25. Program based on jdbc and various operations like insertion, deletion, updating and retrieving data from database.

Course Outcomes:

On completion of this course, the student will be able to:

CO1**:** To Learn the object-oriented concepts
CO2**:** To learn programing exceptions.
CO3: Design, implement, document, test, and debug a Java application consisting of multiple classes.
CO4**:** Handle input/output through files.
CO5**:** Create Java applications with graphical user interface (GUI).

502(A): Computer Network

Max. Marks : Theory 60 IA 40

Course Objectives:

To acquire the knowledge related to computer networks and OSI reference model and seven layers of OSI.

UNIT-I

Introduction to Computer Networks: Basics of data communication, digital vs analog transmission, mode of transmission, Computer Networks: Goals and kinds (LAN/WAN), idea of hardware and software requirements for computer networks, inter comparison of various communication media, wireless transmission., various topologies: bus, ring, tree & mesh, OSI reference model vs TCP/IP.

UNIT-II

Data Link Layer: Data Link Layer Design Issues: Framing Error Control and Flow Control, Error Detection & Correction, Elementary Data Link Protocols, Sliding Windows Protocols, HDLC frame packet.

UNIT- III

Medium Access Sublayer: Channel allocation problem, Multiple access protocols: ALOHA, CSMA, Collision free; Standards in LAN/WAN (CCITT & IEEE), High speed LANs: FDDI, Fast Ethernet; Satellite Networks: Polling, FDM, TDM, CDMA.

UNIT- IV

The Network and Transport Layer: Network Layer design issues, routing and switching techniques, Routing Algorithms, congestion control algorithms, the network layer in the internet; transport layer: Elements of transport services, transport protocols, the internet transport protocol, TCP & UDP.

UNIT- V

Application Layers and Network Management: Network Security: Traditional cryptography, cryptography principles, secret key algorithms, public key algorithm, Authentication protocol, Domain Name System, Simple Network Management Protocol, E-mail, News group, WWW, Future trends in computer networks.

Course Objectives:

On completion of this course, the student will be able to:

CO1 : Learn the basics of Computer network Technologies.
CO2 : Understand the fundamentals of types of transmission mediums and Data link Layer.
CO3 : Learn flow control and error control techniques and Computer Network protocols at Conceptual level.
CO4 : Learn WAN and TCP/IP.
CO5: Learn the architecture & protocols of email and subnet masking.

Text Book(s):

1. Tanenbaum: Computer Networks, PHI
2. Behrouz A. Forouzan: DATA COMMUNICATIONS AND NETWORKING (SIE), McGraw Hill Education;

Reference Book(s):

1. John Freer: Computer Communication & Networks, EWP
2. William Stalling: Data & Computer Communication, PHI
3. Basandra & Jaiswal: Local Area Network, Galgotia
4. James Martin: Computer Networks & Distributed processing , PHI
5. Uyless Black: Computer Networks, PHI

Online Resource(s):

https://nptel.ac.in/courses/106106091
https://www.youtube.com/playlist?list=PLEAYkSg4uSQ2NMmzNNsEK5RVbhxqx0BZF
https://nptel.ac.in/courses/106105183

502 (B) : Mobile Computing

Max. Marks : Theory 60 IA 40

Course Objectives:

To acquire the knowledge related to wireless communication, mobile data communication, WLAN and Bluetooth technology.

UNIT-I

Overview of OSI Model: Significance of layered Model , PDUs, SDUs, IDUs, Higher layer Protocols. Switching and Components. Introduction, Applications, history of wired & wireless Communication systems. . Radio Transmission: frequencies ,signal propagation, antenna, types of modulation, FHSS, DSSS. Multiple Access technology for Wireless Communication : FDMA,TDMA,CDMA Cellular System: Introduction, types.

UNIT-II

Mobile Data Communication : -Cellular Telephony; Structure, Fading, Small scale fading, Multi-path Fading, Speech Coding, Error Coding and Correction, Hand off Management, Switching and authentication, MTSO interconnections, frequency happing, frequency reuse. Circuit Switched Data Services & Packet' Switched Data Services an Cellular Networks, Personal Communication Systems (PCS) Architecture, Digital Enhanced Cordless Telecommunications (DECT,) Personal Access Comm. System (PACS).

UNIT-III

Digital Cellular Systems and Standards : GSM System overview, Architecture; GSM Practical Model, GSM Mobility Management, SMS security aspects. Broadcast System overview. General Packet Service (GRPS) Architecture, GRPS Network, Interfaces and Procedures (2.5 G), 3G Mobile Services: UMTS and International Mobile Telecommunications (IMT-2000), W-C DMA. and CDMA 2000, Quality of service in 3G .

UNIT-IV

WLAN: Components and working of Wireless LAN, Transmission Media for WLAN, Infrastructure & types of WLAN, IEEE 802.11 Standards, Protocols for WLAN ,MACA, MACAW , Infrared technology. Wireless Application Protocol (WAP) model, architecture;-Gateway, WAP protocols and WML

UNIT-V

Introduction to. Bluetooth technology. Wireless in Local Loop (WLL) architecture, products. Satellite as a switch, Components of VSAT system, VSAT topologies access schemes.

Course Outcomes:

On completion of this course, the student will be able to:

CO1: learn multiple access technology for Wireless Communication .

CO2: understand the concept of mobile data communication.

CO3 : learn Digital Cellular Systems and Standards.

CO4: describe Components and working of Wireless LAN**.**

CO5 : understand Bluetooth technology & WLL architecture.

Text Book(s):

1. Jochen Schiller "Mobile Communication", Pearson Education.

Reference Book(s):

1. Yi -Bing Lin and Imrich Chlamtac "Wireless and Mobile Network Architectures", Wiley India.
2. Raj Pandaya "Mobile and Personal Communication System & Services".

Online Resource(s) :

https://nptel.ac.in/courses/106106147

https://nptel.ac.in/courses/117/102/117102062/

503 : Personality Development & Character Building

Max. Marks : Theory 60 IA 40

Course Objectives:

To acquire the knowledge related to personality development and employability quotient.

UNIT- I

Introduction to Personality Development : The concept of personality - Dimensions of personality – Theories of Freud & Erickson-Significance ofpersonality development. The concept of success and failure: What is success? - Hurdles in achieving success - Overcoming hurdles - Factors responsible for success – What is failure - Causes of failure. SWOT analysis.

UNIT-II

Attitude & Motivation : Attitude - Concept - Significance - Factors affecting attitudes - Positive attitude – Advantages –Negative attitude- Disadvantages - Ways to develop positive attitude - Differences between personalities having positive and negative attitude. Concept of motivation - Significance – Internal and external motives - Importance of self- motivation- Factors leading to de-motivation

UNIT-III

Self-esteem : Term self-esteem - Symptoms - Advantages - Do's and Don'ts to develop positive self-esteem – Low self-esteem - Symptoms - Personality having low self esteem - Positive and negative self esteem. Interpersonal Relationships – Defining the difference between aggressive, submissive and assertive behaviours – Lateral thinking.

UNIT-IV

Other Aspects of Personality Development : Body language - Problem-solving - Conflict and Stress Management - Decision-making skills - Leadership and qualities of a successful leader – Character building -Team-work – Time management - Work ethics –Good manners and etiquette.

UNIT- V

Employability Quotient : Resume building- The art of participating in Group Discussion – Facing the Personal (HR & Technical) Interview -Frequently Asked Questions - Psychometric Analysis - Mock Interview Sessions.

Course Outcomes:

On completion of this course, the student will be able to:

CO1:Learn the concept of personality, success and failures.

CO2 : understand concept attitude and importance of motivation

CO3 : understand self esteem

CO4: learn conflict & stress management

CO5 : learn resume building and facing the INTERVIEW

Text Book(s):

1. Hurlock, E.B (2006). Personality Development, 28th Reprint. New Delhi: Tata McGraw Hill.
2. Stephen P. Robbins and Timothy A. Judge(2014), *Organizational Behavior 16th Edition:* Prentice Hall.

Reference Book(s):

1. Andrews, Sudhir. How to Succeed at Interviews. 21st (rep.) New Delhi.Tata McGraw-Hill 1988.
2. Heller, Robert.Effective leadership. Essential Manager series. Dk Publishing, 2002
3. Hindle, Tim. Reducing Stress. Essential Manager series. Dk Publishing, 2003
4. Lucas, Stephen. Art of Public Speaking. New Delhi. Tata - Mc-Graw Hill. 2001
5. Mile, D.J Power of positive thinking. Delhi. Rohan Book Company, (2004).
6. Pravesh Kumar. All about Self- Motivation. New Delhi. Goodwill Publishing House. 2005.
7. Smith, B . Body Language. Delhi: Rohan Book Company. 2004

601 : Web Applications Development

Max. Marks : Theory 60 IA 40

Course Objectives:

To acquire the knowledge related to web designing, java servlet, JSP, web services and android fundamentals.

UNIT- I

Introduction to Web Designing: Web architecture, Parsing in Browsers, Web site design standards, Client Side Technologies: Introduction to Markup languages HTML 5, Building a form and form elements, Dynamic HTML - JavaScript - Cascading Style Sheets - Including Multimedia. HTTP, Web Server and Application Servers, Installation of application servers, Config files, Web.xml.

UNIT - II

Java Servlet: Servlet Development Process, Deployment Descriptors, The Generic Servlet, Life Cycle of Servlet. Servlet Packages, Classes, Interfaces, and Methods, Handling Forms with Servlet. Various methods of Session Handling. Various elements of deployment descriptors.

UNIT - III

JSP Basics: JSP lifecycle, Directives, scripting elements, standard actions, implicit objects. Connection of JSP and Servlet with different database viz. Oracle, MS-SQL Server, MySQL. java.sql Package. Querying a database, adding records, deleting records, modifying records. Type of Statement.

UNIT - IV

Separating Business Logic and Presentation Logic, Building and using JavaBean. Session handling in JSP, Types of errors and exceptions handling. Introduction to Web Services, MVC Architecture, Struts and Hibernate.

UNIT - V

Introduction to Android: Fundamentals, Application Structure, Basic UI design, Android Application Deployment Environment, Dalvik virtual machine, Testing and Debugging Android Application.

Course Outcomes:

On completion of this course, the student will be able to:

CO1 : Understand web architecture.
CO2 : Learn HTML & CSS.
CO3 : Apply different modern technologies used for real-time client server application.
CO4 : Develop different attractive and interactive web pages.
CO5 : Learn basics of android application deployment environment.

Text Book(s):

1. K. Santosh Kumar, "JDBC, Servlet and JSP Black Book", Dreamtech Press India Pvt. Ltd.

Reference Book(s):

1. K. Mukhar, "Beginning Java EE 5: From Novice to Professional", Wrox Press.
2. M. Hall, L. Brown, "Core Servlets and Java Server Pages", 2nd edition, Pearson Education
3. G. Franciscus, "Struts Recipes", Manning Press
4. Android application development for java programmers. By James C. Sheusi. Publisher: Cengage Learning, 2013.

Online Resource(s) :

https://www.youtube.com/playlist?list=PL9m2Lkh6odgL4oPlTc_9PyCsLHMoM1mI
https://www.ics.uci.edu/~lopes/teaching/ics123F05/notes/web_programming_survey.pdf

601 (PR): Lab Web Application Development

Max. Marks : Practical 100

LIST OF PRACTICALS

1. Create a web page that uses an image and hyperlink tag to show any image and connect with other web pages.
2. Create a web page that displays one table each displaying some student details like roll no, name, class, dob and address.
3. Create a generic servlet application.
4. Create an HTTP servlet application.
5. Create a servlet application with static form.
6. Create a servlet application with dynamic form.
7. Create a servlet application for url rewriting session tracking
8. Create a servlet application for http session tracking.
9. Create a servlet application for cookie session tracking .
10. Create a servlet application for request dispatching.
11. Create a servlet application that connects with an oracle database using JDBC in servlet.
12. Create a JSP application using the Scriptlet tag.
13. Create a JSP application using Directive tag.
14. Create a JSP application using the Expression tag.
15. Create a JSP application using the Action tag.
16. Create a JSP application using Declarative tag.
17. Create a JSP application for session tracking.
18. Create a JSP application to connect to the oracle database.
19. Print current date & time
20. JSP Program to upload file into server
21. JSP Program to auto refresh a page
22. JSP Program to count no. of visitors on website
23. JSP Program for session tracking
24. JSP program for error handling
25. Demonstrate expression tag
26. Detect locale, language settings & local specific time
27. Demonstrate JSP implicit object
28. JSP Program to validate username and password
29. JSP Program to select record from database
30. JSP Program to display given number in words

Course Outcomes:

On completion of this course, the student will be able to:

CO1 : To learn servlet deployement in web server.

CO2 : Learn HTML & CSS for static web page construction.

CO3 : Apply different modern technologies used for real-time client server application.

CO4 : Develop different attractive and interactive web pages.

CO5 : Learn basics of android application deployment environment.

602(A) : Data Mining & Warehousing

Max. Marks : Theory 60 IA 40

Course Objectives:

To acquire the knowledge related to data mining & data warehouse**.**

UNIT – I

Motivation, importance, Data type for Data Mining: Relational Databases, Data Warehouses, Transactional databases, advanced database system and its applications, Data mining Functionalities: Concept/Class description, Association Analysis classification & Prediction, Cluster Analysis, Outlier Analysis, Evolution Analysis, Classification of Data Mining Systems, Major Issues in Data Mining.

UNIT – II

Data Warehouse and OLAP Technology for Data Mining: Differences between Operational Database Systems and Data Warehouses, a multidimensional Data Model, Data Warehouse Architecture, Data Warehouse Architecture, Data Warehouse Implementation, Data Cube Technology.

UNIT- III

Data Preprocessing: Data Cleaning, Data Integration and Transformation, Data Reduction, Discretization and Concept Hierarchy Generation. Data Mining Primitives, Languages, and System Architectures, Concept Description: Characterization and Comparison, Analytical Characterization.

UNIT – IV

Mining Association Rules in Large Databases: Association Rule Mining: Market Basket Analysis, Basic Concepts, Mining Single-Dimensional Boolean Association Rules from Transactional Databases: the Apriori algorithm, Generating Association rules from Frequent items, Improving the efficiency of Apriori, Mining Multilevel Association Rules, Multidimensional Association Rules, Constraint-Based Association Mining.

UNIT – V

Classification & Prediction and Cluster Analysis: Issues regarding classification & prediction, Different Classification Methods, Prediction, Cluster Analysis, Major Clustering Methods, Applications & Trends in Data Mining: Data Mining Applications, currently available tools.

Course Outcomes:

On completion of this course, the student will be able to:

CO1 : learn the data mining functionalities.

CO2 : understand and exhibit the basics of data warehousing and multi-dimensional modeling.

CO3 : describe data preprocessing.

CO4 : understand classification , clustering, frequent pattern analysis and regression .

CO5 : learn cluster analysis and DM tools.

Text Book(s):

1. J. Han and M. Kamber, "Data Mining: Concepts and Techniques", Morgan Kaufmann Pub.
2. W.H. Inmon " Building the Data Warehouse, 3ed, Wiley India.

Reference Book(s)

1. Berson "Data warehousing, Data Mining & DLAP, @004, TMH.
2. Anahory, "Data Warehousing in the Real World", Pearson Education.
3. Adriaans, "Data Mining", Pearson Education.
4. S.K. Pujari, "Data Mining Techniques", University Press, Hyderabad.

Online Resource(s):

https://www.youtube.com/watch?v=ykZ_UGcYWg&list=PLCQnw0zDwSUrB7xd3rKmt1bO7LQudolbd

https://nptel.ac.in/courses/106105174

602(B) : Information Storage Management

Max. Marks : Theory 60 IA 40

Course Objectives:

To acquire knowledge related to storage technology, architecture and networked storage.

UNIT-I

Introduction to Storage Technology: Data proliferation, evolution of various storage Technologies, Overview of storage infrastructure components, Information Lifecycle Management, Data categorization.

UNIT-II

Storage Systems Architecture: Intelligent disk subsystems overview, Contrast of integrated vs. modular arrays, Component architecture of intelligent disk subsystems, Disk physical structure components, properties, performance, and specifications, RAID levels, hot sparing.

UNIT-III

Introduction to Networked Storage: JBOD, DAS, NAS, SAN & CAS evolution and comparison. Applications, Elements, connectivity, standards, management, security and limitations of DAS, NAS, CAS & SAN.

UNIT-IV

Hybrid Storage solutions; Virtualization: Memory, network, server, storage & appliances. Data center concepts & requirements, Backup & Disaster Recovery: Principles Managing & monitoring : Industry management standards (SNMP, SMI-S, CIM).

UNIT-V

Information storage on cloud :Concept of Cloud, Cloud Computing, storage on Cloud, Cloud Vocabulary, Architectural Framework, Cloud benefits, Cloud computing Evolution, applications & services on cloud, Cloud service providers and Models, Essential characteristics of cloud computing, Cloud Security and integration.

Course Outcomes:

On completion of this course, the student will be able to:

CO1: Understand data categories and different types of advanced storage techniques.
CO2: Understand intelligent storage management
CO3: Learn which storage topology are used in enterprise
CO4: Understand how to monitor and manage storage.
CO5: Learn about cloud computing technologies.

Text Book(s):

1. G. Somasundaram & Alok Shrivastava (EMC Education Services) editors; Information Storage and Management: Storing, Managing, and Protecting Digital Information; Wiley India.

Reference Book(s):

1. Ulf Troppens, Wolfgang Muller-Friedt, Rainer Erkens, Rainer Wolafka, Nils Haustein; Storage
2. Network explained : Basic and application of fiber channels, SAN, NAS, iSESI, INFINIBAND
3. and FCOE, Wiley India.
4. John W. Rittinghouse and James F. Ransome; Cloud Computing : Implementation , Management and Security, CRC Press, Taylor Frances Pub.
5. Nick Antonopoulos, Lee Gillam; Cloud Computing : Principles, System & Application, Springer.
6. Anthony T. Velete, Toby J.Velk, and Robert Elsenpeter, Cloud Computing : A practical Approach,

Online Resource(s):

http://aad.tpu.ru/practice/EMC/ISM%20v2_with_notes.pdf

603(A): Parallel Computing

Max. Marks : Theory 60 IA 40

Course Objectives:

To acquire the knowledge related to Parallel Computing, modeling of parallel computing, basic communication operation of parallel computing and message passing interfaces and topologies.

UNIT- I

Introduction to Parallel computing: Parallel programming platforms: Trends in Microprocessor Architectures, Limitations of memory system performance, Dichotomy of parallel computing platforms, physical organization of parallel platforms, communication costs in parallel machines, Routing mechanisms for interconnection network, Impact of process processors mapping and mapping techniques.

UNIT – II

Principles of parallel algorithm design: Preliminaries, Decomposition techniques, Characteristics of tasks and interactions, Mapping techniques for load balancing, Methods for containing. Interaction overheads, Parallel algorithm models.

UNIT - III

Basic communication operations: One-to-All Broadcast and All-to-One Reduction, All-to-All broadcast and reduction All-Reduce and prefix sum operations, scatter and gather, All-to-All personalized communication, circular shift, Improving the speed of some communication operation.

UNIT – IV

Analytical modeling of parallel programs: Performance metrics for parallel systems, Effect of granularity of performance, scalability of parallel system, Minimum execution time and minimum cost-optimal execution time, Asymptotic analysis of parallel programs, other scalability metrics.

UNIT - V

Programming using the message passing paradigm: Principle of message – Passing programming, Send and receive operations, The message passing interface, Topologies and embedding, Overlapping communication with computation, collective communication and computation operations, Groups and communicators. Dense matrix algorithm: Matrix-vector multiplication, Matrix-matrix algorithm, Solving a system of linear equations.

Course Outcomes:

On completion of this course, the student will be able to:

CO1: Understand introduction of Parallel computing.
CO2: Learn Techniques of parallel computing and its principles.
CO3: Understand the basic communication operations and its improvements.
CO4: Understand the models of parallel programming and analysis.
CO5: Understand the principle of message, topologies and matrix algorithms.

Text Book(s):

1. Introduction to Parallel Computing, Second Edition, Ananth Gram, Anshul Gupta, George
2. Karypis, Vipin Kumar Pearson Education. Parallel computing Theory and Practice, Second Edition, Michael J. Quinn, TMH.

Reference Book(s):

1. Michael J. Quinn: Parallel Computing: Theory and Practice, McGraw-Hill Education.
2. Michael McCool : Structured Parallel Programming: Patterns for Efficient Computation, Morgan Kaufmann.

Online Resource(s):

https://nptel.ac.in/courses/106/102/106102114/
https://nptel.ac.in/courses/106102114

603(B): Theory of Computation

Max. Marks : Theory 60 IA 40

Course Objectives:

To acquire the knowledge related to theory of computation.

UNIT-I

Review of Mathematical Preliminaries : Set, Relations and functions, Graphs and trees, string, alphabets and languages. Principle of induction, predicates and propositional calculus. Theory of Automation : Definition, description, DFA,NFA, Transition systems,2DFA, equivalence of DFA & NFA, Regular expressions, regular grammar, FSM with output (mealy and moore models), Minimisation of finite automata.

UNIT-II

Formal Languages : Definition & description, Phrase structure grammars & their classification, Chomsky classification of languages, closure properties of families of language, regular grammar, regular set & their closure properties, finite automata, equivalence of FA and regular expression, equivalence of two way finite automata, equivalence of regular expressions.

UNIT -III

Context-Free grammar & PDA : Properties unrestricted grammar & their equivalence, derivation tree simplifying CFG, unambiguous CFG, - productions, normal form for CFG, Pushdown automata, 2 way PDA, relation of PDA with CFG, Determinism & Non determinism in PDA & related theorems, parsing and pushdown automata.

UNIT-IV

Turing Machine : Model, design, representation of TM, language accepted by TM, universal turing machine, determine & non-determinism in TM, TM as acceptor/generator/algorithms, multidimensional, multitracks, multitape, Two way infinite tape, multihead, Halting problems of TM.

UNIT-V

Computability : Concepts, Introduction to complexity theory, Introduction to undecidability, recursively enumerable sets, primitive recursive functions, recursive set, partial recursive sets, concepts of linear bounded Automata, context sensitive grammars & their equivalence.

Course Outcomes:

On completion of this course, the student will be able to:

CO1: Understand theory of automation.
CO2: Learn concepts related to formal languages.
CO3: Understand the context-free grammar & pushdown automata.
CO4: Understand the turing machine.
CO5: Understand the concepts of computability.

Text Book(s):

1. Hopcroft & Ullman “Introduction to Automata theory, languages & Computation” , Narosa Publishing house.
2. Mishra & Chander Shekhar “Theory of Computer Science (Automate, Language & Computations), PHI.

Reference Book(s):

1. Lewis Papadimitriou “Theory of Computation” , Prentice Hall of India, New Delhi .
2. Peter linz, “An Introduction to formal language and automata”, Third edition, Narosa publication.
3. Marvin L. Minsky “Computation : Finite & Infinite Machines”, PHI.

Online Resource(s):

https://www.youtube.com/playlist?list=PLbMVogVj5nJSd25WnSU144ZyGmsqjuKr3
https://nptel.ac.in/courses/106104028
https://nptel.ac.in/courses/106104148

701(1) : Artificial Intelligence

Max. Marks : Theory 60 IA 40

Course Objectives:

To acquire the knowledge related to artificial intelligence, problem solving, search and control strategies, natural language processing and probabilistic reasoning & uncertainty

UNIT-I

General Issues and Overview of AI : The AI problems, what is an AI technique, Characteristics of AI applications. Introduction to LISP programming: Syntax and numeric functions, Basic list manipulation functions, predicates and conditionals, input output and local variables, iteration and recursion, property lists and arrays.

UNIT-II

Problem Solving, Search and Control Strategies : General problem solving, production systems, control strategies forward and backward chaining, exhaustive searches depth first breadth first search. Heuristic Search Techniques : Hill climbing, branch and bound technique, best first search & A* algorithm, AND / OR graphs, problem reduction & AO* algorithm, constraint satisfaction problems.

UNIT-III

Knowledge Representations : First order predicate calculus, skolemization, resolution principle & unification, interface mechanisms, horn's clauses, semantic networks, frame systems and value inheritance, scripts, conceptual dependency.

UNIT-IV

Natural Language processing : Parsing techniques, context free grammar, recursive transition nets (RNT), augmented transition nets (ATN), case and logic grammars, semantic analysis. Game playing : Minimax search procedure, alpha-beta cutoffs, additional refinements. Planning : Overview an example domain the block word, component of planning systems, goal stack planning, non linear planning.

UNIT-V

Probabilistic Reasoning and Uncertainty : Probability theory, bayes theorem and Bayesian networks, certainty factor.Expert Systems : Introduction to expert system and application of expert systems, various expert system, knowledge acquisition, case studies, MYCIN. Learning ; Rote learning, learning by induction, explanation based learning.

Course Outcomes:

On completion of this course, the student will be able to:

CO1: Describe various approaches to Artificial Intelligence and Lisp programming.
CO2: Understanding different Algorithms related to AI.
CO3: Learn techniques of Knowledge Representation.
CO4: Understanding the concept of Natural Language processing.
CO5: Acquire basic knowledge of Expert System.

Text Book(s):

1. Elaine Rich and Kevin Knight "Artificial Intelligence" - Tata McGraw Hill.
2. Stuart Russell: Artificial Intelligence: A Modern Approach, Pearson;

Reference Book(s):

1. "Artificial Intelligence" 4 ed. Pearson.
2. Dan W. Patterson "Introduction to Artificial Intelligence and Expert Systems", Prentice India.
3. Nils J. Nilson "Principles of Artificial Intelligence", Narosa Publishing House.
4. Clocksin & C.S.Mellish "Programming in PROLOG", Narosa Publishing House.

Online Resource(s):

https://www.youtube.com/playlist?list=PLwdnzlV3ogoXaceHrrFVZCJKbm_laSHcH
https://nptel.ac.in/courses/106105077
https://nptel.ac.in/courses/106105079

701(2): Python Programming

Max. Marks : Theory 60 IA 40

Course Objectives:

To acquire the knowledge related to python statements, collection, loops, file handling and OOPs in python.

UNIT -1

Installing Python, Simple program using Python, Expressions and Values, Variables and Computer Memory, error detection, Multiple line statements, Designing and using functions, functions provided by Python, Tracing function calls in memory model, omitting return statement. Working with Text: Creating Strings of Characters, Using Special Characters in Strings, Creating a Multiline String, Printing Information, Getting Information from the Keyboard.

UNIT-2

A Boolean Type , Choosing Statements to Execute, Nested If Statements , Remembering the Results of a Boolean Expression Evaluation , A Modular Approach to Program Organization, Importing Modules , Defining Your Own Modules, Testing Code Semi automatically Grouping Functions Using Methods: Modules, Classes, and Methods , Calling Methods the Object-Oriented Way, Exploring String Methods, Underscores.

UNIT-3

Storing Collections of Data Using Lists: Storing and Accessing Data in Lists, modifying Lists, Operations on Lists, Slicing Lists, Aliasing, List Methods, Working with a List of Lists. Repeating Code Using Loops: Processing Items in a List, Processing Characters in Strings, Looping Over a Range of Numbers, Processing Lists Using Indices, Nesting Loops in Loops, Looping Until a Condition Is Reached, Repetition Based on User Input, Controlling Loops Using Break and Continue Reading and Writing.

UNIT-4

Files: Kinds of files, Opening a File, Techniques for Reading Files, Files over the Internet, Writing Files, and Writing Algorithms That Use the File-Reading Techniques, Multiline Records. Storing Data Using Other Collection Types: Storing Data Using Sets, Storing Data Using Tuples, Storing Data Using Dictionaries, Inverting a Dictionary, Using the In Operator on Tuples, Sets, and Dictionaries, Comparing Collections.

UNIT-5

Collection of New Information Object-Oriented Programming : Understanding a Problem Domain , Function “Isinstance,” Class Object, and Class Book , Writing a Method in Class Book, Plugging into Python Syntax: More Special Methods ,Creating Graphical User interface: Building a Basic GUI, Models, Views, and Controllers, Customizing the Visual Style Introducing few more Widgets, Object-Oriented GUIs, Keeping the Concepts from Being a GUI Mess.

Course Outcomes:

On completion of this course, the student will be able to:

CO1 : Understand the introduction and basics of Python.
CO2 : Learn decision making statements, class and methods.
CO3 : Learn list and control statements.
CO4 : Understand file handling.
CO5: Learn about OOPs and basic Graphics user interfaces.

Text Book(s):

1. O'Reilly, Python Crash Course, 2nd Edition: A Hands-On, Project-Based Introduction to Programming

Reference Book(s):

1. John Zelle, Python Programming: An Introduction to Computer Science
2. Mark Lutz, Python Pocket Reference: Python in Your Pocket
3. O'Reilly, Head First Python: A Brain-Friendly Guide, by Paul Barry

Online Resource(s):

https://www.youtube.com/playlist?list=PLIdgECt554OVFKXRpo_kuI0XpUQKk0ycO
https://nptel.ac.in/courses/106106182
https://nptel.ac.in/courses/106106212

702(A) : Internet Of Things

Max. Marks : Theory 60 IA 40

Course Objectives:

To acquire the knowledge related to Internet of Things, types of sensors, IOT smart applications, protocols and challenges.

UNIT-I

Introduction – Digital Electronics, Logical gates and its working, Types of sensors: Temperature sensor (LM35,RTD,Thermocouple), Light sensor(photodiode, optocoupler), Distance and range sensor (IR,LVDT), Accelerometer sensor, Touch screen sensor.

UNIT-II

Introduction to IOT - Definition & Characteristics, Importance of IoT, Physical Design of IOT, Logical Design of IOT, IOT Enabling technologies, IoT and M2M, IOT Platform Design Methodology, Purpose & Requirements Specification, Process Specification, Domain Model Specification, Information model Specification, Service specification, IOT level Specifications, Functional View Specifications, Operational View Specification, device and component integration, application development

UNIT-III

Iot Smart X Application - Smart Cities, Smart Energy & Smart Grid, Smart Mobility & transport, Smart Home, Smart Building & Infrastructure, Smart Factory & Manufacturing, Smart Health, Smart Logistics & Retails. **Embedded suite for IoT Physical device –** Arduino / Raspberry Pi Interfaces, Hardware requirement of Arduino / Pi, Connecting remotely to the Arduino /Raspberry Pi, GPIO Basics

UNIT-IV

Protocols in IOT: RFID: Introduction, Principle of RFID, Components of an RFID system, RFID Protocols & NFC protocols, CoAP, XMPP, AMQP, MQTT

Resource Management In The Internet Of Things: Clustering, Software Agents, Clustering Principles in an Internet of Things Architecture, Design Guidelines, Software Agents for Object Representation, Data Synchronization.

UNIT-V

Internet of things Challenges: Vulnerabilities of IoT, Security, Privacy & Trust for IoT, Security requirements Threat analysis, Use cases and misuse cases, Introduction to cloud computing, Role of Cloud Computing in IoT, Cloud-to-Device Connectivity, Cloud data management, cloud data monitoring, Cloud data Exchange.

Course Outcomes:

On completion of this course, the student will be able to:

CO1 : Understand the IOT Terminology and Technology.
CO2 : Describe IOT applications.
CO3 : Analyze Protocol standardization for IOT.
CO4 : Perform an analysis of IOT security issues.
CO5: Identify the role of cloud computing in IOT.

Books Recommended :

1. Pethuru Raj, Anupama C. Raman, The Internet of Things Enabling Technologies, Platforms, and Use Cases, CRC Press Taylor & Francis Group
2. Internet of Things: A Hands-on Approach", by Arshdeep Bahga and Vijay Madisetti (UniversitiesPress)

Reference Book(s):

1. Rajkumar Buyya, Amir Vahid Dastjerdi Internet of Things – Principles and Paradigms, Morgan Kaufmann is an imprint of Elsevier, ISBN: 978-0-12-805395-9
2. Hakima Chaouchi, " The Internet of Things Connecting Objects to the Web" ISBN : 978-1- 84821-140-7, Willy Publications
3. Olivier Hersent, David Boswarthick, Omar Elloumi, The Internet of Things: Key Applications and Protocols, ISBN: 978-1-119-99435-0, 2nd Edition, Willy Publications

Online Resource(s):

https://nptel.ac.in/courses/106105166
http://library.iitd.ac.in/arpit_2020-2021/Week%208%20-%20Module%2019%20-%20PPT-%20Internet%20of%20Things%20for%20Libraries.pdf

702 (B) : Software Quality Assurance

Max. Marks : Theory 60 IA 40

Course Objectives:

To acquire the knowledge related to software quality, testing, integration, system test planning, automation & execution and software quality standards.

UNIT-I

Introduction : Software Quality, Role of testing, v & v, objectives and issues of testing, Testing activities and levels, Sources of Information for Test Case Selection, White-Box and Black-Box Testing, Test Planning and Design, Monitoring and Measuring Test Execution, Test Tools and Automation, Test Team Organization and Management; UNIT Testing: Concept, Static UNIT Testing, Defect Prevention, Dynamic UNIT Testing, Mutation Testing, Debugging.

UNIT-II

Control Flow & Data Flow Testing: Outline of CFT, CF Graph, Paths in a Control Flow Graph, Path Selection Criteria, Generating Test Input, Examples of Test Data Selection; Overview of Dynamic Data Flow Testing, Data Flow Graph, Data Flow Testing Criteria, Comparison of Testing Techniques.

UNIT-III

System Integration Testing & Test Design: Concept of Integration Testing, Different Types of Interfaces and Interface Errors, Granularity of System Integration Testing, System Integration Techniques, Test Plan for System Integration, Off-the-Shelf Component Testing, System Test Categories.

UNIT-IV

System Test Planning, Automation & Execution: Structure of a System Test Plan, Test Approach, Test Suite Structure, Test Environment, Test Execution Strategy, Test Effort Estimation, Scheduling and Test Milestones, System Test Automation, Selection of Test Automation Tools, Test Selection Guidelines for Automation, Structure of an Automated Test Case, Test Automation Infrastructure Metrics for Tracking System Test, Metrics for Monitoring Test Execution, Beta Testing, System Test Report, Measuring Test Effectiveness, Acceptance Testing.

UNIT-V

Software Quality: Five Views of Software Quality, McCall's Quality Factors and Criteria, Quality Factors Quality Criteria, Relationship between Quality Factors and Criteria, Quality Metrics, ISO 9126 Quality Characteristics, ISO 9000:2000 Software Quality Standard ISO 9000:2000 Fundamentals, ISO 9001:2000 Requirements.

Course Outcomes:

On completion of this course, the student will be able to:

CO1: Understand quality management processes.

CO2: Understand the importance of standards in the quality management process and role of SQA function in an organization.

CO3: Gain knowledge of software quality assurance.

CO4: Understand the need and purpose of software testing.

CO5: Learn the five views of software quality.

Text Book(s):

1. N.S. Godbole, Software Quality Assurance: Principles and Practice for the New Paradigm (2nd Ed.), Narosa Publishing, 2017.

Reference Book(s):

1. S.H. Kan, Metrics and Models in Software Quality Engineering (2nd ed.), Pearson Education Inc., 2003.
2. Stephen H.Khan ,Metrics and Models in Software Quality Engineering Pearson Education, India
3. Shari Lawrence Pfleeger,"Software Engineering Theory and Practice Pearson Education, India.

Online Resource(s):

https://nptel.ac.in/courses/106105150

https://homepage.cs.uri.edu/student/tseytlin/SQA.ppt

703 : Research Methodology

Max. Marks : Theory 60 IA 40

Course Objectives:

To acquire the knowledge related to research formulation & design, data collection & analysis, soft computing, research ethics and report writing.

UNIT - I

RESEARCH FORMULATION AND DESIGN: Motivation and objectives – Research methods *vs*. Methodology. Types of research – Descriptive *vs*. Analytical, Applied *vs*. Fundamental, Quantitative *vs*. Qualitative, Conceptual *vs*. Empirical, concept of applied and basic research process, criteria of good research.Defining and formulating the research problem, selecting the problem, necessity of defining the problem, importance of literature review in defining a problem, literature review-primary and secondary sources, reviews, monograph, patents, research databases, web as a source, searching the web, critical literature review, identifying gap areas from literature and research database.

UNIT-II

DATA COLLECTION AND ANALYSIS: Accepts of method validation, observation and collection of data, methods of data collection, sampling methods, data processing and analysis strategies and tools,data analysis with statically package (SPSS t-test, ANOVA, etc.), hypothesis testing.

UNIT-III

SOFT COMPUTING: Computer and its role in research, Use of statistical software SPSS, GRETL etc in research.Introduction to evolutionary algorithms - Fundamentals of Genetic algorithms, Simulated Annealing, Neural Network based optimization, Optimization of fuzzy systems.

UNIT-IV

RESEARCH ETHICS, IPR AND SCHOLARLY PUBLISHING: Ethics-ethical issues, ethical committees (human & animal); IPR- intellectual property rights and patent law, commercialization, copyright, royalty, trade related aspects of intellectual property rights (TRIPS); scholarly publishing- IMRAD concept and design of research paper, citation and acknowledgement, plagiarism, reproducibility and accountability.

UNIT-V

INTERPRETATION AND REPORT WRITING: Meaning of Interpretation, Technique of Interpretation, Precaution in Interpretation, Significance of Report Writing, Different Steps in Writing Report, Layout of the Research Report, Types of Reports, Oral Presentation, Mechanics of Writing a Research Report, Precautions for Writing Research Reports, Conclusions.

Course Outcomes:

On completion of this course, the student will be able to:

CO1 : Learn how to design research praposal.
CO2 : Understand data collection and analysis for research
CO3 : Learm soft computing and its role in research.
CO4 : Learn research paper publishing
CO5 : Understand how to prepare research report.

Text Book(s):

1. Garg, B.L., Karadia, R., Agarwal, F. and Agarwal, U.K., 2002. An introduction to Research Methodology, RBSA Publishers.
2. Kothari, C.R., 1990. Research Methodology: Methods and Techniques. New Age International.

Reference Book(s):

1. Sinha, S.C. and Dhiman, A.K., 2002. Research Methodology, Ess Publications. 2 volumes.
2. Trochim, W.M.K., 2005. Research Methods: the concise knowledge base, Atomic Dog Publishing.
3. Wadehra, B.L. 2000. Law relating to patents, trade marks, copyright designs and geographical indications. Universal Law Publishing.

Online Resource(s):

https://onlinecourses.swayam2.ac.in/nou22_cm06/preview
https://onlinecourses.swayam2.ac.in/aic21_ge02/preview

801: Big Data Analytics & Visualization

Max. Marks : Theory 60 IA 40

Course Objectives:

To acquire the knowledge related to big data, its characteristics, big data modeling and visualization

UNIT-I

Introduction of big data, Big data characteristics - Volume, Veracity, Velocity, and Variety – Data, Appliance Challenges and Issues, Case for Big data, Big data sources, Features of data, Evolution of Big data, Best Practices for Big data Analytics and Integration tools.

UNIT-II

Introduction to Data Modeling, Data Models Used in Practice: Conceptual data models, Logical data models, Physical data models, Common Data Modeling Notations, How to Model Data : Identify entity types, Identify attributes, Apply naming conventions, Identify relationships, Apply data model patterns, Assign keys, Normalize to reduce data redundancy.

UNIT-III

Introduction to elementary data analysis: Measures of center: Mean, Median, Mode, Variance, Standard deviation, Range. Normal Distribution: Center, Spread, Skewed Left, Skewed Right, outlier. Correlations: Correlation Patterns: Direction relationship, Magnitude Relationship.

UNIT-IV

Introduction to Bayesian Modeling: Bayes Rule, Probabilistic Modeling Introduction to Predictive Analytics: Simple Linear regression, Multiple Linear regression, Logistic Linear Regression.

UNIT-V

Visualization: History of Visualization, Goals of Visualization, Scientific Visualization, Information Visualization, Visual Analytics, Impact of visualization Introduction to Data Processing, MapReduce Framework, Hadoop, HDFS, S3, Hadoop Distributed file systems, Apache Mahout, Hive, Sharding, Hbase, Impala, Case studies : Analyzing big data with twitter, Big data for Ecommerce, Big data for blogs.

Course Outcomes:

On completion of this course, the student will be able to:

CO1 : Learn Big data and its characteristics.
CO2 : Understand best practices for Big data Analytics and Integration tools.
CO3 : Describe data modeling.
CO4 : Learn elementary data analysis.
CO5 : Understand basics of visualization.

Text Book(s):

1. Frank J Ohlhorst, "Big Data Analytics: Turning Big Data into Big Money", Wiley and SAS Business. Series, 2012.
2. The Data Modeling Handbook: A Best-Practice Approach to Building Quality Data Models 1st Edition by Michael C. Reingruber (Author), William W. Gregory(Author) A Wiley QED publications

Reference Book(s):

1. Colleen Mccue, "Data Mining and Predictive Analysis: Intelligence Gathering and Crime Analysis",Elsevier, 2007
2. Correlation and Regression: Applications for Industrial Organizational Psychology And Management (Organizational Research Methods) 1st Edition, by Philip Bobko Multiple
3. Regression and Beyond 1st Edition by Timothy Z. Keith.

Online Resource(s):

https://nptel.ac.in/courses/106104189
https://nptel.ac.in/courses/106106142
http://luthuli.cs.uiuc.edu/~daf/courses/CS-199-BD/Slides/intro-bigdata.pptx

802 :Cryptography & Network Security

Max. Marks : Theory 60 IA 40

Course Objectives:
To acquire the knowledge of classical encryption techniques, secret and public key cryptography, message authentication, IP, web and system security.

UNIT-I

Classical Encryption Techniques: Symantec Cipher model, substitution Techniques, transposition techniques, rotor machines, steganography. Block Ciphers and the Data Encryption standards: Simplified DES, block cipher principles, the data encryption standard, the strength of DES, block cipher design principles, block cipher modes of operation, Triple DES.

UNIT-II

Confidentiality using symmetric encryption: Placement of Encryption function, traffic confidentiality, key distribution; Public key Encryption, Public key cryptography and RSA: Principles of Public key cryptosystems, the RSA algorithm; Key Management other public key cryptosystems : Key management, Diffie-Hellman key exchange algorithm.

UNIT-III

Message authentication and Hash function : Authentication Requirements, Authentication functions, message authentication codes, hash functions, security of hash function and MACs. Hash Algorithms: MD5 message digest algorithm, secure Hash algorithm; Digital Signature and Authentication protocols: Digital signatures, Authentication protocols, and digital signature standard. Authentication Applications: Kerberos, X.509 Authentication service.

UNIT-IV

Electronic Mail Security: Pretty Good privacy, S/MIME; IP Security : IP Security overview, IP security architecture, authentication header, encapsulating security payload, combining security associations, key management; Web Security: Web security considerations, Secure sockets layer and transport layer security, Secure Electronic Transaction(SET).

UNIT-V

System security: Intruders, intrusion detection, and password Management. Malicious software: Viruses and related threats, virus countermeasures. Firewalls: Firewall Design Principles, Trusted systems.

Course Outcomes:
On completion of this course, the student will be able to:
CO1: learn classical encryption techniques and block cipher modes of operation.
CO2: implement a symmetric and asymmetric cryptographic methods
CO3 : learn Message authentication and Hash functions.
CO4: describe the role and implementation of digital signatures.
CO5 : understand IP security, Web security and system security.

Text Book(s):

1. William Stallings “Cryptography and Network Security”, 4 ed, Pearson Education.

Reference Book(s):

1. Kanfren “Network Security : Private Communications in a public world 2/e
2. W.Stallings “ Network security Essential “ Applications & Standards”, Pearson ed.
3. Eric Maiwald “ Network Security : A Beginner's Guide, second ed.”, Tata Mcgraw Hill.

Online Resource(s)
http://williamstallings.com/Crypto/Crypto4e-inst.html

https://www.box.net/s/h164at4gsc
https://nptel.ac.in/courses/106105162

ODHESH PRATAP SINGH UNIVERSITY
REWA (MP) 486003

CBCS

CURRICULAM & SYLLABUS

(as per unified ordinance no. 14 of MP universities)

for

MASTER OF COMPUTER APPLICATION (MCA)

(AICTE Approved)

w.e.f. Session 2020-21

Course code : 060

www.apsurewa.ac.in

A. P. S. UNIVERSITY, REWA (MP)

MASTER OF COMPUTER APPLICATION (MCA)

SCHEME OF EXAMINATION(w.e.f. Session 2020-21)

Course code : 060

FIRST SEMESTER

Paper Code	Paper Name	Course Type	Credit	Theory Marks Max(Min)	CCE Marks Max(Min)	Total Marks (Min)
10601	Computer Organization	CC	4	60(21)	40(20)	100
10602	Mathematical Foundation of Computer Science	CC	4	60(21)	40(20)	100
10603	Operating System	CC	4	60(21)	40(20)	100
10604	DBMS	CC	4	60(21)	40(20)	100
10605	Problem Solving using C & C++	GE	4	60(21)	40(20)	100
10606	Lab I – DBMS	LAB	2			100(50)
10607	Lab II – Prog. in C& C++	LAB	2			100(50)
10608	Comprehensive Viva	Viva	4			100(50)
	TOTAL		28			800

SECOND SEMESTER

Paper Code	Paper Name	Course Type	Credit	Theory Marks Max(Min)	CCE Marks Max(Min)	Total Marks (Min)
20601	Data Structure and Analysis of Algorithms	CC	4	60(21)	40(20)	100
20602	Software Engineering	CC	4	60(21)	40(20)	100
20603	Computer Graphics & Visualization	CC	4	60(21)	40(20)	100
206041 206042	Elective I : (Any one from the following) • Artificial Intelligence • Cloud Computing	DCE	4	60(21)	40(20)	100
20605	Java Programming & Technologies	GE	4	60(21)	40(20)	100
20606	Lab I – Computer Graphics	LAB	2			100(50)
20607	Lab II – Java	LAB	2			100(50)
20608	Comprehensive Viva	Viva	4			100(50)
	TOTAL		28			800

THIRD SEMESTER

Paper Code	Paper Name	Course Type	Credit	Theory Marks Max(Min)	CCE Marks Max(Min)	Total Marks (Min)
30601	Compiler Design	CC	4	60(21)	40(20)	100
30602	Computer Networking & Internet	CC	4	60(21)	40(20)	100
306031 306032 306033 306034	Elective II : : (Any one from the following) • Cryptography & Network Security • Mobile Computing • Software Quality Assurance • Internet of Things	DCE	4	60(21)	40(20)	100
306041 306042 306043 306044	Elective III : : (Any one from the following) • Dot Net Technology • Python Programming • Data Warehousing &Mining • Big Data Analytics & Visualization	DCE	4	60(21)	40(20)	100
30605	Web Applications Development	GE	4	60(21)	40(20)	100
30606	Lab I – Based on Elective III	LAB	2			100(50)
30607	Lab II – Web Applications Development	LAB	2			100(50)
30608	Comprehensive Viva	Viva	4			100(50)
	TOTAL		28			800

FOURTH SEMESTER

Paper Code	Paper Name	Course Type	Credit	Theory Marks Max(Min)	CCE Marks Max(Min)	Total Marks (Min)
40601	Major Project / Dissertation Evaluation	CC	16			400(200)
40602	Major Project / Dissertation Internal Evaluation	CC	4			100(50)
40603	Comprehensive Viva	Viva	4			100(50)
	TOTAL		24			600

CC = Core Course, GE = Generic Elective, DCE = Discipline Centric Elective

TOTAL CREDITS : 28+28+28+24=108 Grand Total : 800+800+800+600=3000

Programme Objectives (POs):

Master of Computer Applications (MCA) is a full-time four-semester course, which includes one semester of project work in the fourth semester. The objective of MCA programme is to impart quality education in Computer Science and its applications, so that students are well prepared to face the challenges of the highly competitive computer industry. The course structure ensures overall development of the student, while concentrating on imparting technical skills required for computer/IT profession.

Programme Outcomes

- **Critical thinking**: Take informed action after identifying the assumptions that frame our thinking and actions check out the degree to which these assumption are accurate and valid and look at our ideas and decision (intellectual, organization and personal) from different perspectives.
- **Effective Communication:** Speak, read, write and listen clearly in person and throw electronic media in English and in one Indian language, and make meaning of the word by connecting people, ideas, books, media and technology.
- **Social Interaction**: Elicit views of others, mediate disagreements and help reach conclusions in group settings.
- **Social Citizenship:** Demonstrate empathetic social concern and equity-centered national development and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
- **Ethics**: Recognize different value system including your own understands the moral dimensions of your decisions and accept responsibility for them.
- **Environment and sustainability:** Understand the issues of environmental context and sustainable development.
- **Self directed and life-long learning:** Acquire the ability to engage in independent and life-long learning in the broadest context of socio-technological changes

Programme Specific Outcomes (PSOs):

The programme is designed to

PSO1: Enable the students to apply the computing and soft skills acquired in the MCA program for designing and developing innovative applications for the betterment of the society.

PSO2: Identify, formulate, research literature, and solve complex computing problem searching substantiated conclusions using fundamental principles of mathematics, computing sciences, and relevant domain disciplines.

PSO3: provide exposure to techniques that would enable the students to design, implement and evaluate IT solutions. Demonstrate knowledge and understanding of the computing and management principles and apply these to one's own work, as a member and leader in a team to manage projects and in multidisciplinary environments.

PSO4: Understand and commit to professional ethics and cyber regulations, responsibilities, and norms of professional computing practices. Assess societal, environmental, health, safety, legal, and cultural issues within local and global contexts, and the consequential responsibilities relevant to professional computing practices.

MCA I Sem - Course Code 10601 :Computer Organization

Credit 4; Theory Max/Min(60/21), CCE Max/Min(40/20)

Course Objectives: To understand the basic organization of computer hardware, Boolean algebra &simple combinational and sequential logic circuits

Course Outcomes:

On completion of this course, the student will be able to:

CO1: Describe the basic organization of computer hardware.

CO2: Represent and manipulate data – number systems, conversion between different number systems, perform binary arithmetic and learn Boolean algebra.

CO3: Design simple combinational and sequential logic circuits - flip-flops, counters, shift registers, adders, subtractor, multiplexer, de-multiplexer, and Arithmetic/Logic unit.

CO4: Learn architecture of Microprocessor 8085 and its basics.

CO5: Design simple programs in assembly language.

UNIT I

Computer Organization: Digital and Analog computers, Major components of a digital computer, Basic concepts of IT, concepts of Data & Information, data processing, history of computers (generations, type of languages), I/O devices, Storage devices, Software's Types & its uses, Binary Number System and Conversion, Complements, Signed Binary Numbers, Binary Codes, Error detecting Code, Introduction of Assembler, Compiler & Interpreters

UNIT II

Computer Arithmetic: Binary representation of Negative Integers using 2's complement andSigned magnitude representation, Fixed point Arithmetic operations on Positive and Signed (Negative) Integers like addition, subtraction, multiplication, Booth's algorithm for multiplication, Division of positive and negative binary numbers. Boolean Algebra and Logic Gates: Basic Definitions, Basic Theorems and properties of Boolean algebra, Boolean Functions, Digital Logic gates.

UNIT III

Gate-Level Minimization: The K-Map Method, 3 and 4 variable K-Map, Combinational Circuits, Decoders, Encoders, Multiplexers and Demultiplexers, Sequential circuits, Latches, Flip Flops: SR, D, JK, T; Master Slave JK Flip flop, Integrated Circuits; Shift Registers- Serial in Serial out, Serial in Parallel out, Parallel in Serial out and Parallel in Parallel out. Designing of Asynchronous (Ripple) Counters, Design of Synchronous Counters.

UNIT IV

Introduction of 8085 Microprocessor: Architecture of 8085 processor, Register Architecture: Accumulator, Register and Flag Register, Addressing Modes: Direct memory addressing mode and Register direct Addressing Mode, Memory addressing capability of a CPU, Word length of a computer, Processing speed of a CPU, Working of CPU, Buses, Block Diagram of 8085.

UNIT V

Introduction to Assembly Language Programming: Various Instructions Classifications:instruction Format, Opcode, Operand and Hex code. Instruction Operation Status, Various Instruction Sets: Data Transfer Group Instructions, Arithmetic Group Instructions, Logical Group Instruction, Branch Group Instructions: Conditional , Unconditional and Machine control Instructions.

Books Recommended:

1. Microprocessor Architecture, Programming and Applications with 8085/8080 by Ramesh S. Gaonkar.
2. Digital Design by M. Morris Mano. Publication: PHI Eastern economy edition.

Reference Book(s):

1. Fundamentals of Computers by B Ram Publication : PHI , Fourth edition
2. Microprocessor and Its applications by R Theagrajan,SDhanapal
3. Computer Architecture By Dr. Rajkamal. Publication: TMH Indian Special edition 2006.

MCA I Sem-Course Code 10602: Mathematical Foundation of Computer Science

Credit 4; Theory Max/Min(60/21), CCE Max/Min(40/20)

Course Objectives : To understand the fundamental concepts of mathematical structures.

Course Outcomes:

On completion of this course, the student will be able to gain fundamental knowledge of:

CO1: Mathematical structures (sets, relations and functions), and will be able to model real world situations mathematically.

CO2: Principles of proportions & lattices.

CO3: Groups, Graphs and their applications in Computer Science.

CO4: Discrete Numeric function and Recurrence relation.

CO5: Growth of functions asymptotically.

UNIT-I

Sets, Relations and Functions: Sets, Subsets, Power sets, Complement, Union and Intersection, Demorgan's law, Cartesian products, Relations, relational matrices, properties of relations, equivalence relation, functions, Injection, Surjection and Bijective mapping, Composition of functions, the characteristic functions and Mathematical induction

UNIT-II

Proportions & Lattices : Proposition & prepositional functions, Logical connections, Truth-values and Truth Table, the algebra of prepositional functions-the algebra of truth values-Applications (switching circuits, Basic Computer Components); Partial order set, Hasse diagrams, upper bounds, lower bounds, Maximal and minimal element, first and last element, Lattices, sub lattices, Isotonicity, distributive inequality, Lattice homomorphism, lattice isomorphism,complete lattice, complemented lattice, distribution lattice

UNIT-III

Groups : Binary Composition, Algebraic Structure, Algebraic properties or Group axioms, Monoid, Semigroup, Groupoid, Groups, Abelian Groups, Finite and Infinite Group, Integral power of anelement, order of an element of a group, Transformations, Permutation and permutations group,Cyclic permutation, Even and odd permutations, Subgroups of a group, Cosets, Lagrangetheorem, Cyclic groups, Normal subgroups

UNIT-IV

Graphs: Finite graphs, incidence and degree, isomorphism, sub graphs and union of graphs,connectedness, walk, paths, and circuits Eulerian graphs,tree properties of trees, pendant vertices in tree, center of tree,spanning trees and cut vertices, binary tree,matrix representation of graph, incidence and adjacency matrix and their properties, applications of graphs in computer science

UNIT-V

Discrete Numeric function and Recurrence relation: Introduction to discrete numeric functions and generating functions, introduction to recurrence relations and recursive algorithms, linear recurrence relations with constant coefficients,homogeneous solutions, particular solutions and total solutions

Books Recommended:

1. J.P.Trembley&R.P.Manohar "Discrete Mathematical Structure with applications to Computer Science".
2. M. K. Gupta, Discrete Mathematics, Krishna Prakashan Media (P) Ltd.
3. Kenneth H. Rosen-203 "Discrete Math & its Applications"
4. K.A. Ross and C.R.B. Writht "Discrete Mathematics"
5. Bernard Kolman& Robert C. Busby "Discrete Mathematical Structures for Computer Science".

MCA I Sem-Course Code 10603 :Operating System

Credit 4; Theory Max/Min(60/21), CCE Max/Min(40/20)

Course Objectives : To understand the fundamental concepts of Operating Systems, process management, memory management and File and Device management.

Course Outcomes:

On completion of this course, the student will be able to:

CO1: Describe basic functions of an Operating System.

CO2: Distinguish between different types of Operating Systems so as to use each of them most efficiently in the respective application areas.

CO3: Describe different techniques for managing computer resources like CPU, memory.

CO4: Implement simple algorithms for managing computer resources.

CO5: To understand Distributed Systems.

UNIT-I

Introduction: Evolution of operating systems (History of evolution of OS with the generations of computers), Types of operating systems, Multitasking, Timesharing, Multithreading, Multiprogramming and Real time operating systems, Operating system concepts and structure, Layered Operating Systems, Monolithic Systems. Processes: The Process concept, The process control block, Systems programmer's view of processes, Operating system services for process management, Scheduling algorithms and types.

UNIT-II

Memory Management : Memory management without swapping or paging, Concepts of swapping and paging, Page replacement algorithms namely Least recently used, Optimal page replacement, Most recently used, Clock page replacement, First in First out (This includes discussion of Belady's anomaly and the category of Stack algorithms), Modeling paging algorithms, Design issues for paging system, Segmentation, Segmented Paging, Paged Segmentation

UNIT-III

Inter-process Communication and Synchronization: The need for inter-process synchronization, Concept of mutual exclusion, binary and counting semaphores, hardware support for mutual exclusion, queuing implementation of semaphores, Classical problems in concurrent programming, Dining Philosopher's problem, Bounded Buffer Problem, Sleeping Barber Problem, Readers and Writers problem, Critical section, critical region and conditional critical region, Monitors and messages. Deadlocks: Concepts of deadlock detection, deadlockprevention, deadlock avoidance; Banker's Algorithm

UNIT-IV

File System: File systems, directories, file system implementation, security protection mechanisms; Input/output: Principles of I/O Hardware: I/O devices, device controllers, direct memory access, Principles of I/O software: Goals interrupt handlers, device drivers, and device independent I/O software. User space I/O Software. Disks: Disk hardware, Disk scheduling algorithms (namely First come first serve, shortest seek time first, SCAN, C-SCAN, LOOK and C-LOOK algorithms) Error handling, track-at-a-time caching, RAM Disks. Clocks: Clock hardware, memory-mapped terminals, I/O software.

UNIT-V

Processes and Processors in Distributed Systems: Threads, System models, processor allocation, scheduling; Distributed File Systems: Design, Implementation, and trends; Performance Measurement, monitoring and evaluation Introduction, important trends affecting performance issues, why performance monitoring and evaluation are needed, performance measures, evaluation techniques, bottlenecks and saturation, feedback loops. Case Studies: WINDOWS and LINUX /UNIX Operating System.

Books Recommended:

1. Deitel, H.M. "An Introduction to Operating Systems". Addison Wesley Publishing Company 1984.
2. Milenkovic, M., "Operating Systems - concepts and Design" McGraw Hill International Edition-Computer Science series 1992.
3. Galvin P., J.L. Abraham Silberschatz. "Operating System Concepts".John Wiley & Sons Company,1989.
4. Tanenbaum, A.S. "Modern Operating System", Prentice Hall of India Pvt. Ltd.1995.
5. William Stallings "Operating Systems" , Prentice Hall of India Pvt. Ltd.

MCA I Sem - Course Code 10604: Data Base Management System

Credit 4; Theory Max/Min(60/21), CCE Max/Min(40/20)

Course Objectives : To acquire the knowledge related to DBMS, RDBMS, PL/SQL and Stored functions.

Course Outcomes:

On completion of this course, the student will be able to:

CO1: Understand basic database concepts, including the structure and operation of the relational data model.

CO2: Apply logical database design principles, including E-R diagrams, conversion of ER diagrams to relations.

CO3: Understand the concepts of integrity constraints, relational algebra, relational domain & tuple calculus, data normalization.

CO4: Construct simple and moderately advanced database queries using Structured Query Language (SQL).

CO5: Understand the emerging fields in database.

UNIT-I

Introduction: Advantage of DBMS approach, various view of data, data independence, schema and subschema, primary concepts of data models, Database languages, transaction management, Database administrator and users, data dictionary, overall system architecture. **ER model**: basic concepts, design issues, mapping constraint, keys, ER diagram, weak and strong entity sets, specialization and generalization, aggregation, inheritance, design of ER schema, reduction of ER schema to tables.

UNIT-II

Domains, Relations and Keys: domains, relations, kind of relations, relational database, various types of keys, candidate, primary, alternate and foreign keys. **Relational Algebra & SQL**: The structure, relational algebra with extended operations, modifications of Database, idea of relational calculus, basic structure of SQL, set operations, aggregate functions, null values, nested sub queries, derived relations, views, modification of Database, join relations, DDL in SQL, Introduction of Database Design, SDLC, DDLC, Automated Design Tools

UNIT-III

Functional Dependencies and Normalization: basic definitions, trivial and non trivial dependencies, closure set of dependencies and of attributes, irreducible set of dependencies, introduction to normalization, non loss decomposition, FD diagram, first, second, third Normal forms, dependency preservation, BCNF, multivalued dependencies and fourth normal form, Join dependency and fifth normal form.

UNIT-IV

Database Integrity: general idea. Integrity rules, domain rules, attribute rules, relation rules, Database rules, assertions, triggers, integrity and SQL. **Transaction, concurrency and Recovery**: basic concepts, ACID properties, Transaction states, implementation of atomicity and durability, concurrent executions, basic idea of serializability, basic idea of concurrency control, basic idea of deadlock, failure classification, storage structure types, stable storage implementation, data access, recovery and atomicity- log based recovery, deferred Database modification, immediate Database modification, checkpoints. **Distributed Database**: basic idea, distributed data storage, data replication, data fragmentation horizontal, vertical and mixed fragmentation

UNIT-V

Emerging Fields in DBMS, Object oriented Databases, Data Warehousing, Database on www, multimedia Databases-difference with conventional DBMS, issues, similarity based retrieval, continuous media data, multimedia data formats, video servers. Storage structure and File organizations, Indexing, Network and hierarchical models, DBTG model, implementations, tree structure diagram, implementation techniques, comparison of the three models, Basics of Decision Support System, Introduction and Installation of MYSQL, SQLLITE, MSSQL, MongoDB, PHP Introduction, Installing PHP, PHP and MYSQL, Case Study : Database Design of an Internet Bookshop

Books Recommended:

1. A Silberschatz, H.F Korth, Sudersan “Database System Concepts” –, MGH Publication.
2. C.J Date “An introduction to Database Systems” –6th ed.
3. Elmasri&Navathe “Fundamentals of Database systems” – III ed.
4. B.C. Desai. “An introduction to Database systems” BPB
5. Raghurama Krishnan “Database Systems” TMH
6. Shio Kumar Singh, “Database Systems”, PEARSON

MCA I Sem - Paper Code-10605 :Problem Solving using C & C++

Credit 4; Theory Max/Min(60/21), CCE Max/Min(40/20)

Course Objectives : To help the students to acquire basic knowledge in concepts and theory of principles of programming and to familiarize the students in the C and C++ programming language.

Course Outcomes:

On completion of this course, the student will be able to:

CO1: Learn basic concepts of problem solving using programming language.

CO2: Understand concept of Derived data type and its use in programming problems.

CO3: Select a suitable programming construct and in-built data structure for the given problem.

CO4: Design, develop, document, and debug modular programs.

CO5: Apply procedure oriented &object-oriented paradigm for problem solving

UNIT–I

C language programming: Flowchart, Algorithm, Introduction to C language, Simple I/O functions (scanf, printf, gets, puts, getchar, getche, getch); Data types in C, Assignment statement, Arithmetic, Operators, Precedence of operators. **Control structure:** The if-else statements, nesting of if-else, switch statement, Loops: while and do-while loop, the for loop, Functions: User defined functions, Returning a value from a function, Local and Global variables, Parameters, Type declaration of a function, Functions with more than one parameters, Storage classes

UNIT–II

Arrays &Pointers : Declaration and initialization; the break and continue statement; String and Character arrays, operations with arrays; searching in array (linear and binary). Sorting an array, String & String functions: sprintf, strcpy, scanf, strcat, strlen, malloc, strcmp. Two dimensional array.**Pointers:** The concept of pointers, pointer arithmetic, passing pointers as parameters, pointer & arrays, Pointer to pointers, Array of pointers to strings.

UNIT–III

Structures: The concept of structure, Initializing, Arrays of structures, Arrays within structures, Structures within Structures, passing structures to function; unions.

Files: Files in 'C', Modes for files; Functions used in files (getc, putc, fopen, fclose, fscanf, fread, fwrite, fprintf, fseek, ftell, rewind), text versus binary files; command line arguments; Preliminaries of C preprocessor Directives, (#define, #undef, #include, #ifdef, #ifndef, #endif, #else, #if).

UNIT–IV

Introduction to OOP : Basic concepts of OOP : Object, Classes, Inheritence, Polymorphism, Reusability; Benefits & applications of OOP, Characters used in C++. Basic data types, user defined data types, use of conditional and looping statements in C++. Arrays in C++. Reference variable, **Functions** : prototypes, default arguments, const arguments in functions, Inline functions, call by value, call by reference, function overloading.

Classes and objects : Declaring a class, defining an object, data hiding and encapsulation, public and private data members & functions, friend function. Pointer to data member, pointer to member function and pointer to object, virtual function.

Unit-V

Constructors & Destructors: Parametrized constructors, multiple constructor in a class, copy constructors, object as function arguments, returning objects, the this pointer, memory allocation for objects. **Operator Overloading**: Unary and binary operators.**Inheritence** :Inheritence and derivation, single, multilevel, multiple, hierarchical & hybrid inheritence, Overriding functions, virtual function;Manipulators, managing output with manipulators, user defined manipulators with arguments;**Streams** : C^{++} streams, stream classes;. Files : Classes for file stream operations, file I/O with streams.

Books Recommended:

1. Gottfried, Programming with C, TMH
2. E. Balagurusamy, Programming in ANSI C, TMH
3. Y. Kanetkar, Let us C, BPB
4. Y. Kanetkar, Let us C++, BPB
5. E. Balagurusamy, Object Oriented Programming with C^{++} , TMH
6. Robert Lafore, Object Oriented Programming in Turbo C^{++} ,Galgotia Publications

MCA II Sem-Paper Code-20601:Data Structure & Analysis of Algorithms

Credit 4; Theory Max/Min(60/21), CCE Max/Min(40/20)

Course Objectives : The aim of this course is to provide knowledge of various data structures, operations on them & various applications and searching, sorting algorithms and analysis of algorithms.

Course Outcomes:

On completion of this course, the student will be able to:

CO1: Identify best suited data structure for the problem at hand.

CO2: Identify the programming constructs to optimize the performance of the data structure in different scenarios.

CO3: Describe the algorithm design techniques: iteration, divide and conquer, dynamic programming, greedy approach algorithms.

CO4: Analyze the strengths and weaknesses of each technique.

CO5: Identify and apply technique(s) suitable for simple applications.

Unit – I

Data Structure : types, operations on data structures, Algorithm analysis, time space complexities; Stack : Contiguous implementation of stack, PUSH & POP, applications of stack : Various polish notations – infix, prefix, postfix, conversion using stack; Queue : implementation of queue, operations on queue, priority queue,Linear queue and circular queue, various operation on queue.

Unit – II

General List: list and it's contiguous& linked implementation, it's drawback; singly linked list-operations on it; doubly linked list-operations on it; circular linked list; applications of linked list,

Trees : Definition – height, depth, order degree, etc; Binary Tree, complete binary tree, implementation of Binary tree, Tree traversal algorithms – preorder, inorder& post order, Binary search tree, operations on binary tree, application of binary tree.

Unit – III

Graph: related definition, implementation of graph, traversal algorithms - depth first search, breadth first search; minimum spanning tree, shortest path algorithms, Searching : Sequential search, binary search, indexed sequential search,Hashing, hash methods, collisions & its resolution techniques. Sorting :bubble sort, selection sort, heap sort, insertion sort and tree sort

Unit – IV

Divide and Conquer: Structure of divide and conquer algorithm, Merge sort, Quick sort; Asymptotic Notation;Greedy Method: Overview of the greedy paradigm examples of exact optimization solution(minimum cost spanning tree), Approximate solution (Knapsack problem), Single source shortest paths. Branch and bound; 0/1 Knapsack problem, Traveling Salesman Problem.

UNIT- V

Dynamic programming: Overview, Applications: Shortest path in graph, Traveling salesman Problem, longest Common sequence. Back tracking: Overview, 8-queen problem, and Knapsack problem, Computational complexity, Polynomial and non polynomial time complexity, NP hard and NP Complete Classes.

Books Recommended:

1. Kruse R.L. Data Structures and Program Design in C; PHI
2. Aho "Data Structure & Algorithms"
.3. Trembly "Introduction to Data Structure with Applications".
4. TennenBaum A.M. & others: Data Structures using C & C++; PHI
5. Horowitz &Sawhaney: Fundamentals of Data Structures, Galgotia Publishers.
6. Ullman "Analysis and Design of Algorithm" TMH
7. T. H. Cormen, Leiserson ,Rivest and Stein, "Introduction of Computer algorithm," PHI

MCA II Sem-Paper Code-20602 :Software Engineering Methodologies

Credit 4; Theory Max/Min(60/21), CCE Max/Min(40/20)

Course Objectives : To acquire the knowledge related to software development life cycle models, software requirement analysis & specification, software design, coding & testing and software reliability & quality assurance.

Course Outcomes:

On completion of the course, the student is expected to:

CO1: Demonstrate an understanding of software engineering layered technology and software process models that provide a basis for the software development lifecycle.

CO2: Describe software/system requirements and understand the processes involved in the discovery and documentation of these requirements.

CO3: Practice of software project planning and designing.

CO4: Test software using verification and validation & Appreciate software project management that includes project planning, project estimation techniques, risk management, quality management, and configuration management.

CO5: Understand the concept of re engineering and case tools.

UNIT -I

System concepts and Information system environment: The system concept, characteristics ofsystem, elements of system, The System Development Life Cycle, The Role of System Analyst.Introduction system planning & initial investigation, various information gathering tools, feasibility study, structures tools of system analysis, various methods of processdesign, form design methodologies, introduction to information system testing, quality assurance.

UNIT -II

Software Process, Product and Project: The Product : Software, Software Myths, The process :Software Engineering : A Layered Technology, Software Process Models, The Linear SequentialModel, The Prototyping Model, The RAD Model, Evolutionary Software Process Models, Component – Based Development, Fourth Generation Techniques, Software process and Project Metrics : Software measurement

UNIT-III

Software Project Planning and Design: Software Project Planning : Project planning objectives, Decomposition Techniques, Empirical estimation models, The Make/Buy Decision, Risk analysis. Software Design: Design Principles, Cohesion & Coupling, Design notation andspecification, structure design methodology.

UNIT-IV

Software Quality Assurance and Testing : Software Quality Assurance : Quality Concepts, The Quality Movement, Software Quality Assurance, Software Reviews, Formal Technical Reviews, Formal Approaches to SQA, Statistical Software Quality Assurance, Software Reliability, Mistake Proofing for Software, Introduction to ISO standard. Testing Strategies: A strategicapproach of software testing strategic issues, unit testing, integration testing, validation testing,system testing, the art of debugging. OOA, OOD.

UNIT-V

Advanced Topics: MIS &DSS:Introduction to MIS, long range planning, development andimplementation of an MIS, applications of MIS in manufacturing sector and in service sector. Decision Suppost System concepts, types of DSS. Object Oriented Software Engineering: Object Oriented Concepts, Identifying the Elements of an Object Model, Management of Object Oriented Software Projects. CASE tools, Re-engineering.

Books Recommended:

1. R. S. Pressman, “Software Engineering – A practitioner’s approach”, 6th ed., McGraw Hill Inc
2. PankajJalote “Software Engg” Narosa Publications.
3. Ian Sommerville : Software Engineering 6/e (Addison-Wesley)
4. Richard Fairley : Software Engineering Concepts (TMH)
5. Elis Awad, "System Analysis & Design", Galgotia publications
6. Hoffer “ Modern System Analysis & Design” 3e, Pearson Edition

MCA II Sem-Paper Code-20603 :Computer Graphics & Visualization

Credit 4; Theory Max/Min(60/21), CCE Max/Min(40/20)

Course Objectives : To acquire the knowledge related to computer graphics, transformations, windowing & clipping, algorithms and shading & Color models.

Course Outcomes:

After the completion of this course, students will be able to:

CO1 : Describe architecture of basic Input/ Output devices and their underlying working principles along with various primitives for drawing shapes.

CO2 : Illustrate the digitization process of images and related algorithms for drawing basic geometric figures in the 2D Transformation.

CO3 : Learn windowing and clipping concept and color model of graphics.

CO4 : Apply fundamental mathematics in producing spatial 3D-image of an object in an inherently 2D display device.

CO5 : Understand the basics of OpenGL API and to manipulate graphics & images.

UNIT-I

Computer Graphics : definition, classification & applications, Development of Hardware &Software for Computer Graphics. Display devices, Hard copy devices. Interactive Input devices,display processor, Line drawing; various algorithms and their comparison, circle generation-Bresenham'smid point circle drawing algorithm, mid point ellipse drawing algorithm.

UNIT-II

Attributes of output primitives, line style, color and intensity, Area filling algorithms, Scan line algorithm, boundary fill,flood fill algorithm, Antialiasing techniques. Two dimensionaltransformations; translation, scaling, rotation, reflection sheering, composite transformation, transformation commands, character generation.

UNIT-III

Viewing coordinates, Window, view port, clipping, Window to view port transformation, lineclipping algorithm; Cohen Sutherland, polygon clipping; Sutherland Hodgman algorithm, 3D clipping : Normalized view volumes, view port clipping, clipping in homogeneous coordinates. Illumination model: Light sources, diffuse reflection specular reflection, reflected light, intensity levels, surface shading; phong shading gouraud shading, color models like RGB, YIQ, CMY, HSV etc.

UNIT-IV

3-D Viewing: Three-dimensional concepts, 3D display techniques, 3D representation polygon &curved surfaces. Design of curves & surfaces- Bezier's Method, B-spline method, 3Dtransformation transition, scaling, composite transformation rotation about arbitrary axis,projections: Parallel & Perspective, Hidden surface and line removal; back face removal, depthbuffer and scan line methods.

UNIT-V

Introduction to OPENGL- Points, Lines – Specifying a 2D World Coordinate, Reference Frame inOpenGL- OpenGL Point Functions, Line Functions, Polygon Fill Area Functions, Vertex Arrays - Line Drawing Algorithms - Circle Generation Algorithm, Filled Area Primitives, OpenGL fill AreaFunctions - Scan Line Polygon Filling Algorithms – Boundary Fill - Flood Fill Algorithms.

Books Recommended:

1. Donald Hearn and Pauline Baker, "Computer Graphics with OpenGL ", Third Edition, Prentice Hall of India, 2009.
2. S. Harrington – "Computer Graphics - a Programming approach" (2nd ed) McGrawhill.
3. New Mann &Sprovl- "Principles of interactive computer graphics" (2nd ed) McGrawhill.
4. Roger S. David "Procedural Elements for Computer Graphics", McGraw Hill.
5. Roger S David "Mathematical Elements for Computer Graphics", McGraw Hill.
6. Foley &Vandan "Computer Graphics Principles & Practice in "C" "AddisionWesly.

MCA II Sem-Paper Code-206041 :Artificial Intelligence

Credit 4; Theory Max/Min(60/21), CCE Max/Min(40/20)

Course Objectives : To acquire the knowledge related to artificial intelligence, problem solving, search and control strategies, natural language processing and probabilistic reasoning & uncertainty

Course Outcomes:

On completion of this course, the student will be able to:

CO1: Describe various approaches to Artificial Intelligence.

CO2: Design intelligent agents.

CO3: Describe and apply concepts, methods, and theories of search, heuristics, games, knowledge representation, planning.

CO4: Acquire basics knowledge of Natural language processing.

CO5: Understand the limitations of Artificial Intelligence techniques.

UNIT-I

General Issues and Overview of AI : The AI problems, what is an AI technique, Characteristicsof AI applications. Introduction to LISP programming: Syntax and numeric functions, Basic list manipulation functions, predicates and conditionals, input output and local variables, iteration and recursion, property lists and arrays.

UNIT-II

Problem Solving, Search and Control Strategies : General problem solving, production systems, control strategies forward and backward chaining, exhaustive searches - depth first,breadth first search. Heuristic Search Techniques : Hill climbing, branch and bound technique,best first search & A* algorithm, AND / OR graphs, problem reduction & AO* algorithm,constraint satisfaction problems.

UNIT-III

Knowledge Representations : First order predicate calculus, skolemization, resolution principle& unification, interface mechanisms, horn's clauses, semantic networks, frame systems and valueinheritance, scripts, conceptual dependency.

UNIT-IV

Natural Language processing : Parsing techniques, context freegrammer, recursive transitions nets (RNT), augmented transition nets (ATN), case and logic grammers, symantic analysis.Game playing :Minimax search procedure, alpha-beta cutoffs, additional refinements. Planning: Overview an example domain the block word, component of planning systems, goal stackplanning, non linear planning.

UNIT-V

Probabilistic Reasoning and Uncertainty : Probability theory, bayes theorem and Bayesian networks, certainty factor.Expert Systems : Introduction to expert system and application ofexpert systems, various expert system shells, knowledge acquisition, casestudies, MYCIN. Learning ; Rote learning, learning by induction, explanation based learning.

Books Recommended:

1. Elaine Rich and Kevin Knight “Artifical Intelligence” - Tata McGraw Hill.
2. “Artifical Intelligence” 4 ed. Pearson.
3. Dan W. Patterson “Introduction to Artifical Intelligence and Expert Systems”, Prentice India.
4. Nils J. Nilson “Principles of Artifical Intelligence”, Narosa Publishing House.
5. Clocksin&C.S.Melish “Programming in PROLOG”, Narosa Publishing House.
6. M.Sasikumar,S.Ramani etc. “Rule based Expert System”, Narosa Publishing House.

MCA II Sem-Paper Code-206042 :Cloud Computing

Credit 4; Theory Max/Min(60/21), CCE Max/Min(40/20)

Course Objectives : To acquire the knowledge related to cloud, its security and challenges.

Course Outcomes:

On completion of this course, the student will be able to:

CO1 : Understand the architecture and infrastructure of cloud.
CO2 : Learn the resource virtualization technique.
CO3 : Build the appropriate file system and database.
CO4 : Understand cloud security and challenges.
CO5 : Evaluate third party cloud services for a real world problem.

Unit-I

Introduction: Historical development,Vision of Cloud Computing, Characteristics of cloud computing as per NIST, Cloud computing reference model,Cloud computing environments, Cloud services requirements, Cloud and dynamic infrastructure, Cloud Adoption and rudiments.Overview of cloud applications: ECG Analysis in the cloud, Protein structure prediction, GeneExpression Data Analysis, Satellite Image Processing,CRM and ERP, Social networking.

Unit-II

Cloud Computing Architecture: Cloud Reference Model, Types of Clouds, CloudInteroperability & Standards, Scalability and Fault Tolerance; Cloud Solutions: CloudEcosystem, Cloud Business Process Management, Cloud Service Management. Cloud Offerings:Cloud Analytics, Testing Under Control, Virtual Desktop Infrastructure.

Unit –III

Cloud Management & Virtualization Technology: Resiliency, Provisioning, Assetmanagement,Concepts of Map reduce, Cloud Governance, High Availability and DisasterRecovery. Virtualization: Fundamental concepts of compute,storage, networking, desktop andapplication virtualization.Virtualization benefits, server virtualization, Block and file levelstorage virtualization, Hypervisor management software, Infrastructure Requirements, VirtualLAN(VLAN) and Virtual SAN(VSAN) and their benefits.

Unit-IV

Cloud Security: Cloud Information security fundamentals, Cloud security services, Designprinciples, Secure Cloud Software Requirements, Policy Implementation, Cloud ComputingSecurity Challenges, Virtualization security Management, Cloud Computing Security Architecture.

Unit-V

Market Based Management of Clouds, Federated Clouds/Inter Cloud: Characterization & Definition, Cloud Federation Stack, Third Party Cloud Services.Case study : Google App Engine, Microsoft Azure, Hadoop, Amazon, Aneka

Books Recommended:

1. Buyya, Selvi ," Mastering Cloud Computing ",TMH Pub
2. Kumar Saurabh, "Cloud Computing" , Wiley Pub
3. Krutz , Vines, "Cloud Security " , Wiley Pub
4. Velte, "Cloud Computing- A Practical Approach",TMH Pub
5. Sosinsky, " Cloud Computing" , Wiley Pub

MCA II Sem-Paper Code-20605 : JAVA Programming & Technologies

Credit 4; Theory Max/Min(60/21), CCE Max/Min(40/20)

Course Objectives : To acquire knowledge related to the programming language Java and creation of GUI interface.

Course Outcomes:

On completion of this course, the student will be able to:

CO1: Understand the object-oriented concepts – Classes, Objects, Inheritance, Polymorphism– for problem solving.

CO2 : Design, implement, document, test, and debug a Java application consisting of multiple classes.

CO3 : Handle program exceptions.

CO4 : Handle input/output through files.

CO5 : Create Java applications with graphical user interface (GUI).

UNIT-I

The Java Environment: History of Java: Comparison of Java and C++; Java as an objectoriented language, Basic idea of application and applet; Basics: Data types; Operators- precedenceand associativity; Type conversion; Java control statements; arrays; memory allocation and garbage collection in java.Object Oriented Programming in Java: Class& Object; Packages; scope and lifetime; Access specifies;Constructors; Copy constructor; this pointer; finalize () method; arrays; Memory allocation andgarbage collection in java, keywords Inheritance : Inheritance basics, method overriding,dynamics method dispatch, abstract classes.

UNIT-II

Interfaces : defining an interface, implementing & applying interfaces, extending interfaces. Multithreading and Exception Handling: Basic idea of multithreaded programming; The lifecycle of a thread; Creating thread with the thread class and runnable interface; Thread synchronization; Thread scheduling; Producer-consumer relationship; Daemonthread, Selfish threads; Basic idea of exception handling; The try, catch and throw; throwsConstructor and finalizers in exception handling; Exception Handling.

UNIT-III

Applets: the class hierarchy for applets; Life cycle of applet; HTML Tags for applet.The AWT: The class hierarchy of window fundamentals; The basic user interface components Label, Button, Check Box, Radio Button, Choice menu, Text area, Scroll list, Scrollbar; Frame; Layout managers;The Java Event Handling Model,ignoring the event, Self containedevents, Delegating events; The event class hierarchy; The relationship between interface, methodscalled, parameters and event source; Adapter classes; Event classes.

UNIT-IV

Input/Output : Exploring Java I/O., stream classes The Byte stream : Input stream,output stream, file input stream, file output stream, print stream, Random access file, thecharacter streams, Buffered reader, buffered writer, print writer, serialization. JDBC: JDBCODBCbridge; The connectivity model; The driver manager; Navigating the resultset objectcontents; java.sql Package; The JDBC exception classes; Connecting to Remote database.

UNIT-V

Networking & RMI: Java Networking : Networking Basics : Socket, Client server, reservedsockets, proxy servers, Inet address, TCP sockets, UDP sockets. ; RMI for distributed computing;RMI registry services; Steps of creating RMI Application and an example. Collections: Thecollections framework, collection interfaces, collection classes.

Books Recommended:

1. Naughton&Schildt “The Complete Reference Java 2”, Tata McGraw Hill
2. Deitel “Java- How to Program:” Pearson Education, Asia
3. Horstmann& Cornell “Core Java 2” (Vol I &II) , Sun Microsystems
4. lvanBayross “Java 2.0” : BPB publications
5. Ivor Horton’s “Beginning Java 2, JDK 5 Ed., Wiley India

MCA III Sem-Paper Code-30601 :COMPILER DESIGN

Credit 4; Theory Max/Min(60/21), CCE Max/Min(40/20)

Course Objectives : To acquire the knowledge related to compiler working

Course Outcomes:

On completion of this course, the student will be able to:

CO1: Describe how different phases of a compiler work.

CO2: Understand formal languages and automata.

CO3: Implement top down and bottom up parsing algorithms.

CO4: Use compiler tools like lexfor implementing syntax directed translator.

CO5: Learn implementation of block structure languages.

Unit I

Compilers & Interpreters: aspects of compilation, structure of compiler, compilation of expression compilation of control structures, interpreters. Software tool.Linker & Loaders: Relocation & linking concepts, design of linkers, self relocating programs, linking for overlays, loaders : A two pass loader scheme.

Unit II

Formal Language and Automata: Definition & description, Chomskey classification of languages, regular grammar, finite automata, equivalence of FA and regular expression. Minimizing the number of states of a DFA, FSM with output (mealy and moore models).Lexical Analysis: Role of lexical analyzer, specification and recognition of tokens, automatic generation of lexical analyzer, Implementation of lexical analyzer using lex.

Unit III

Context free grammar, derivation of parse tree, capabilities of CFGs, normal form for CFG, Pushdown automata, relation of PDA with CFG, capabilities of CFG, Parser, Shift reduce parsing, operator precedence parsing top down parsing, Predictive parsing, LR parser, the canonical collection of LR(0) items, constructing SLR parsing table, constructing canonical LR parsing table, constructing LALR parsing table

Unit IV

Syntax direct translation schemes, implementation of syntax directed translators, intermediate code, postfix notation, parse tree and syntax tree, three address code, quadruples and triples, translations of assignment statement, Boolean expression, statements that alter the flow of control, cost fix translations, translation with top down parser.

Unit V

Symbol table, the contents of symbol tables, data structure for symbol tables, representing scope information, run time storage administration, implementation of a simple stack allocation schemes, implementation of block structure languages, storage for block structured languages.

Books Recommended :

1. Principal of compiler design by Afred V. Aho, Jeffrey D. Ulman.
2. “Compiler: principals Technique and tools”,Aho, Ravi Sethi, Ulman, Pearson Education, VIII Ed 2002
3. Mishra &ChanderShekhar “Theory of Computer Science (Automate, Language &Computations)”, PHI.
4. Hopcroft& Ullman “Introduction to Automata theory, languages & Computation”,Narosha Publishing house.
5. LewishPapadimutrau “Theory of Computation” , Prentice Hall of India, New Delhi.

MCA III Sem-Paper Code-30602 :Computer Networking & Internet

Credit 4; Theory Max/Min(60/21), CCE Max/Min(40/20)

Course Objectives : To acquire the knowledge related to computer networks and OSI reference model and seven layers of OSI.

Course Outcomes:

On completion of this course, the student will be able to:

CO1 : Learn the basics of Computer network Technologies.

CO2 : Understand the fundamentals of types of transmission mediums and interfacing standards along with the current edge of the data communication techniques.

CO3 : Learn flow control and error control techniques and Computer Network protocols at Conceptual level.

CO4 : Learn WAN and TCP/IP.

CO5: Learn the architecture & protocols of email and www.

UNIT-I

Introduction: Computer Network, Layered Network Architecture-Review of ISO-OSI Model, Transmission Fundamentals, Communication Media : guided & unguided, Modulation & Demodulation, Digital to Analog Conversion-Frequency Modulation (FM), Amplitude, Modulation (AM), Phase Modulation (PM), Contention Protocol-, Stop-Go-Access Protocol, Aloha Protocol- Pure aloha & Slotted aloha, Carrier sense multiple access with collision detection (CSMA/CD)

UNIT-II

Data Security and Integrity: Parity Checking Code, Cyclic redundancy checks (CRC),Hamming Code, Protocol Concepts, Basic flow control, Sliding window protocol -Go-Back-Nprotocol and selective repeat protocol, Protocol correctness- Finite state machine

UNIT-III

Local Area Network: Ethernet : 802.3 IEEE standard, Token Ring : 802.5 IEEE standard, Token Bus : 802.4 IEEE standard, FDDI Protocol, DQDB Protocol, Inter Networking, Layer 1connections-Repeater, Hubs, Layer 2 connections- Bridges, Switches, Layer 3 connections-Routers, Gateways.

UNIT-IV

Wide Area Network: Introduction, Network routing, Routing Tables, Types of routing, Dijkstra's Algorithm, Bellman-Ford Algorithm, Link state routing, Open shortest path first,Flooding, Broadcasting, Multicasting, Congestion & Dead Lock, Internet Protocols, InternetLayer-Class full Addressing – Class less addressing – Private Addresses – Subnets – Subnet masksOverview ofTCP/IP, Transport protocols, Elements of Transport Protocol, Transmission control protocol(TCP), User data-gram protocol (UDP).

UNIT-V

Network Security, introduction to cryptography, Virtual Terminal Protocol, Overview of DNS, SNMP, email - Architecture and services, MIME, SMTP, Mail Gateways, Remote login, File Transfer Protocol, World Wide Web: Introduction, Architectural overview, static and dynamic web pages, HTTP, LDAP, Browser Architecture.

Books Recommended:

1. A.S.Tanenbaum, "Computer Network", 4th addition,PHI
2. Forouzan "Data Communication and Networking 3ed", TMH
3. J.F.Hayes, "Moduling and Analysis of Computer Communication Networks", Plenum Press
4. D.E.Comer, "Internetworking with TCP/IP", Volume Ist&IInd, PHI
5. Willium Stalling, "Data & Computer communications",Maxwell Macmillan International Ed.
6. D.Bertsekas and R.Gallager,"Data Networks", 2nd Ed. ,PHI.
7. G.E. Keiser ,"Local Area Networks ", McGraw Hill, International Ed.

MCA III Sem-Paper Code-306031 :Cryptography & Network Security

Credit 4; Theory Max/Min(60/21), CCE Max/Min(40/20)

Course Objectives : To acquire the knowledge of classical encryption techniques, secret and public key cryptography, message authentication, IP, web and system security.

Course Outcomes:

On completion of this course, the student will be able to:

CO1: Learn classical encryption techniques and block cipher modes of operation.

CO2: Implement a symmetric and asymmetric cryptographic methods

CO3 : Learn Message authentication and Hash functions.

CO4: Describe the role and implementation of digital signatures.

CO5 : Understand IP security, Web security and system security.

UNIT-I

Classical Encryption Techniques: Symantec Cipher model, substitution Techniques, transposition techniques, rotor machines, steganography. Block Ciphers and the Data Encryption standards: Simplified DES, block cipher principles, the data encryption standard, the strength of DES, block cipher design principles, block cipher modes of operation,Triple DES.

UNIT-II

Confidentiality using symmetric encryption: Placement of Encryption function, trafficconfidentiality, key distribution; Public key Encryption, Public key cryptographyand RSA: Principles of Public key cryptosystems, the RSA algorithm; Key Management otherpublic key cryptosystems : Key management, Diffie-Hallman key exchange algorithm.

UNIT-III

Message authentication and Hash function : Authentication Requirements, Authenticationfunctions, message authentication codes, hash functions, security of hash function and MACs.Hash Algorithms: MD5 message digest algorithm, secure Hash algorithm;Digital Signature and Authentication protocols: Digital signatures, Authentication protocols, anddigital signature standard. Authentication Applications: Kerberos, X.509 Authentication service.

UNIT-IV

Electronic Mail Security: Pretty Good privacy, S/MIME; IP Security: IP Security overview, IP security architecture, authentication header, encapsulating security payload, combining security associations, key management; Web Security: Web security considerations, Secure sockets layer and transport layer security, Secure Electronic Transaction(SET).

UNIT-V

System security: Intruders, intrusion detection, and password Management. Malicious software:Viruses and related threats, virus countermeasures. Firewalls: Firewall Design Principles, Trustedsystems.

Books Recommended:

1. William Stallings “Cryptography and Network Security”, 3 ed, Pearson Education.
2. W.Stallings “ Network security Essential “ Applications & Standards”, Pearson ed.
3. Kanfren “Network Security : Private Communications in a public world 2/e
4. Eric Maiwald “ Network Security : A Preginner’s Guide, second ed.”, Tata Mcgraw Hill.
5. Roberta Bragg “ Mark Rhodes, Ousley& Keith Strassberg Network Security : The Complete

MCA III Sem-Paper Code-306032 :Mobile Computing

Credit 4; Theory Max/Min(60/21), CCE Max/Min(40/20)

Course Objectives : To acquire the knowledge related to wireless communication, mobile data communication, WLAN and Bluetooth technology.

Course Outcomes:

On completion of this course, the student will be able to:

CO1: Learn multiple access technology for Wireless Communication.

CO2: Understand the concept of mobile data communication.

CO3: Learn Digital Cellular Systems and Standards.

CO4: Describe Components and working of Wireless LAN**.**

CO5: Understand Bluetooth technology & WLL architecture.

UNIT-I

Overview of OSI Model: Significance of layered Model, PDUs, SDUs, IDUs, Higher layer Protocols, Switching and Components : Introduction, Applications, history of wired & wireless Communication systems; Radio Transmission : frequencies,signal propagation, antenna, types of modulation, FHSS, DSSS; Multiple Access technology for Wireless Communication : FDMA,TDMA,CDMA Cellular System: Introduction, types.

UNIT-II

Mobile Data Communication :Cellular Telephony; Structure, Fading, Small scale fading, Multi-path Fading, Speech Coding, Error Coding and Correction, Hand off Management, Switching and authentication, MTSO interconnections, frequency hopping, frequency reuse; Circuit Switched Data Services & Packet Switched Data Services on Cellular Networks, Personal Communication Systems (PCS) Architecture, Digital Enhanced Cordless Telecommunications (DECT), Personal Access Communications System (PACS).

UNIT-III

Digital Cellular Systems and Standards : GSM System overview, Architecture; GSM Practical Model, GSM Mobility Management, SMS security aspects, Broadcast System overview, General Packet Service (GRPS) Architecture, GRPS Network, Interfaces and Procedures (2.5 G), 3G Mobile Services: UMTS and International Mobile Telecommunications (IMT-2000), W-C DM and CDMA 2000, Quality of service in 3G .

UNIT-IV

WLAN: Components and working of Wireless LAN, Transmission Media for WLAN, Infrastructure & types of WLAN, IEEE 802.11 Standards, Protocols for WLAN, Multiple Access with Collision Avoidance (MACA), MACAW, Infrared technology. Wireless Application Protocol (WAP) model, architecture -Gateway, WAP protocols and WML.

UNIT-V

Introduction to. Bluetooth technology. Wireless in Local Loop (WLL) architecture, products. Satellite as a switch, Components of VSAT system, VSAT topologies access schemes.

Books Recommended :

1. Jochen Schiller "Mobile Communication", Pearson Education
2. Yi -Bing Lin and ImrichChlamtac "Wireless and Mobile Network Architectures", Wiley India. .
3. Raj Pandaya "Mobile and Personal Communication System & Services". '

MCA III Sem-Paper Code-306033 : Software Quality Assurance

Credit 4; Theory Max/Min(60/21), CCE Max/Min(40/20)

Course Objectives : To acquire the knowledge related to software quality, testing, integration, system test planning, automation & execution and software quality standards.

Course Outcomes:

On completion of this course, the student will be able to:

CO1: Understand quality management processes.

CO2: Understand the importance of standards in the quality management process and role of SQA function in an organization.

CO3: Gain knowledge of software quality assurance.

CO4: Understand the need and purpose of software testing.

CO5: Learn the five views of software quality.

Unit-I

Introduction: Software Quality, Role of testing, v & v, objectives and issues of testing, Testing activities and levels, Sources of Information for Test Case Selection, White-Box and Black-Box Testing, Test Planning and Design, Monitoring and Measuring Test Execution, Test Tools and Automation, Test Team Organization and Management; Unit Testing: Concept, Static Unit Testing, Defect Prevention, Dynamic Unit Testing, Mutation Testing, Debugging.

Unit-II

Control Flow & Data Flow Testing: Outline of CFT, CF Graph, Paths in a Control Flow Graph, Path Selection Criteria,Generating Test Input, Examples of Test Data Selection; Overview of Dynamic Data Flow Testing, Data Flow Graph, Data Flow Testing Criteria, Comparison of Testing Techniques.

Unit-III

System Integration Testing & Test Design: Concept of Integration Testing, Different Types of Interfaces and Interface Errors, Granularity of System Integration Testing, System Integration Techniques, Test Plan for System Integration, Off-the-Shelf Component Testing, System Test Categories.

Unit-IV

System Test Planning, Automation & Execution: Structure of a System Test Plan, Test Approach, Test Suite Structure, Test Environment, Test Execution Strategy, Test Effort Estimation, Scheduling and Test Milestones, System Test Automation, Selection of Test Automation Tools, Test Selection Guidelines for Automation, Structure of an Automated Test Case, Test Automation Infrastructure Metrics for Tracking System Test, Metrics for Monitoring Test Execution, Beta Testing, System Test Report, Measuring Test Effectiveness, Acceptance Testing.

Unit-V

Software Quality: Five Views of Software Quality, McCall's Quality Factors and Criteria, Quality Factors Quality Criteria, Relationship between Quality Factors and Criteria, Quality Metrics, ISO 9126 Quality Characteristics, ISO 9000:2000 Software Quality Standard ISO 9000:2000 Fundamentals, ISO 9001:2000 Requirements.

Books Recommended:

1. N.S. Godbole, Software Quality Assurance: Principles and Practice for the New Paradigm (2nd Ed.), Narosa Publishing, 2017.
2. S.H. Kan, Metrics and Models in Software Quality Engineering (2nd ed.), Pearson Education Inc., 2003.
3. Stephen H.Khan ,Metrics and Models in Software Quality Engineering PearsonEducation,India
4. Shari Lawrence Pfleeger,"Software Engineering Theory and Practice PearsonEducation,India.

MCA III Sem-Paper Code-306034 : Internet Of Things

Credit 4; Theory Max/Min(60/21), CCE Max/Min(40/20)

Course Objectives : To acquire the knowledge related to Internet of Things, types of sensors, IOT smart applications, protocols and challenges.

Course Outcomes:

On completion of this course, the student will be able to:

CO1 : Understand the IOT Terminology and Technology.

CO2 : Describe IOT applications.

CO3 : Analyze Protocol standardization for IOT.

CO4 : Perform an analysis of IOT security issues.

CO5: Identify the role of cloud computing in IOT.

Unit-I

Introduction – Digital Electronics, Logical gates and its working, Types of sensors: Temperature sensor (LM35,RTD,Thermocouple), Light sensor(photodiode, optocoupler), Distance and range sensor (IR,LVDT), Accelerometer sensor, Touch screen sensor.

Unit-II

Introduction to IOT - Definition & Characteristics,Importance of IoT,Physical Design of IOT, Logical Design of IOT, IOT Enabling technologies,IoT and M2M, IOT Platform Design Methodology,Purpose & Requirements Specification, Process Specification, Domain Model Specification, Information model Specification, Service specification, IOT level Specifications, Functional View Specifications, Operational View Specification, device and component integration, application development

Unit-III

Iot Smart X Application - Smart Cities, Smart Energy & Smart Grid, Smart Mobility & transport, Smart Home, Smart Building & Infrastructure, Smart Factory & Manufacturing, Smart Health, Smart Logistics & Retails. **Embedded suite for IoT Physical device –** Arduino / Raspberry Pi Interfaces, Hardware requirement of Arduino / Pi, Connecting remotely to the Arduino /Raspberry Pi, GPIO Basics

Unit-IV

Protocols in IOT: RFID: Introduction, Principle of RFID, Components of an RFID system, RFID Protocols & NFC protocols,CoAP, XMPP, AMQP, MQTT

Resource Management In The Internet Of Things: Clustering, Software Agents, Clustering Principles in an Internet of Things Architecture, Design Guidelines, Software Agents for Object Representation, Data Synchronization.

Unit-V

Internet of things Challenges: Vulnerabilities of IoT, Security, Privacy & Trust for IoT, Security requirements Threat analysis, Use cases and misuse cases, Introduction to cloud computing, Role of Cloud Computing in IoT, Cloud-to-Device Connectivity,Cloud data management, cloud data monitoring, Cloud data Exchange.

Books Recommended:

1.Pethuru Raj, Anupama C. Raman, The Internet of Things Enabling Technologies, Platforms, and Use Cases, CRC Press Taylor & Francis Group, International Standard Book Number-13: 978-1-4987-6128-4

2. Internet of Things: A Hands-on Approach", by ArshdeepBahga and Vijay Madisetti (UniversitiesPress)

3. RajkumarBuyya, Amir VahidDastjerdi Internet of Things – Principals and Paradigms, Morgan Kaufmann is an imprint of Elsevier, ISBN: 978-0-12-805395-9 HakimaChaouchi, " The Internet of Things Connecting Objects to the Web" ISBN : 978-1- 84821-140-7, Willy Publications

4. Olivier Hersent, David Boswarthick, Omar Elloumi, The Internet of Things: Key Applications and Protocols, ISBN: 978-1-119-99435-0, 2 nd Edition, Willy Publications

5. Daniel Kellmereit, Daniel Obodovski, "The Silent Intelligence: The Internet of Things",. Publisher: Lightning Source Inc; 1 edition (15 April 2014). ISBN-10: 0989973700, ISBN-13: 978- 0989973700.

MCA III Sem-Paper Code-306041 :DOT NET Technology

Credit 4; Theory Max/Min(60/21), CCE Max/Min(40/20)

Course Objectives : To acquire the knowledge related to .Net Technology, framework and programming constructs, window forms and file handling.

Course Outcomes:

On completion of this course, the student will be able to:

CO1 : Learn .NET Technology and IDE.

CO2 : Understand the Structure Exception Handling Exception Filtering

CO3 : Describe the classes, interfaces& arrays.

CO4 : Learn creation of window forms & controls.

CO5 : Understand file handling and graphics in VB.

UNIT-I

Introduction to .NET Technology, Introduction to VB.NET, Building VB.net Application, IDE Dot.NET, Evolution of Dot.net Framework, Keywords, Statement, Variables, Enumerable, Constant, Data Types, Conversion, Operators, Comments, Decision Making, Looping, Array, Handling Strings, Strings Function.

UNIT-II

Handling Dates and Times, Sub Procedure and Function, Creating Function, Passing Values as arguments, Creating Properties, Handling Exception, Resume Next, Resume Line, ON Error GOTO, Structure Exception Handling Exception Filtering. Throwing Exception, Custom Exception.

UNIT-III

Classes and Objects: Types, Field, Properties, Methods and Events, Class vs Object, Members Overloading, Overriding, Creating Class, Object, Structure & Modules, Accessing Modifiers, Shadowing, Creating Interfaces, Polymorphism, Early and Late binding, Multiple Interface, Using MyBase and MyClass Keyword, Inheritance based Polymorphism and Interface Based Polymorphism.

UNIT-IV

Window Forms: Creating Window Forms, Controls to Form, Setting Title bars, Dialog Boxes, Handling Mouse Events, Handling Key Press Events, Controls Classes: Textbox, Rich Textbox, Labels, Link Labels, Buttons, Checkbox, Panels, Group Boxes, Radio Button, Drop Down, List Boxes, Combo Box, Scroll Bars, Pickers, Tool Tips, Timers, Menu, Min & Max Button, Image, Toolbars, Popup Menu, Setup Dialog, Progress bar, Status Bar, Tab Controls.

UNIT-V

File Handling: File Opening and Creating, Writing Files, Reading Binary Data, Directory class, Files Class, Graphics: Using Brush class, Using Pen Class, Graphics Class, Data Access and ADO.NET: Creating Data set, Populating Dataset, Displaying data in Grids, Data access using Data Adapters Controls, Binding Data to Controls, Using Data Views.

Books Recommended:

1. Jeffrey R. Shapiro “The Complete Reference Visual Basic .NET” Tata Mcgraw Hill.
2. Rox “Beginner and Professional Edition VB.NET” Tata Mcgraw Hill.
3. Steven Holzner “Visual Basic .NET Black Book” Wiley Dreamtech Publication.
4. Alex Homer, Dave Sussman “Professional ASP.NET1.1” Wiley Dreamtech
5. Bill Evzen,Bill Hollis “Professional VB.NET 2003” Wiley Dreamtech
3. Tony Gaddis “Starting Out VB.NET PROG.2nd Edition” Wiley Dreamtech
6. Chris Ullman, Kauffman “Beg. ASP.NET1.1 with VB.NET 2003” Wiley Dreamtech
7. Chris Ullman, Kauffman “Beg ASP.NET1.1 with VC#.NET 2003” Wiley Dreamtech

MCA III Sem-Paper Code-306042 :Python Programming

Credit 4; Theory Max/Min(60/21), CCE Max/Min(40/20)

Course Objectives : To acquire knowledge related to the programming language Python.

Course Outcomes:

On completion of this course, the student will be able to:

CO1 : Understand different data types used in python.

CO2 : Get better understanding of different types of control structures.

CO3 : Use different data structures for different problem domains.

CO4 : Apply different object oriented features for solving real world problems.

CO5 : Develop different web based applications.

UNIT -I

Installing Python, Simple program using Python, Expressions and Values, Variables and Computer Memory, error detection, Multiple line statements, Designing and using functions, functions provided by Python, Tracing function calls in memory model, omitting return statement. Working with Text: Creating Strings of Characters, Using Special Characters in Strings, Creating a Multiline String, Printing Information, Getting Information from the Keyboard.

UNIT-II

A Boolean Type , Choosing Statements to Execute, Nested If Statements, Remembering the Results of a Boolean Expression Evaluation, A Modular Approach to Program Organization, Importing Modules, Defining Your Own Modules, Testing Code Semi automatically Grouping Functions Using Methods: Modules, Classes, and Methods, Calling Methods the Object-Oriented Way, Exploring String Methods, Underscores.

UNIT-III

Storing Collections of Data Using Lists: Storing and Accessing Data in Lists, modifying Lists, Operations on Lists, Slicing Lists, Aliasing, List Methods, Working with a List of Lists. Repeating Code Using Loops: Processing Items in a List, Processing Characters in Strings, Looping Over a Range of Numbers, Processing Lists Using Indices, Nesting Loops in Loops, Looping Until a Condition Is Reached, Repetition Based on User Input, Controlling Loops : UsingBreak and Continue Reading and Writing.

UNIT-IV

Files: Kinds of files, Opening a File, Techniques for Reading Files, Files over the Internet, Writing Files and Writing Algorithms That Use the File-Reading Techniques, Multiline Records. Storing Data Using Other Collection Types: Storing Data Using Sets, Storing Data Using Tuples, Storing Data Using Dictionaries, Inverting a Dictionary, Using the In Operator on Tuples, Sets, and Dictionaries, Comparing Collections.

UNIT-V

Collection of New Information Object-Oriented Programming : Understanding a Problem Domain, Function “Isinstance”,Class Object, and Class Book, Writing a Method in Class Book, Plugging into Python Syntax: More Special Methods,Creating Graphical User interface: Building a Basic GUI, Models, Views, and Controllers, Customizing the Visual Style Introducing few more Widgets, Object-Oriented GUIs, Keeping the Concepts from Being a GUI Mess.

Books Recommended :

1. O’Relly, Python Crash Course, 2nd Edition: A Hands-On, Project-Based Introduction to Programming
2. John Zelle, Python Programming: An Introduction to Computer Science
3. Mark Lutz, Python Pocket Reference: Python in Your Pocket
4. O’Relly, Head First Python: A Brain-Friendly Guide, by Paul Barry

MCA III Sem-Paper Code-306043 :Data Warehousing and Mining

Credit 4; Theory Max/Min(60/21), CCE Max/Min(40/20)

Course Objectives : To acquire the knowledge related to data mining & data warehouse.

Course Outcomes:

On completion of this course, the student will be able to:

CO1 : Learn the data mining functionalities.

CO2 : Understand and exhibit the basics of data warehousing and multi-dimensional modeling.

CO3 : Describe data preprocessing.

CO4 : Understand classification , clustering, frequent pattern analysis and regression .

CO5 : Learn cluster analysis and DM tools.

UNIT – I

Motivation, importance, Data type for Data Mining : relational Databases, Data Warehouses, Transactional databases, advanced database system and its applications, Data mining Functionalities: Concept/Class description, Association Analysis classification & Prediction,Cluster Analysis, Outlier Analysis, Evolution Analysis, Classification of Data Mining Systems,Major Issues in Data Mining.

UNIT – II

Data Warehouse and OLAP Technology for Data Mining:Differences between Operational Database Systems and Data Warehouses, a multidimensional Data Model, Data WarehouseArchitecture, Data Warehouse Implementation, Data CubeTechnology.

UNIT- III

Data Preprocessing: Data Cleaning, Data Integration and Transformation, Data Reduction,Discretization and Concept Hierarchy Generation. Data Mining Primitives, Languages, and System Architectures, Concept Description: Characterization and Comparison, AnalyticalCharacterization.

UNIT – IV

Mining Association Rules in Large Databases: Association Rule Mining: Market BasketAnalysis, Basic Concepts, Mining Single-Dimensional Boolean Association Rules fromTransactional Databases: the Apriori algorithm, Generating Association rules from Frequentitems, Improving the efficiency of Apriori, Mining Multilevel Association Rules,Multidimensional Association Rules, Constraint-Based Association Mining.

UNIT – V

Classification & Prediction and Cluster Analysis: Issues regarding classification & prediction, Different Classification Methods, Prediction, Cluster Analysis, Major Clustering Methods, Applications & Trends in Data Mining: Data Mining Applications, currently available tools.

Books Recommended:

1. J. Han and M. Kamber, “Data Mining: Concepts and Techniques”, Morgan Kaufmann Pub.
2. Berson “Dataware housing, Data Mining & DLAP, @004, TMH.
3. W.H. Inmon “ Building the Datawarehouse, 3ed, Wiley India.
4. Anahory, “Data Warehousing in Real World”, Pearson Education.
5. Adriaans, “Data Mining”, Pearson Education.
6. S.K. Pujari, “Data Mining Techniques”, University Press, Hyderabad.

MCA III Sem-Paper Code-306044 : Bigdata Analytics & Visualization

Credit 4; Theory Max/Min(60/21), CCE Max/Min(40/20)

Course Objectives: To acquire the knowledge related to big data, its characteristics, big data modeling and visualization

Course Outcomes :

On completion of this course, the student will be able to:

CO1 : Learn Big data and its characteristics.

CO2 : Understand best practices for Data modeling and Integration tools.

CO3 : Describe elementary data analysis and Correlation Patterns

CO4 : Learn Bayesian Modeling

CO5 : Understand basics of visualization.

UNIT-I

Introduction of big data, Big data characteristics - Volume, Veracity, Velocity, and Variety – Data, Appliance Challenges and Issues, Case for Big data, Big data sources, Features of data, Evolution of Big data, Best Practices for Big data Analytics and Integration tools.

UNIT-II

Introduction to DataModeling, Data Models Used in Practice: Conceptual data models, Logical data models, Physicaldata models, Common Data Modeling Notations, How to Model Data : Identify entity types, Identifyattributes, Apply naming conventions, Identify relationships, Apply data model patterns, Assign keys, Normalize to reduce data redundancy.

UNIT-III

Introduction to elementary data analysis: Measures of center: Mean, Median, Mode, Variance, Standard deviation, Range. Normal Distribution: Center,Spread, Skewed Left, Skewed Right, outlier. Correlations: Correlation Patterns: Directionrelationship, Magnitude Relationship.

UNIT-IV

Introduction to Bayesian Modeling: Bayes Rule, ProbabilisticModeling Introduction to Predictive Analytics: Simple Linear regression, Multiple Linear regression,Logistic Linear Regression.

UNIT-V

Visualization: History of Visualization, Goals of Visualization,Scientific Visualization, Information Visualization, Visual Analytics, Impact ofvisualization Introduction to Data Processing, Map Reduce Framework, Hadoop, HDFS, S3, Hadoop Distributed file systems, Apache Mahout, Hive,Sharding, Hbase, Impala, Case studies :Analyzing big data with twitter, Big data for Ecommerce, Big data for blogs.

Books Recommended:

1. Frank J Ohlhorst, “Big Data Analytics: Turning Big Data into Big Money”, Wiley andSAS Businessm.Series, 2012.
2. The Data Modeling Handbook: A Best-Practice Approach to Building Quality DataModels 1st Edition by Michael C. Reingruber (Author), William W. Gregory(Author) A Wiley QED publications
3. Colleen Mccue, “Data Mining and Predictive Analysis: Intelligence Gathering andCrime Analysis”,Elsevier, 2007
4. Correlation and Regression: Applications for Industrial Organizational Psychologyand Management (Organizational Research Methods) 1st Edition, by Philip BobkoMultiple Regression and Beyond 1st Edition by Timothy Z. Keith.

MCA III Sem-Paper Code-30605 :Web Applications Development

Credit 4; Theory Max/Min(60/21), CCE Max/Min(40/20)

Course Objectives: To acquire the knowledge related to web designing, java servlet, JSP, web services and android fundamentals.

Course Outcomes:

On completion of this course, the student will be able to:

CO1 : Understand web architecture.

CO2 : Learn HTML & CSS.

CO3 : Apply different modern technologies used for real-time client server application.

CO4 : Develop different attractive and interactive web pages.

CO5 : Learn basics of android application deployment environment.

UNIT- I

Introduction to Web Designing: Web architecture, Parsing in Browsers, Web site design standards, Client Side Technologies: Introduction to Markup languages HTML 5, Building a form and form elements, Dynamic HTML - JavaScript - Cascading Style Sheets - Including Multimedia. HTTP, Web Server and Application Servers, Installation of application servers, Config files, Web.xml.

UNIT - II

Java Servlet: Servlet Development Process, Deployment Descriptors, The Generic Servlet, Lifecycle of Servlet. Servlet Packages, Classes, Interfaces, and Methods, Handling Forms with Servlet. Various methods of Session Handling. Various elements of deployment descriptors.

UNIT - III

JSP Basics: JSP lifecycle, Directives, scripting elements, standard actions, implicit objects. Connection of JSP and Servlet with different database viz. Oracle, MS-SQL Server, MySQL. java.sql Package. Querying a database, adding records, deleting records, modifying records. Type of Statement.

UNIT - IV

Separating Business Logic and Presentation Logic, Building and using JavaBean. Session handling in JSP, Types of errors and exceptions handling. Introduction to Web Services, MVC Architecture, Struts and Hibernate.

UNIT - V

Introduction to Android: Fundamentals, Application Structure, Basic UI design, Android Application Deployment Environment, Dalvik virtual machine, Testing and Debugging Android Application.

Books Recommended :

1. K. Mukhar, "Beginning Java EE 5: From Novice to Professional", Wrox Press.
2. M. Hall, L. Brown, "Core Servlets and Java Server Pages", 2nd edition, Pearson Education
3. Deitel and Deitel, "*Internet and WWW — How to Program?*" Fifth Edition, Prentice Hall, 2012.
4 G. Franciscus, "Struts Recipes", Manning Press
5. B. Basham, K. Sierra, B. Bates, "Head First Servlet and JSP", 2nd Edition, O'Reilly Media.
6. Android application development for java programmers. By James C. Sheusi. Publisher: Cengage Learning, 2013.

FOURTH SEMESTER

Paper Code-40601: Web Major Project / Dissertation Evaluation

Course Objectives: To acquire the knowledge of software development for real life application.

Course Outcomes :

On completion of this course, the student will be able to:

CO1 : Indentify and define the problem statement.

CO2 : Define and justify scope of the proposed problem.

CO3 : Practice software analysis and design techniques.

CO4 : Develop & implement real time systems

CO5 : Develop technical report writing and oral presentation.

AWADHESH PRATAP SINGH UNIVERSITY
REWA (M.P.)

SYLLABUS

BACHELOR OF COMPUTER APPLICATION

(BCA I-VI SEM)

W.E.F. SESSION 2012-13

BACHELOR OF COMPUTER APPLICATION (BCA)

CURRICULUM AT A GLANCE

Syllabus and Course Structure recommended by the Board of Studies of Computer Science dated 22/05/2012.

BCA (First Semester)

PAPER CODE	NOMENCLATURE OF PAPER	Theory Max/Min		CCE Max/Min
FC –I-1	Foundation Course –I	70	35	45/15
FC –I-2	Foundation Course –II	35		
BCA-1	Fundamentals of Computers	35/12		15/5
BCA-2	Introduction to Operating System	35/12		15/5
BCA-3	Introduction to PC Software	35/12		15/5
BCA-4	Basic Mathematics-I	35/12		15/5
BCA-5(PR)	S/W Lab 1 – OS	50/17		-
BCA-6(PR)	S/W Lab 2 - PC Software	50/17		-

BCA (Second Semester)

PAPER CODE	NOMENCLATURE OF PAPER	Theory Max/Min		CCE Max/Min
FC –II-1	Foundation Course –I	70	35	45/15
FC –II-2	Foundation Course –II	35		
BCA-7	Programming in C	35/12		15/5
BCA-8	Digital Electronics	35/12		15/5
BCA-9	Analysis & Design of Information System	35/12		15/5
BCA-10	Web Technologies	35/12		15/5
BCA-11 (PR)	S/W Lab 1 – C	50/17		-
BCA-12 (PR)	S/W Lab 2 – Web Technologies	50/17		-

BCA (Third Semester)

PAPER CODE	NOMENCLATURE OF PAPER	Theory Max/Min		CCE Max/Min
FC –I-1	Foundation Course –I	70	35	45/15
FC –I-2	Foundation Course –II	35		
BCA-13	OOPs Using C++	35/12		15/5
BCA-14	Data Structure	35/12		15/5
BCA-15	System Software	35/12		15/5
BCA-16	Information Storage Management	35/12		15/5
BCA-17(PR)	S/W Lab 1 – C++	50/17		-
BCA-18(PR)	S/W Lab 2 – Data Structure	50/17		-

BCA (Fourth Semester)

PAPER CODE	NOMENCLATURE OF PAPER	Theory Max/Min		CCE Max/Min
FC –I-1	Foundation Course –I	70	35	45/15
FC –I-2	Foundation Course –II	35		
BCA-19	DBMS	35/12		15/5
BCA-20	Visual Programming Language	35/12		15/5
BCA-21	Computer Network	35/12		15/5
BCA-22	Basic Mathematics-II	35/12		15/5
BCA-23(PR)	S/W Lab 1 – DBMS	50/17		-
BCA-24(PR)	S/W Lab 2 – Visual Prog.	50/17		-

BCA (Fifth Semester)

PAPER CODE	NOMENCLATURE OF PAPER	Theory Max/Min		CCE Max/Min
FC –I-1	Foundation Course –I	70	35	45/15
FC –I-2	Foundation Course –II	35		
BCA-25	Computer Graphics	35/12		15/5
BCA-26	Programming in Java	35/12		15/5
BCA-27	Operating System	35/12		15/5
BCA-28	Discrete Mathematics	35/12		15/5
BCA-29(PR)	S/W Lab 1 – Comp. Graphics	50/17		-
BCA-30(PR)	S/W Lab 2 – Java	50/17		-

BCA (Sixth Semester)

PAPER CODE	NOMENCLATURE OF PAPER	Theory Max/Min		CCE Max/Min
FC –I-1	Foundation Course –I	70	35	45/15
FC –I-2	Foundation Course –II	35		
BCA-31	Software Engineering	35/12		15/5
BCA-32	RDBMS	35/12		15/5
BCA-33	Real Life Project (Internal & External Evaluation)	150/50		-
BCA-34(PR)	S/W Lab 1 – RDBMS	50/17		-

GRAND TOTAL : 450 x 6 = 2700

The syllabus of Foundation Course will be same as applicable for BA/BSC course in respective semesters, approved by Central Board of Studies.

BCA-I SEM

BCA-1 : FUNDAMENTALS OF COMPUTERS

Max Marks 35 (12)

Unit-I

History, Generation of Computers, Characteristics, Capabilities and Limitations. Classification of Computers and types of Digital computers. Hardware, Software, types of software. Generations of Computer Languages, High and low level languages, Types of Translators (Compiler, Interpreter and Assembler)

Unit-II

Working of a computer using block diagram, Components of Computer system, Central Processing Unit, Address, Control and Data Bus, Arithmetic Logic Unit, Control Unit, storage units : Bits and Bytes; external & internal devices, Booting of PC system, Comparative study of various series of IBM PC Family.

Unit-III

Introduction and working of various input/output devices: Keyboard, mouse, MICR, OCR, OMR, Bar Code, Audio Response Unit, Scanner, VDU, Plotter, Impact and Non-impact printers, Computer Output Microfilm (COM).

Unit-IV

Primary memory: RAM, ROM, EPROM, EEPROM, Cache memory. Secondary memory: Floppy disc, hard disk, magnetic tape, CD-ROM, DVD. Overview of tracks, sectors, cylinders, access time, seek time, latency time.

Unit-V

Basics of data communication. Communication media, Methods of data transmission, modes of data transmission, Analog versus digital and serial versus parallel communication. Introduction to computer Network: Advantages, type, various LAN topologies, Distinction between LAN, WAN, MAN. Overview of Internet: www, email, ftp, telnet, chat, browser, newsgroup.

Books Recommended:

1. Sinha, P.K.: Computer Fundamentals, BPB Publ.
2. Jain, Satish: Introduction to Computer Science, BPB Publ.

BCA-I SEM

BCA-2 : INTRODUCTION TO OPERATING SYSTEM

Max Marks 35 (12)

Unit-I

Introduction to O.S.: Historical evolution, Need, Type. Batch processing, multiprogramming, time sharing, Online, Real time, multitasking, multiprocessing. Spooling. Functions of O.S. Layered organization, Comparative study of popular operating systems.

Unit-II

MS-DOS: Internal commands (dir, copy, del, cd, rd, md, rename, prompt, ver, vol, type, path, time, date etc.). External commands (tree, undelete, chkdsk, fdisk, backup, restore, format, unformat, attrib, xcopy, diskcopy, diskcomp etc.)

Unit-III

File redirection, filtering and piping, Concept of Batch files, config file, autoexec file. Booting process in MS-DOS, File system and concepts of files and directories in MS-DOS, Use of function keys in MS-DOS.

Unit-IV

Structure of Unix system: Kernel, Shell, Utility programs. Unix file system, concept of files and directories. General commands: bc, echo, cut, kill, date, wc, sleep, who, ps etc. File oriented commands: cat, cp, grep, pg, mv, rm, del, etc. File permissions: chmod, chown etc. Directory oriented commands: ls, mkdir, cd, rmdir, pwd etc. Inter user communication commands: write, mail etc.

Unit-V

Windows: Introduction, GUI, windows desktop, start button, taskbar, switching between programs and windows. Managing files, folders and objects. Windows explorer, Creating shortcuts. Control panel. Windows accessories: Paintbrush, wordpad, calculator, etc. Sharing information among applications using OLE and clipboard. Comparison of Unix, MS-Windows and MS-DOS.

Books Recommended:

1. Cowart, R.: Mastering windows, BPB.
2. Koparkar, P.K.: Unix for you, TMH.
3. Thomas, R.: Dos 6 and 6.2 instant reference, BPB.

BCA-I SEM

BCA-3 : INTRODUCTION TO PC SOFTWARE

Max Marks 35 (12)

UNIT–I

Introduction to Microsoft Office : The Office Manager, Sharing Information with Microsoft Office, The Clipboard, Object Linking and Embedding (OLE), Editing Linked Information, Editing Embedded Objects, Word Processing with Word for Windows: Word Basics: Undo, Redo, Repeat, Inserting Text, Replacing Text, Formatting Text, Cut, Copying from one Word Document to Another, Print, Autoformat.

UNIT–II

MS WORD : Working with Headers, Footers, Endnotes, Footnotes, tabs, tables, sorting, Working with graphics: Importing graphics, Sizing and Cropping graphics with the picture command, Drawing objects, Text in Drawings (Word Art), Pictures using Drawing objects, Rotating and Flipping Objects, Callouts, Filling: Templates, Wizards: Spelling Checker, Autocorrect, Autotext, Grammar Checker, Word Count and Other Statistics, Creating Tables of Contents and Index, Macros, Introduction to Mail Merge.

UNIT–III

MS EXCEL: Overview of Excel Features, Rearranging worksheets: Excel page setup, changing column widths and row heights, autoformat, manual formatting, using different styles, hiding rows and columns, working with multiple worksheets. An Introduction to excel functions, Excels chart features: Instant charts with the chart Wizard, creating charts on separate Worksheets, Resizing and Moving charts, adding chart notes and arrows, editing charts, Working with graphics in excel: creating and placing graphic objects, resizing graphics, Introduction to Excel's command Macros, using worksheets as databases.

UNIT–IV

MS POWERPOINT: Creating presentations, Auto content wizard, editing slides, Working with Text in Power Point, Formatting and Aligning Text; Working with graphics in Power Point; Importing images from the outside and drawing in power point, creating organizational charts, inserting cliparts & picture/photos in Power Point Presentation, Excel charts in power point, inserting table from word, Arranging, Previewing and rehearsing, transition and building effects, printing presentation elements, creating overhead transparencies.

UNIT–V

MS ACCESS : Creation of databases, tables, forms, reports & queries, use of macros & modules, creation of relationships among tables, generating simple queries using databases. Administering & securing a database, Writing expressions for queries.

Books Recommended :

1. Mansfield R.: The Compact guide to MS-OFFICE, BPB
2. Mansfield R.: Word 6 for Windows Quick & Easy Reference, TECH.
3. Murray : Mastering POWER POINT 6.0 for Windows, BPB
4. Cowart : ABC's of MS – ACCESS, BPB.

BCA-I SEM

BCA-4 : BASIC MATHEMATICS

Max Marks 35 (12)

Unit-I

Set Theory : Introduction, Basic Concepts of Set Theory, Operations on Sets, Venn Diagram, some basic set identities, Cartesian product, Relations, Domain and Range of Relations, Types of Relations.

Unit-II

Limits, function and continuity: Concept of real function, its domain and range. Fundamental theorems on limits, continuity of a function at a point, over an open, closed interval, properties of continuous function.

Unit-III

Determinants: Definition, minors and cofactors, properties. Matrices: Definition, types, equality, multiplication of matrices, transpose of matrix, adjoint of a matrix, inverse of a matrix, application of matrices in solving the simultaneous equation.

Unit-IV

Co-ordinate Geometry -I : Rectangular Cartesian coordinates of a point in space, Distance between two points, cylindrical co-ordinates; spherical co-ordinates, direction Cosines points of division, orthogonal projection, angle between straight lines.

Unit-V

Co-ordinate Geometry-II: Sphere circle & related topics, Tangent lines and Tangent Planes to a sphere, redial plane, redial line, co axial spheres. Limiting points examples and exercises.

Books recommended:

1. N. Saran : Real analysis, S. Chand and Co.
2. Shanti Narayan and P. K. Mittal Analytical Solid Geometry, S. Chand and co.
2. Parmanand Gupta : Comprehensive mathematics, Laxmi Publ. Ltd.
3. R. K. Mohanti : Differential Calculus, Anmol Pub.

BCA-II Sem

BCA-7 : PROGRAMMING IN C

Max Marks 35 (12)

UNIT–I

C language programming: Flowchart, Algorithm, Introduction to C language, Character set of C-language. The structure of a simple C program; Simple I/O functions (scanf, printf, gets, puts, getchar, getche, getch); Use of semicolon, braces, parentheses, comments and newline character; Data types in C. Assignment statement, Arithmetic, Relational & Logical operators; Unary operator, sizeof operator, Conditional operators, Precedence of operators.

UNIT–II

Control structure: The if-else statements, nesting of if-else, switch statement, Loops: while and do-while loop, the for loop, Functions: User defined functions, Returning a value from a function, Local and Global variables, Parameters, Type declaration of a function, Functions with more than one parameters, Prototype of a function. Functions with arguments, functions without arguments. Storage classes

UNIT–III

Arrays: Declaration and initialization; the break and continue statement; String and Character arrays, operations with arrays; searching in array (linear and binary). Sorting an array (Bubble, Selection and Insertion), String & String functions: sprintf, strcpy, scanf, strcat, strlen, malloc, strcmp. Two dimensional array, matrix, types of matrix – addition and product of two matrices.

UNIT–IV

Pointers: The concept of pointers, passing pointers as parameters, arrays of pointers, Pointer to pointers, Array of pointers to strings, Sorting an array, using pointers, Structures: The concept of structure, Initializing, Arrays of structures, Arrays within structures, Structures within Structures, passing structures to function, unions

UNIT–V

Files: Files in 'C', Modes for files; Functions used in files (getc, putc, fopen, fclose, fscanf, fread, fwrite, fprintf, fseek, ftell, rewind), text versus binary files, The C preprocessor, Preliminaries of C preprocessor Directives, (#define, #undef, #include, #ifdef, #ifndef, #endif, #else, #if).

Books Recommended:

1. Gottfried, Programming with C, TMH
2. E. Balagurusamy, Programming in ANSI C, TMH
3. Rajaraman, Introduction to C, PHI
4. Cooper, Mullish, The Spirit of C, An introduction to modern programming, Jaico Pub. House, N. Delhi.
5. Y. Kanetkar, Understanding Pointer in C, BPB
6. Y. Kanetkar, Let us C, BPB
7. Y. Kanetkar, Exploring in C, BPB

BCA-II SEM

BCA-8 : DIGITAL ELECTRONICS

Max Marks 35 (12)

Unit-I

Number system and codes, decimal, binary, octal, hexadecimal and their inter conversion. Binary addition, subtraction, multiplication and division ASCII, gray code, excess-3 code, BCD numbers.

Unit-II

Gates: NOT, OR, AND, NAND, NOR, XOR, XNOR. Boolean algebra, DeMorgan's theorem, Application of gates, Half adder and full adder.

Unit-III

TTL circuits: Digital IC 74 series, TTL characteristics, Totempole and open collector gates, Comparison between different types of TTL, Multiplexer, Demultiplexer, Encoder, Decoders.

Unit-IV

Boolean functions and truth tables, SOP, POS, min-terms and max-terms, Karnaugh map, method of reduction.

Unit-V

Flip-flop, registers and counter. RS flip-flop, Clocked D Flip-flip, Edge triggered D Flip-flip, Edge triggered JK Flip-flip, Racing in Flip-flop, JK Master-Slave Flip-flip. Buffer registers, Shift registers, Ripple counters, Synchronous counters, Ring counters, Presetable counters, Mod counters.

Books recommended:

1. Digital Computer Electronics: Malvino.

2. Computer Fundamentals : B. Ram.

BCA-II SEM

BCA-9 : ANALYSIS AND DESIGN OF INFORMATION SYSTEM

Max Marks 35 (12)

UNIT-I

Organizational Foundation of IS: Historical Evolution of Information system, The competitive Business Environment, Advantages of Using Computerized Information System (IS), Six major types of Information System, The changing matter of Information Technology, Challenges of Information systems, Relationship between Organisation and Information systems, Salient Features of Organization and management, Classical Model, Behavioral Model and Decision Model, Levels and types of Decision Making, System Approach Theory, Management Challenges, Ethical and Social Impact of Information System.

UNIT –II

Technical Foundation of Information System: Charting Techniques, Structured Analysis and Design, Decision Tree, Decision Table, DFD, Data Dictionary, Information System Software Tools and Approaches: Advantages and disadvantages of using IS Software Tools, Idea of Object Oriented Programming, CASE tool, PERT & CPM, Recent Database Management Trends, Distributed Databases: Object Oriented and Hypermedia Databases, Telecommunications, The Internet.

UNIT –III

Building Information System: Traditional System Development Life Cycle (SDLC), Analysis: Problem Identification, Fact Gathering, Fact Analysis, Feasibility Study, Feasibility Report, Design: Physical and Logical Design, File Design, I/O Design, Database Design, Limitation of traditional life cycle approach, Prototyping, Outsourcing information system, A Typical Case Study of Information System.

UNIT –IV

Implementation: Managing and Controlling of Information System, Testing, training, conversion, Post Implementation phase, Ensuring quality with IS, Traditional tool & methodology for quality assurance, New approaches to quality assurance, Measuring Information System Success, Areas of Problem in Information System, Causes of Information system Success and Failure, Controlling Risk Factor, Auditing Information System.

UNIT–V

Management and Organizational Support Systems: Knowledge Work System, Decision Support System (DSS), Group Decision Support System (GDSS), Executive Support System (ESS), Artificial Intelligence (AI), Expert System, Neural Network, Growth of International Information System, Main Technological Issues: Merger of International Technology and Infrastructure.

Books Recommended:

1. Lauden C. Kennieth & Lauden P. Jane: Management Information System: Organization Technique, PHI.
2. Awad E. M.: Systems Analysis and Design, Galgotia Pub.
3. Murdic, Ross, Clagett : Information Systems for Modern Management, PHI
4. Bhatnagar S. C. : Computer & Information Management, PHI

BCA-II SEM

BCA-10 : WEB TECHNOLOGIES

Max Marks 35 (12)

UNIT – I

Internet : History and evolution of Internet .Internet & intranet ,Basic concept of www , HTTP, FTP, URL, domain name, IP address, web browser, web server, web page, web site, Portals, email, chatting, Usenet, telnet, newsgroup, Fax, Telephony, telecommuting, Conferencing. Searching , downloading , uploading, files on internet ,Search Engines. Email (reading, ending, deleting, replying), voice & video conferencing. Internet Protocol :TCP/IP, dialup access, direct access, three levels of Internet connectivity. ISPs, Introduction to DNS.

UNIT-II

Internet Security & HTML: Overview of internet security, access security, transaction security, security zones, digital IDS, sending / receiving signed & encrypted emails. Introduction to firewalls. web page design : static and dynamic web pages, introduction to HTML.HTML elements and tags, formatting with HTML tags, physical, logical HTML styles ,setting fonts ,colors and headings. displaying Plain , presenting and arranging text using <DIV>, <SPAN> , <LAYERS> tags.

UNIT-III

ADVANCE HTML: Working with images, links and lists, creating tables. working with frames, creating horizontal, vertical frames, named frames, opening new browser window, creating html forms, Adding controls on forms, submitting data from forms, working with multimedia, multimedia sound, video, 3D,Using multimedia files, inline sound and videos. Style sheets: types, creating and, using style sheets.

UNIT-IV

Java script & XML: introduction to client and server side scripting, introduction to Java script, data types, operators, conditional statement, loops in Java script, functions, arrays, objects and elements in Java script, form validation using Java script. Introduction to XML, Creating XML documents, specifying attributes in DTDs, accessing XML data with XML Data Island, documents. Handling events while loading XML documents.

UNIT-V

E-Commerce: Introduction to E-Business, Electronic Fund Transfer (EFT), Value-chain, internet Business strategy, Functional Architecture, implementation Strategies; Building Blocks of E-commerce, System design, creating and managing content etc; Payment systems; Auxiliary system; transaction Processing; Building e-commerce system, system architecture, secure links etc; Present and future Trend; Impact of e-commerce; A case Study on development of e-commerce system.

Books Recommended:

1. Teach Your Self Internet In 24 Hours : Techmedia.
2. Internet Complete : BPB Publication.
3. HTML Blake Book: Steven Holzer.
4. The Internet :Christian Crumlish (BPB Publication).
5. Html Complete : BPB Publication.

BCA-III SEM

BCA-13 : OOPs USING C++

Max Marks 35 (12)

Unit-I

Introduction to OOP :- Procedural, Structured and Object Oriented Programming(OOP) , Basic concepts of OOP : Object, Classes, Inheritence, Polymorphism, Reusability; Benefits & applications of OOP, C^{++} and OOP. Characters used in C++. Basic data types, user defined data types, Structure of C^{++} program, use of conditional and looping statements in C++. Arrays in C++. Reference variable, operators, structures, union, enum.

Unit-II

Functions : prototypes, default arguments, const arguments in functions, Inline functions, call by value, call by reference, function overloading. Classes and objects : Declaring a class, defining an object, data hiding and encapsulation, public and private data members & functions, friend function. Pointer to data member, pointer to member function and pointer to object, virtual function.

Unit-III

Constructors & Destructors: Parametrized constructors, multiple constructor in a class, copy constructors, arrays of object, object as function, arguments, returning objects, the this pointer, memory allocation for objects. Operator Overloading : Unary and binary operators, type conversions.

Unit-IV

Inheritence : Inheritence and derivation, single, multilevel, multiple, hierarchical & hybrid inheritence, constructors in multiple inheritence, private and protected inheritance. Overriding functions, virtual methods, ambiguity resolution, virtual base class. Constructors in derived class. Member classes : nesting of classes.

Unit-V

Streams : C^{++} streams, stream classes, unformatted & formatted I/O operations, member functions of cin, manipulators, managing output with manipulators, user defined manipulators with arguments. Files : Classes for file stream operations, file I/O with streams, file modes, binary versus text files, binary I/O, random access, error handling during file operations, command line arguments, Exception handling.

Books Recommended:

1. E. Balagurusamy, Object Oriented Programming with C^{++} , TMH
2. Jesse Liberty, Teach Your self ANSI C^{++} , Techmedia
3. Robert Lafore, Object Oriented Programming in Turbo C^{++} , Galgotia Publications
4. Stroustrup, The C^{++} Programming Language, Addison Wesley.
5. Herbert Schild, C^{++} Complete Reference, TMH
6. Yashwant Kanatkar, Let us C^{++}, BPB

BCA-III SEM

BCA-14 : DATA STRUCTURE

Max Marks 35 (12)

UNIT - I

Primitive Data Structures, Operations on Data Structures; Integer, Real number, Character Information, Logical and Pointer Information, Algorithm analysis for time and space requirements. Non-primitive data structures, Storage structure for arrays, Operations on arrays, Sparce matrices. Stacks: Definition and operations on stacks, Applications of stacks; Recursion, Polish expressions and their manipulations.

UNIT–II

Queues: Operations on queues, Priority queues; Linked storage representation, Pointers and linked allocation, Linked linear lists, Operations on linked lists, Circular linked list, Doubly linked lists, Application of linked lists. Dynamic Storage Management: Garbage collection, Compaction.

UNIT–III

Trees, Definitions and concepts of general trees and binary trees, Representation of binary trees, Binary tree representation of general tree, Binary tree traversal, Threaded binary trees, Operation on binary trees, Application of trees, Binary search trees

UNIT-IV

Introduction to Graphs, definition, terminology, directed, undirected and weighted graphs. Representation of graphs. Graph traversal: Breadth first search, Depth first search. Spanning trees, Minimal spanning tree. Application of graphs.

UNIT–V

Notation and concepts, Selection sort, Bubble sort, Merge sort, Heap sort, insertion sort, quick sort. Hash-table method, Hashing functions, Collision resolution techniques, Searching : Linear search, Binary search.

Books Recommended:

1. Horowitz & Sahni : Fundamentals of Data Structures, Comp. Sc. Press
2. S. Lipschutz : Schaum's Outline Series; Data Structures, Mc Graw Hill
4. Data Structures Using C; Tenenbaum, PHI
5. Data Structures Using Pascal, Tenenbaum, PHI
6. D. E. Knuth : The Art of Computer Programming, Addision Wesley
7. R. G. Dromey : How to solve it by computer

BCA-III SEM

BCA-15 : SYSTEM SOFTWARE

Max Marks 35 (12)

UNIT–I

Difference between system software and application software. Layered organization of system software. Introduction to System Software: The Simplified Instructional Computer (SIC): Machine structure (Memory, Register, Data formats, Instruction format, Addressing modes, Instruction set, Input/output) Assemblers: Basic Assembler Functions (A Simple SIC assembler, tables and logic).

UNIT – II

Assemblers: Basic Assembler Functions (A Simple SIC assembler, tables and logic), Assembler for Small Computer, op-code and symbol table.

UNIT-III

Loaders And Linkers: Separate Compilation and linking, loading, linking & relocation, Basic Loader Functions, Machine dependent loader features (Relocation, Program linking, Tables and logic, a linking loader), Machine-independent loader features (Automatic library search, loader upturns, overlay program), Loader Design option (Linkage editors, Dynamic linking, Bootstrap loaders)

UNIT-IV

Software Tools : A brief overview, interpreter and program generators, debug monitors, programming environments. Text editors: Overview of the editing process, User interface editor structure.

UNIT-V

Compilers: Main parts of a Compiler , Basic Compiler Functions, Lexical analyzer, parser, symbol table manager, Code generator.

Books Recommended:

1 Leland L. Beck: System Software (An introduction to systems programming), Addison Wesley Publishing Company.

2. Alfred Jeffrey Ullman: Principles of Compiler Design, Narosa Publishing Home, New Delhi.

3. D.M. Dhamdhare: Systems Programming & Operating Systems, TMH

BCA-III SEM

BCA-16 : INFORMATION STORAGE MANAGEMENT

Max Marks 35 (12)

Unit-I

Introduction to Storage Technology: Data proliferation, evolution of various storage Technologies, Overview of storage infrastructure components, Information Lifecycle Management, Data categorization.

Unit-II

Storage Systems Architecture: Intelligent disk subsystems overview, Contrast of integrated vs. modular arrays, Component architecture of intelligent disk subsystems, Disk physical structure components, properties, performance, and specifications, RAID levels, hot sparing.

Unit-III

Introduction to Networked Storage: JBOD, DAS, NAS, SAN & CAS evolution and comparison. Applications, Elements, connectivity, standards, management, security and limitations of DAS, NAS, CAS & SAN.

Unit-IV

Hybrid Storage solutions; Virtualization: Memory, network, server, storage & appliances. Data center concepts & requirements, Backup & Disaster Recovery: Principles Managing & monitoring : Industry management standards (SNMP, SMI-S, CIM).

Unit-V

Information storage on cloud :Concept of Cloud, Cloud Computing, storage on Cloud, Cloud Vocabulary, Architectural Framework, Cloud benefits, Cloud computing Evolution, applications & services on cloud, Cloud service providers and Models, Essential characteristics of cloud computing, Cloud Security and integration.

Books Recommended:

1. G. Somasundaram & Alok Shrivastava (EMC Education Services) editors; Information Storage and Management: Storing, Managing, and Protecting Digital Information; Wiley India.
2. Ulf Troppens, Wolfgang Mueller-Friedt, Rainer Erkens, Rainer Wolafka, Nils Haustein; Storage Network explained : Basic and application of fiber channels, SAN, NAS, iSESI, INFINIBAND and FCOE, Wiley India.
3. John W. Rittinghouse and James F. Ransome; Cloud Computing : Implementation , Management and Security, CRC Press, Taylor Frances Pub.
4. Nick Antonopoulos, Lee Gillam; Cloud Computing : Principles, System & Application, Springer.
5. Anthony T. Velete, Toby J.Velk, and Robert Eltenpeter, Cloud Computing : A practical Approach, TMH Pub.
6. Saurabh , Cloud Computing : Insight into New Era Infrastructure, Wiley India.
7. Sosinsky, Cloud Computing Bible, Wiley India.

BCA-IV SEM

BCA-19 : DATABASE MANAGEMENT SYSTEM

Max Marks 35 (12)

UNIT-I

Basic Concept: An Introduction to database System, Advantages and limitations of DBMS. Database System Architecture, Purpose of DBMS, Data Independency, Basic File Systems: Types of file, operations on file, file activity ratio, access time, response time, volatility, file size. File Organization: Sequential, Index Sequential, Direct access. Detail design of E-R Model.

UNIT-II

Three Data Models: An Overview of three Main Data Models i.e. Hierarchical Model, Network Model, Relational Model and their Inter-comparison. Relational Algebra: Basic Operation like Union, Intersection, Difference, Product, Join. The Power of SQL (Creation, Insertion, Deletion, Indexing & Modification of Databases in SQL).

UNIT-III

Normalisation: Relational Database Design: Integrity Constraints, Functional Dependency: Single Value and Multi Value Functional dependence, Normal Forms: I, II, III, Boyce Codd, IV & V Normal forms. Security & Integrity: Introduction, Access Control, Crypto Systems.

UNIT-IV

Introduction to Database and foxpro package: Ideas of database hierarchy (bit, byte, field, record); Foxpro commands: create, use, list, display, edit, browse, append, insert, delete, zap, pack, copy, to print, quit, clear, go top, go bottom, modify structure, recall, replace, sort, index, locate, continue, seek, search, find, close, Arithmetic, date, time and string function with database using commands/functions such as count, aveage, sum, time, day, dow, cdow, year, date, ctod, dtoc, cmonth, month, val, trim, str), displaying information with ? and ??.

UNIT-V

Programming: Using Input, Output statements and Conditional statement ACCEPT, INPUT, IF-ELSE-ENDIF, DO CASE-ENDCASE, DO WHILE-ENDDO, TEXT-ENDTEXT, SKIP, WAIT, STORE, SET commands, Generation of Report, Label and Customized Screen, Use of multiple files: Master file updation, Setting relations.

Books recommended:

1. Henry F. Korth & A. Silbershatz: Data Base System Concepts, MGH
2. C. J. Date: Database Management System, MGH
3. R. K. Taxali: Foxpro 2.6, TMH.
4. Arun K. Majumdar & P. Bhattacharya: Data Base Management System, TMH
5. Jeffrey O. Ullman : Principles of Database Systems, Galgotia Pub. Co. Ltd.
6. Bipin C. Desai: An Introduction to Database Systems, Galgotia Pub. Co. Ltd.
7 James Martin: Principles of Database Management, PHI
8. James Martin, Computer Database organization, PHI

BCA IV SEM

BCA-20 : VISUAL PROGRAMMING LANGUAGE

Max Marks 35 (12)

UNIT I

Introduction to VB: The Integrated Development environment (Menu bar, Tool box, Project Explorer, Properties window, object browser), working with forms, variables, procedure (Sub, Event, General). Control Structures (If…..Then…..Else), Select…..Case, Do While……Loop, For…..Next) Exit for and Exit Do statement, With-End with statement, Arrays, Data types, User-Defined, Data Types, constants, Datatype conversion, Built-in Functions, operators.

UNIT II

Working with controls – Classification of controls, study of various controls, Text box, label, Command button, option button, list box, combobox & Scrollbar, Flex grid & Built-In Activex controls) with respect to property, event and methods. Creating Control Array (at Design-time, at runtime, menus, mouse events and dialog boxes, OLE.

UNIT III

OOPS inVB: Objects, working with objects, forms as object, constructors and destructors collections (collection object, control collection), Class module. Database Programming: ODBC, Database Access methods in VB (DAO, RDO, ADO). Recordset

UNIT IV

Advanced data controls (datalist, datacombo, datagrid, Hierarchical flexigrid), SQL and the T-SGL Debugger. Overview of Data Report and Crystal Report. Activex Controls: Creating and Deploying Activex controls, Overview of COM/DCOM, Activex Exe and Activex DLL. VB Script: VB vx Vbscript, objects, operators, functions, statements in VB scripts.

UNIT V

Active Server Pages: Built in ASP objects: Response object (write, buffer, clear, flush, End, redirect, Expires, Expire Absolute method). Request object: Form collection (Query string, form), HTTP headers, ready the HTTP headers request. Server variables method, Environment variable; Cookies: Reading and writing cookies, Tradeoffs of cookies, Session object: Session variable, application object: Application variable, Session vs Application object, Global as a file ASP components: Add Rotator, Content linker and browser capabilities, Server object: Reading and writing files on the web server. Asp error object.

Text Books

1 Teach yourself VB6 in 21 days - Techmedia
2 VB6 Unleashed - Techmedia
3 Teach yourself ASP in 21 days - Techmed
4 ASP unleased - Techmedia

BCA-IV SEM

BCA-21 : COMPUTER NETWORKS

Max Marks 35 (12)

UNIT I

Introduction to Computer Networks:
Basics of data communication, digital vs analog transmission, mode of transmission, Computer Networks: Goals and kinds (LAN/WAN), idea of hardware and software requirements for computer networks, intercomparison of various communication media, wireless transmission., various topologies: bus, ring, tree & mesh, OSI reference model vs TCP/IP.

UNIT II

Data Link Layer:
Reference models: OSI vs TCP/IP, Data Link Layer Design Issues: Framing Error Control and Flow Control, Error Detection & Correction, Elementary Data Link Protocols, Sliding Windows Protocols, HDLC frame packet.

UNIT III

Medium Access Sub Layer:
Medium Access Sublayer: Channel allocation problem, Multiple access protocols: ALOHA, CSMA, Collision tree; Standards in LAN/WAN (CCITT & IEEE), High speed LANs: FDDI, Fast Ethernet; Satellite Networks: Polling, FDM, TDM, CDMA.

UNIT IV

The Network and Transport Layer:
Network Layer design issues, routing and switching techniques, Routing Algorithms, congestion control algorithms, the network layer in the internet; transport layer: Elements of transport services, transport protocols, the internet transport protocol, TCP & UDP.

UNIT V

Application Layers and Network Management:
Network Security: Traditional cryptography, cryptography principles, secret key algorithms, public key algorithm, Authentication protocol, Domain Name System, Simple Network Management Protocol, E-mail, News group, WWW, Future trends in computer networks.

Books recommended:

1 Tanenbaum: Computer Networks, PHI
2 John Freer: Computer Communication & Networks, EWP
3 William Stalling: Data & Computer Communication, PHI
4. Basandra & Jaiswal: Local Area Network, Galgotia
5. James Martin: Computer Networks & Distributed processing , PHI
6. Uyless Black: Computer Networks, PHI

BCA-IV SEM

BCA-22 : BASIC MATHEMATICS-II

Max Marks 35 (12)

UNIT I

Vector algebra and geometry: Concept of vector, forms of vector, algebra of vector. Composition and resolution of vector. Scalar and vector product of two vectors.

Unit-II

Measures of central tendency: The arithmetic mean, weighted arithmetic mean, geometric mean, harmonic mean, root mean square, median, mode, quartiles, deciles and percentiles.

Unit-III

Measures of dispersion: The range, mean deviation and standard deviation.

Unit-IV

Probability: Elementary probability theory, sample space, events, classical and relative frequency definition of probability, theorems of total and compound probability

Unit-V

Curve fitting and the method of least squares, regression, coefficient of correlation.

Books recommended:

1. M. Ray and H.S. Sharma : Mathematical statistics, Ram Prasad and Sons.
2. Parmanand Gupta : Comprehensive mathematics, Laxmi Publ. Ltd.
3. Shanti Narayan : A text book of vector algebra, S. Chand & Co.
4. M. Ray : Vector Algebra, Ram Prasad and Sons.
5. N. Saran & S.N. Nigam : Introduction to vector analysis, Pothishala Pvt.

BCA-V SEM

BCA-25 : COMPUTER GRAPHICS

Max Marks 35 (12)

UNIT-I

Introduction : Applications of Computer Graphics, Raster Graphics, Fundamentals; Scan conversion, Pixel, frame, buffer, Graphics Primitives : Line, Circle, Ellipse, character generation, polygon : representation, polygon filling algorithms, antialiasing

UNIT-II

Devices: Display Devices, random scan and raster scan monitors, color CRT monitor, direct view storage tube, Plasma Panel, Hardcopy devices : printers and plotters, Input Devices : Joysticks, mouse, digitizer, scanner, camera, Transformations : Translation, scaling, rotation, Shear, Reflection, homogeneous coordinates, composite transformation, concatenation properties, Raster method of transformation.

UNIT-III

Windowing and Clipping : Window, viewport, line clipping, polygon clipping, text clipping, Window & Viewport transformation, Display file concepts & Segmentation : display File, segment table, segment creation, deletion, rename, segment display file.

UNIT-IV

Interaction : Locator & Selector devices, interactive picture construction techniques, Three Dimensions : 3D geometry, 3D display techniques, transformation, viewing parameters.

UNIT – V

Hidden surface removal : Back face removal algorithm, Z buffers algorithm, Scan line algorithm, painter's algorithm,

Shading & Color Models : Diffuse illumination, point source illumination, specular reflection, refraction, shadows, colour, colour models, dithering, halftoning

Curves & Surfaces : Interpolation algorithm for curve fitting, B splines, bezier curves, fractals.

Books Recommended:

1. D. Hearn and Baker : Computer Graphics, Prentice Hall of India Pvt. Ltd.
2. Steven Harrington : Computer Graphics, MGH.
3. Newman and R.F. Sprouli : Principles on Interactive Computer Graphics, MGH.
4. W.K. Giloi : Interactive Computer Graphics, PHI.
5. R.A. Piastock and G. Kalley : Theory and Problems of Computer Graphics, MGH

BCA-V SEM

BCA-26 : PROGRAMMING IN JAVA

Max Marks 35 (12)

UNIT I

Introduction to Object Oriented Programming: Basic concepts, benefits of OOPS, Application of OOP, Java evolution : history, features, C, C++ & Java a comparison, Java and WWW, HW, & SW requirements for Java, Structure of simple Java program, Java tokens, statements, Java virtual machine, command line arguments, programming style, constants & variables, symbolic constants, type casting; Various operators in Java (arithmetic, relational, logical , assignment, increment, decrement, conditional, bitwise & special operator); arithmetic expressions & their evaluation, precedence of arithmetic operators, type conversions in expressions, operator precedence and associativity, mathematical functions.

UNIT II

Decision making and branching; Decision making with if statement, simple if statement, the if....else statement, nesting of if.....else statements, the else if Ladder, the switch statement, The ? operators, the while statement, the do statement, the do statement, the for statement, jump in loops, labeled loops, classes, objects and methods; Defining a class, objects and methods; Defining a class, adding variables and methods, creating objects, accessing class members, constructors, method overloading, static members, nesting of methods inheritance; extending a class, overriding methods, final variables and methods, final classes, finalize methods, abstract methods and classes visibility control.

UNIT III

Arrays, strings and vectors; Arrays, one dimensional arrays, creating an array, two dimensional arrays, strings, vectors, wrapper classes, defining interfaces, multiple inheritance, extending interfaces, implementing interfaces, accessing interface variable, Packages: Java API packages, using system packages, naming conventions, creating packages, accessing a package, using a package, adding a class to a package.

UNIT IV

Multithreaded programming; creating threads, extending the thread class, stopping and blocking a thread, life cycle of a thread, using thread methods, thread exceptions, thread priority, synchronization, implementing the runnable interface.

UNIT V

Applet programming; Local and remote applets, preparing to write applets, building applets code, applet life cycle, creating and executing applet, designing a web page, adding applet to HTML file, running the applet, passing parameters to applets, displaying numerical values, getting input from the user.

Book Recommended:

1. Programming with Java a primer by E. Balagurusamy.
2. Peter Norton's Guide to Java Programming, Techmedia Pub.
3. Mastering in Java, Techmedia Pub.schatz & Galvin
4. Core JAVA 2 Volume_I Fundamentals Sun Microsystems

BCA-V SEM

BCA-27 : OPERATING SYSTEM

Max Marks 35 (12)

UNIT–I

Fundamental Concepts of Operating Systems: Evolution of operating systems - Serial processing, Batch Processing, Multi -programming, Types of Operating systems - Batch operating system, Time-sharing operating systems, Real-time operating system, multitasking operating system, distributed operating system. Overview of Process Management, Memory Management, File Management, Device Management, Operating system services,

UNIT-II

Process Management : Process concept, process scheduling, operation on processes, threads, enterprises communication, basic concepts, scheduling criteria, scheduling algorithms, Multiple processor scheduling, real-time scheduling, algorithm evaluation.

UNIT-III

Inter Process Synchronization: Concurrent processes, the critical section problem, the Critical Region and Conditional Critical Region problem, Inter process synchronization, Inter process communication, Deadlock occurrence, Deadlock characterization, Deadlock prevention, Deadlock avoidance, Deadlock detection and recovery.

UNIT-IV

Memory Management: Single Process Monitor, Static Partitioned memory allocation, Swapping, Relocation. Dynamic Partitioned memory allocation, Compaction. Multiple fence register. Segmentation - Address translation, Descriptor caching. Paging, Page allocation. Virtual memory, Instruction interruptability, Management of virtual memory, Page replacement, Replacement algorithms. Comparison of various memory management techniques with reference to Protection and sharability.

UNIT-V

File and Device Management: File system organization, File operations, Access methods, Directory structure organization, File protection - Goals of protection, Access matrix model of protection, Dynamic Protection Structure, Security encryption, Device management: Dedicated, Shared and Virtual devices, Sequential Access and Direct Access devices, Channel and Control Units, I/O buffering, I/O schedulers, Spooling system.

Books Recommended:

1. Peterson & Siberschatz : Operating system concepts, Sybex.
2. Senart E. Madnik and J.J. Donovan : Operating Systems, McGraw Hill.
3. Milan Melankovic : Operating Systems, Concept and Design, McGraw Hill
4. Lister Andrew : Fundamentals of Operating Systems, Macmilan Pub. Co.
5. Delteri : An Introduction to Operating System, Addition Wesley.

BCA-V SEM

BCA-28 : DISCRETE MATHEMATICS

Max Marks 35 (12)

UNIT – I

Mathematical Logic: Propositions and logical operators, Truth tables, equivalence and implementation, Laws of logic, Quantifiers. Set theory: Introduction, concept of set of theory relation, types of relation, equivalence relation.

UNIT – II

Boolean Algebra and its properties, Algebra of propositions & examples, De-Morgan's Laws, Partial order relations, greatest lower bound, least upper bound, Algebra of electric circuits & its applications. Design of simple automatic control system

UNIT – III

Graph: Simple and multigraph. Incidence and degree, Paths, walk, cycles and circuit. Isomorphism, subgraphs. Connectedness, algorithm, complete and regular graphs. Operations on graphs, Euler graph, bipartite graphs. Shortest path algorithms; travelling salesman problem, Hamiltonal paths.

UNIT – IV

Trees: Properties of trees, pendant vertices. Centre of a tree, rooted and binary trees, spanning trees - spanning tree algorithms, fundamental . circuits; spanning trees of a weighted graph: cutsets and cut-vertices; fundamental cutsets; connectivity and seperativity; network. flows; max-flow min-cut theorem.

UNIT – V

Plan on graphs, dual graphs, Kuratowski's two graph, matrix representation of graphs, incidence matrix, directed graphs, digraphs, directed paths and connectedness. Eular digraphs.

Books Recommended:

1. Harry, F.: Graph theory, Addison Wesley Publ. Co.
2. Trembley J. P. & Manohar R: Discrete Mathematical Structures with Application to Computer Science, TMH.
3. S. Lipchutz: "Finite Mathematics", Schaum Series, MGH.
4. Liu, C.L Elements of Discrete Mathematics, MGH.
5. Deo. N, Graph Theory, PHI

BCA-VI SEM

BCA-31 : SOFTWARE ENGINEERING

Max Marks 35 (12)

UNIT–I

Introduction: The product and the process, program vs software products, Emergence of software engineering, software development life cycle models, classical waterfall, iterative waterfall, prototyping, evolution, spiral & RAP model, comparison of various life cycle models, project management process, process management process.

UNIT- II

Software Requirement Analysis & Specification (SRAS) : Need for software requirement specification, requirement process, requirement analysis, requirement specification, planning a software project; cost estimation, project scheduling, staffing & personnel planning, software configuration management, plans: quality assurance plan, risk management.

UNIT-III

Software Design : Criteria for Software design, software design & design principle; module level concepts: Coupling and Cohesion, design notation & specifications, design methodology, verification, object oriented design: Basic concepts, design methodology & Metrics, object oriented vs function oriented design, detailed design.

UNIT-IV

Coding and Testing : Standard guideline for coding, programming practice, testing fundamentals, unit testing, verification vs validation, black box & white box testing, functional testing, structural testing, object oriented program testing.

UNIT-V

Software reliability & quality assurance: Reliability metrics, growth and modeling, software quality management system, evolution, ISO 9000. CASE: scope and benefit, support in software life cycle, CASE tools, hardware and environmental requirements, architecture of a CASE environment. Software maintenance.

Books Recommended:

1. Pankaj Jalote: An Integral Approach to Software Engineering, Narosa
2. Rogers Pressman: Software Engineering, a practitioner's approach, MGH
3. Rajib Mall: Fundamental of Software Engineering, PHI
4. Richard Farley: Software Engineering Concept, TMH

BCA-VI SEM

BCA-32 : RDBMS

Max Marks 35 (12)

UNIT-I

Interactive SQL: involving SQL plus, data manipulation in DBMS, the oracle data types, creating a table, creating a table from a table, insertion of data into tables, updating the contents of a table, deletion operations, the select command, many faces of the select command, modifying the structure of tables, removing/deleting/dropping tables

UNIT-II

Data constraints: column level and table level constrains, NULL value concepts primary key concepts, unique key concepts, default value concepts, the foreign - key references constraints, CHECK integrity constraints, defining different constraints on the table, defining integrity constraints in the ALTER TABLE command, dropping integrity constraints in the alter table command, computations in expression lists used to select data, logical operators, range searching, pattern matching, oracle functions, grouping data from tables in SQL, manipulating data in SQL.

UNIT-III

Joins: joining multiple tables (equi joins), joining a table to itself (self joins): sub queries, using the union, intersect and minus clause, indexes, views: creation of views, renaming the column of a view, using view, selecting a data set from a view, updatable views, destroying a view, granting permissions: permission on the objects created by the user, granting permissions using GRANT statement, object privileges, with grant option, referencing a table belonging to another user, granting permissions to another user, revoking the permissions given.

UNIT-IV

PL/SQL: introduction, performance, performance improvement, portability, PL/SQL data types, what PL/SQL can do for programming, the PL/SQL execution environment, the PL/SQL syntax, the character set, understanding the PL/SQL block structure, oracle transactions, locks, cursors, error handling in PL/SQL, stored procedures: what are procedures, where do procedures reside, how oracle create a procedure, how oracle executes procedures, advantages of procedures, syntax for creating stored procedure, an application using a procedure, deleting a stored procedure.

UNIT-V

Stored functions: what are functions, where do functions reside, how oracle crates a function, how oracle executes a function, advantages o functions, syntax for creating a stored function, an application using a function, deleting a stored function. database triggers: introduction, use of database triggers, how to apply database triggers

BOOKS RECOMMENDED:

1. Ivan Bayross: Oracle Developer 2000 BPB Pub.
2. Liebschuty: The oracle cook book, BPB Pub.
3. Michael Abbey & Michael J. Corey : Oracle Beginners guide TMH.

DEPARTMENT OF CHEMISTRY

COURSE STRUCTURE

for

M.Sc. (Chemistry)
Four Semesters (Two Year)

Programme

Based on

Choice Based Credit System (CBCS)
(As per Ordinanc-14)

I & II Semester 2020-21
III & IV Semester 2021-22

AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

Semester Course of M.Sc. Chemistry

Programme	**:**	M.Sc. Chemistry
Programme Code	**:**	13
Duration	**:**	4 Semester (Two Year)
Eligibility	**:**	B.Sc. with Mathematics and Biology as a subject
Age Limit	**:**	No age limit
Admission Procedure	**:**	The admission will be done as per merit of qualifying examinations

PROGRAMME OBJECTIVES & STRUCTURE

PO #	PROGRAMME OUTCOME
PO 1	**Critical Thinking**: Take informed actions after identifying the assumptions that frame our thinking and actions, check out the degree to which these assumptions are accurate and valid, and look at our ideas anddecisions(intellectual,organizational,andpersonal)fromdifferent Perspectives.
PO 2	**Effective Communication**: Speak, read, write and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media and Technology.
PO 3	**Social Interaction**: Elicit views of others, mediated is agreements and help reach conclusions in group settings.
PO 4	**Effective Citizenship**: Demonstrate empathetic social concern and equity-centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
PO 5	**Ethics**: Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.
PO 6	**Environment and Sustainability**: Understand the issues of environmental contexts and sustainable development.
PO 7	**Self-directed and Life-long Learning**: Acquire the ability to engage in independent and life-long learning in the broadest context of socio-technological changes.

PROGRAMME SPECIFIC OUTCOME

PSO #	PROGRAMME SPECIFIC OUTCOME
PSO 1	To gain a functional knowledge of theoretical concepts and experimental aspects of chemistry and their applications in the day-to-day life.
PSO 2	To integrate the gained knowledge with various contemporary and evolving areas in chemical sciences like inorganic, organic, physical, analytical, synthetic, instrumental etc.
PSO 3	To understand, analyze, plan and implement qualitative as well as quantitative analytical synthetic and phenomenon-based problems in chemical sciences.
PSO 4	Provide opportunities to excel in academics, research or Industry.

Course Outcome (COs)

S.No.	**Course Name**	**Course Code**
Semester-I		
401	**Inorganic Chemistry-I**	**MCH-401**
	Course Outcome	
CO1	Understand Molecular Symmetry and Group Theory	
CO2	Understand Stereochemistry and Bonding in Main Group Compounds	
CO3	Concept of Metal-Ligand Equilibrium in Solution	
CO4	Understand kinetics and reaction mechanisms in transition metal complexes	
CO5	Concept of electron transfer mechanism and Crystal Field theory and its limitations	
402	**Organic Chemistry-I**	**MCH-402**
	Course Outcome	
CO1	Understand the nature of bonding in Organic molecules	
CO2	Evaluate stereochemistry inorganic compounds	
CO3	Examine conformational analysis and linear free energy relationship	
CO4	Analyse structure and reactivity in terms of reaction mechanism	
CO5	Understand aliphatic nucleophilic substitution and its factors	
403	**Physical Chemistry-I**	**MCH-403**
	Course Outcome	

CO1	Investigate Exact Quantum Mechanical Results	
CO2	Understand approximate methods and its application	
CO3	Discuss angular momentum	
CO4	Evaluate classical thermodynamics	
CO5	Understand statistical thermodynamics	
404 A	**(A) Mathematics for Chemists** (For students without Mathematics in B.Sc.)	**MCH-404**
Course Outcome		
CO1	Explain Vectors and Matrix Algebra	
CO2	Discuss Differential Calculus	
CO3	Understand Integral calculus	
CO4	Discuss the Elementary Differential equations	
CO5	Fundamental understanding of Permutation and Probability	
404B	**(B) Biology for Chemists** (For students without Biology in B.Sc.)	**MCH-404**
Course Outcome		
CO1	Understand Cell Structure and Functions	
CO2	Discuss Carbohydrates	
CO3	Discuss Lipids	
CO4	Understand Amino-acids, Peptides and Proteins	
CO5	Explain Nucleic Acids	
105	**Inorganic Chemistry Lab**	**MCH-105**
Course Outcome		
CO1	Fundamental understanding of qualitative analysis	
CO2	Fundamental understanding of quantitative analysis	
CO3	Apply volumetric and gravimetric analysis in separation and determination of metal ions	
CO4	Understand methods of preparation of inorganic compounds	
CO5	Analyse inorganic compounds by spectroscopic methods	
106	**Organic Chemistry Lab**	**MCH-106**
Course Outcome		
CO1	Understand methods of preparation of organic compounds	

CO2	Analyse synthesized organic compounds by spectroscopic techniques	
CO3	Understand chromatographic methods for separation, purification and identification of organic compounds	
CO4	Understand IR spectra for functional group identification	
CO5	Interpretation of results	
107	**Physical Chemistry Lab**	**MCH-107**
Course Outcome		
CO1	Understand experimental techniques for adsorption and phase diagram	
CO2	Determine rate constant for various chemical reactions	
CO3	Understand Oscillatory reactions	
CO4	Determine molecular mass of non-volatile and electrolyte	
CO5	Analyse the degree of dissociation of weak electrolyte and its deviation from ideal behaviour	
Semester-II		
405	**Inorganic Chemistry-II**	**MCH-405**
	Course Outcome	
CO1	Understand Electronic Spectral Studies of Transition Metal Complexes	
CO2	Understand Magnetic Properties of Transition metal Complexes	
CO3	Understand Metal π Complexes	
CO4	Understand Metal Clusters	
CO5	Determine Optical Rotatory Dispersion and Circular Dichroism	
406	**Organic Chemistry-II**	**MCH-406**
	Course Outcome	
CO1	Explain to Aromatic Electrophilic & Nucleophilic Substitution	
CO2	Explain to Free Radical Reactions	
CO3	Understand Addition Reactions	
CO4	Understand to Addition to carban-Hetero Multiple bonds and Elimination Reactions	
CO5	Understand to Pericyclic Reactions	
407	**Physical Chemistry-II**	**MCH-407**
	Course Outcome	
CO1	Understand Chemical Dynamics	
CO2	Understand Surface Chemistry	

CO3	Explain Macromolecules	
CO4	Understand Non Equilibrium thermodynamics	
CO5	Explain Electrochemistry	
408	**Spectroscopy and Diffraction Methods**	**MCH-408**
	Course Outcome	
CO1	Understand Nuclear Magnetic Resonance Spectroscopy	
CO2	Understand Electron Spin Resonance Spectroscopy	
CO3	Explain to X-ray Diffraction-I	
CO4	Explain to X-ray Diffraction-Il	
CO5	Understand the Electron and Neutron Diffraction	
205	**Inorganic Chemistry Lab**	**MCH-205**
	Course Outcome	
CO1	Explain the Separation of cations and anions by paper chromatography	
CO2	Explain the Separation of cations and anions by column chromatography (ion exchange)	
CO3	Understand the Preparation of inorganic compounds	
CO4	Understand I. R. electronic spectra of Synthesized inorganiccompounds	
CO5	Analyse Mossbauer, E.S.R. and magnetic susceptibility of Synthesized inorganic compounds	
206	**Organic Chemistry Lab**	**MCH-206**
	Course Outcome	
CO1	Understand Aldol condensation	
CO2	Understand synthesis of p-chlorotoulene from p-toludiene	
CO3	Understand synthesis of p-nitroaniline and p- bromoaniline	
CO4	Determination of the percentage or number of hydroxyl group inan organic compound by acetylation method	
CO5	Determine the iodine and saponification values of an oil sample	
207	**Physical Chemistry Lab**	**MCH-207**
	Course Outcome	
CO1	Understand of solubility product of sparingly soluble salt	
CO2	Determine the strength of strong and weak acid	
CO3	Analyse the strengths of halides in a mixture potentiometrically	
CO4	Understand Acid - base titration in a non - aqueous media using a pH meter	
CO5	Determine the dissociation constant of monobasic / dibasic acid	

Semester-III		
501	**Application of Spectroscopy**	**MCH-501**
	Course Outcome	
CO1	Understand Electronic Spectra of coordination compounds	
CO2	Discuss Vibrational Spectroscopy	
CO3	Discuss Electron Spin Resonance Spectroscopy	
CO4	Analyse the Application of Nuclear Magnetic Resonance in coordination compounds	
CO5	Explain Mossbauer and Mass spectroscopy	
502	**Photochemistry**	**MCH-502**
	Course Outcome	
CO1	Discuss Photochemical Reactions	
CO2	Understand Reaction Mechanism	
CO3	Discuss Photochemistry of Alkene & Aromatic Compounds	
CO4	Explain Photochemistry of Carbonyl Compounds	
CO5	Analyse Miscellaneous Photochemical Reactions	
503	**Analytical Chemistry**	**MCH-503**
	Course Outcome	
CO1	Discuss the Introduction of Analytical Chemistry	
CO2	Discuss Errors and Evaluation	
CO3	Understand Food Analysis & Water Pollution	
CO4	Understand Clinical Chemistry	
CO5	Analyse Drug Analysis	
504	**Heterocyclic Chemistry**	**MCH-504**
	Course Outcome	
CO 1	Understand Nomenclature of Heterocycles and Aromatic Heterocycles	
CO 2	Discuss Non-aromatic Heterocycles	
CO 3	Explain Small Ring Heterocycles and Benzo-Fused Five-Membered Heterocycles	
CO 4	Understand Meso-ionic Heterocycles and Six-Membered Heterocycles with one Heteroatom	
CO 5	Understand Heerocyclic systems containing P, As, Sb and B	
505	**Electrochemistry**	**MCH-505**

Course Outcome		
CO 1	Understand Conversion and storage of Electrochemical Energy	
CO 2	Explain corrosion and stability of metals	
CO 3	Understand Bioelectrochemistry	
CO 4	Learn kineic parameters for quasi-reversible and irreversible waves	
CO 5	Understand potential Sweep and Bulk Electrolysis methods	
506	**Industrial Chemistry**	**MCH-506**
Course Outcome		
CO 1	Understand Industrial Gases and Inorganic Chemicals	
CO 2	To impart basic knowledge of Petroleum Chemistry	
CO 3	To learn how to make Glasses, Ceramics and Cements	
CO 4	To learn the manufacturing of Sugar, Papers, Leathers and Fertilizers	
CO 5	Understand Petroleum and Petrochemical Chemistry	
507	**Medicinal Chemistry**	**MCH-507**
Course Outcome		
CO 1	Understand Structure and Activity	
CO 2	Discuss Pharmacodynamics	
CO 3	Understand Antibiotics and Antibacterial	
CO 4	Explain General chemistry and mode of action of Antifungal Antibacterial and Antiviral drugs	
CO 5	Explain General chemistry and mode of action of Non - steroidal & Anti inflammatory drugs	
305	**Inorganic Chemistry Lab**	**MCH-305**
	Course Outcome	
CO1	Quantitative determination of a three component mixture	
CO2	Analyse Chromatographic Separations of Cadmium and Zinc	
CO3	Analyse Thin layer chromatography-separation of Nickel, Manganese	
CO4	Understand Separation and identification of sugar present in the Given mixture of glucose, fructose and sucrose	
CO5	Analyse Chromatographic Separations of Cobalt and Zinc	
306	**Organic Chemistry Lab**	**MCH-306**
	Course Outcome	
CO1	Analyse Benzilic acid from Benzil	
CO2	Understand Preparation of quinoline from aniline	

CO3	Understand Preparation of 2-phenyl indole from phenl hydrazine.	
CO4	Understand Biosynthesis of ethanol from sucrose	
CO5	Analyse the Separation and identification of the sugars present In the given mixture of glucose, fructose and sucrose by paper chromatography and determination of Rf values	
307	**Physical Chemistry Lab**	**MCH-307**
	Course Outcome	
CO1	Determine the stoichiometry and stability constant of Ferric Isothiocyanate complexion solution	
CO2	Determine the rate constant of alkaline bleaching of Malachite Green and effects of ionic strength on the rate of reaction	
CO3	Analyse the energy and enthalpy of activation in the reaction of $KMnO_4$ and benzyl alcohol in acid medium	
CO4	Analyse the energy of activation and entropy of activation from A single kinetic run	
CO5	Determine Kinetics of an enzyme catalyzed reaction	
Semester-IV		
508	**Organotransition Metal Chemistry**	**MCH-508**
	Course Outcome	
CO1	Understand Alkyls and Aryls of Transition Metals Compounds of Transition Metal-Carbon multiple bonds	
CO2	Understand Transition Metal π-Complexes	
CO3	Discuss Stoichiometric reactions and Transition Metal Compounds with bonds to hydrogen, boron, silicon	
CO4	Discuss Homogeneous Catalysis	
CO5	Analyse Fluxional Organometallic Compounds	
509	**Solid State Chemistry**	**MCH-509**
	Course Outcome	
CO1	Discuss Solid State Reactions	
CO2	Understand Crystal Defects and Non-Stoichiometry	
CO3	Discuss Eiectronic properties and Band Theory	
CO4	Understand Organic Solids	
CO5	Analyse Liquid crystals	
510	**Natural Product**	**MCH-510**

Course Outcome		
CO 1	Explain the Terpenoids and Carotenoids	
CO 2	Discuss the Alkaloids	
CO 3	Discuss the Steroids	
CO 4	Understand the Plant Pigments and Prophyrins	
CO 5	Understand the Prostaglandis and Pyrethroids and Rotenones	
511	**Organic Synthesis**	**MCH-511**
Course Outcome		
CO 1	Explain Disconnection approach	
CO 2	Understand one group and two group C-C disconnections	
CO 3	Understand Oxidation and Reduction	
CO 4	Understand organometallic reagents	
CO 5	Discuss synthesis of some complex molecules	
512	**Polymer Chemistry**	**MCH-512**
Course Outcome		
CO 1	Understand importance of polymers	
CO 2	Discuss polymer characterization	
CO 3	Learn analysis and testing of polymers	
CO 4	Understand inorganic polymers	
CO 5	Discuss structure, properties and application of polymers	
513	**Environmental Chemistry**	**MCH-513**
Course Outcome		
CO 1	Explain Atmospheric Chemistry and Tropospheric Photochemistry	
CO 2	Understand Air Pollution, Acid Rain, Stratospheric Ozone Depletion, Green House Effect and Urban Air Pollution	
CO 3	Discuss Aquatic Chemistry and Water Pollution	
CO 4	Understand Toxic heavy metals, Toxic Organic Compound, Polychlorinated biphenyls and Polynuclear Aromatic Hydrocarbons	
CO 5	Explain Soil and Environmental Disasters	
514	**Computer-Aided Drug Discovery**	**MCH-514**
Course Outcome		
CO 1	Discuss General information about drugs	

CO 2	Understand SAR vs Quantitative Structure-Activity Relationship	
CO 3	Explain Topological modeling	
CO 4	Discuss Regression analysis	
CO 5	Discuss Molecular Modeling	
515	**Inorganic Chemistry Lab**	**MCH515**
Course Outcome		
CO1	Understand Preparation of inorganic compounds	
CO2	Understand IR electronic spectra of Synthesized inorganic compounds	
CO3	Discuss Handing of air and moisture sensitive compounds involving vacuum lines.	
CO4	Analyse Spectrophotometric Determination of Manganese/Chromium in steel sample	
CO5	Analyse Fluoride/nitrite/phosphate inorganic compounds	
516	**Organic Chemistry Lab**	**MCH 516**
Course Outcome		
CO1	Understand lsolation of caffeine from tea leaves	
CO2	Understand Isolation of casein from milk	
CO3	Understand Isolation of nicotine diorite from tobacco	
CO4	Understand Isolation of eugenol from clove	
CO5	Analyse Identification of organic compounds by UV, IR, PMR Spectroscopy	
517	**Physical Chemistry Lab**	**MCH 517**
Course Outcome		
CO1	Determine the partial molar volume of solute and solvent in a binary mixture.	
CO2	Determine of the temperature dependence of the solubility of a compound	
CO3	Analyse Identification and estimation of Cd+2, Pb+2	
CO4	Analyse Identification and estimation of Zn+2 and I+2	
CO5	Analyse Study of metal ligand complex polarographically	

M.Sc. CHEMISTRY
(FOUR SEMESTER COURSE)
SCHEME OF EXAMINATION
(CBCS Syllabus)
(Effective from 2020-21)

SEMESTER –I

Paper	Course No.	Course	Credit	Marks
Paper I	MCH-401	Inorganic Chemistry I	**4**	**100(60+40)**
Paper II	MCH-402	Organic Chemistry I	**4**	**100(60+40)**
Paper III	MCH-403	Physical Chemistry I	**4**	**100(60+40)**
Generic Elective				
Paper IV	MCH-404	(a) Mathematics for Chemists[1] (b) Biology for Chemists[2]	**4**	**100(60+40)**
Practical	Inorganic (105) + Organic (106) + Physical (107) (2+2+2)		**6**	**100+100+100**
		Comprehensive viva voce	**4***	**100**
Total Marks			**26**	**800**

***Virtual Credit**
[1] Strictly for the students without Mathematics in B.Sc.
[2]Strictly for the students without Biology in B.Sc.

SEMESTER –II

Paper	Course No.	Course	Credit	Marks
Paper V	MCH-405	Inorganic Chemistry II	**4**	**100(60+40)**
Paper VI	MCH-406	Organic Chemistry II	**4**	**100(60+40)**
Paper VII	MCH-407	Physical Chemistry II	**4**	**100(60+40)**
Generic Elective				
Paper VIII	MCH-408	Spectroscopy and Diffraction Methods	**4**	**100(60+40)**
Practical	Inorganic (205) + Organic (206)+ Physical (207) (2+2+2)		**6**	**100+100+100**
		Comprehensive viva voce	**4***	**100**
Total Marks			**26**	**800**

***Virtual Credit**

SEMESTER– III

Paper	Course No.	Course	Credit	Marks
Paper–I	MCH-501	Application of Spectroscopy	**4**	**100(60+40)**
Paper–II	MCH-502	Photochemistry	**4**	**100(60+40)**
Discipline Elective (any one)				
Paper–III	MCH-503 MCH-504 MCH-505	Analytical Chemistry Heterocyclic Chemistry Electrochemistry	**4**	**100(60+40)**
Generic Elective (any one)				
Paper–IV	MCH-506 MCH-507	Industrial Chemistry Medicinal Chemistry	**4**	**100(60+40)**
Practical	Inorganic (307) + Organic (308) + Physical (309) (2+2+2)		**6**	**100+100+100**
		Comprehensive viva voce	**4***	**100**
Total Marks			**26**	**800**

*Virtual Credit

SEMESTER– IV

Paper	Course No.	Course	Credit	Marks
Paper V	MCH-508	Organotransition Metal Chemistry	**4**	**100(60+40)**
Paper VI	MCH-509	Solid State Chemistry	**4**	**100(60+40)**
Discipline Elective (any one)				
Paper VII	MCH-510 MCH-511 MCH-512	Natural Product Organic synthesis Polymer Chemistry	**4**	**100(60+40)**
Generic Elective (any one)				
Paper VIII	MCH-513 MCH-514	Environmental Chemistry Computer-Aided Drug Discovery	**4**	**100(60+40)**
Practical	Inorganic (515) + Organic (516) + Physical (517) (2+2+2)		**6**	**100+100+100**
		Comprehensive viva voce	**4***	**100**
Total Marks			**26**	**800**

*Virtual Credit

Grand Total Marks M.Sc. (Ist to IVth Sem)=**3200**

SEMESTER –I
Paper-I
MCH-401: INORGANIC CHEMISTRY-I

COURSE OBJECTIVES

To make the student conversant with

- The basic concept of Molecular Symmetry and Group Theory
- Stereochemistry and bonding in main group compounds
- Metal ligand equilibrium in solution
- Reaction mechanism of transition metal complexes
- Metal ligand bonding

Unit-I

Molecular Symmetry and Group Theory

Symmetry elements and symmetry operations, definition of group, subgroup and classes in a group. Conjugacy relation and classes. Point symmetry group. Schonfilies symbols, representations of groups by matrices (representation for the C_n, C_{nv}, C_{nh}, D_{nh} group to be worked out explicity). Character of a representation. The great orthogonality theorem (without proof) and its importance. Character tables and their use. Reducible representations and their reduction spectroscopy. Derivation of character table for C_{2v} and C_{3v} point group Symmetry aspects of molecular vibrations of H_2O molecule.

Unit-II

Stereochemistry and Bonding in Main Group Compounds

VSEPR, Walsh diagram (triatomic and penta-atomic molecules), dπ-pπ bond, Bent rule and Short comings of VSEPR model, energetics of hybridization, some simple reactions of covalently bonded molecules.

Unit-III

Metal-Ligand Equilibrium in Solution

Stepwise and overall formation constants and their interaction, trends in stepwise constant, factors affecting the stability of metal complexes with reference to the nature of metal ion and ligand. Chelate effect and its thermodynamic origin, determination of binary formation constants by potentiometry and spectrophotometry.

Unit-IV

Reaction Mechanism of Transition Metal Complexes

Energy profile of a reaction, reactivity of metal complex, inert and labile complexes, kinetic application of valence bond and crystal field theories, kinetics of octahedral substitution, acid hydrolysis, factors affecting acid hydrolysis, base hydrolysis, conjugate base mechanism, direct and indirect evidences in favour of conjugate mechanism, anion reactions, reactions without metal ligand bond cleavage. Substitution reactions in square planar complexes, the trans effect, mechanism of the substitution reaction. Redox reaction, electron transfer reactions, mechanism of one electron transfer reactions, outer sphere type reactions, cross reactions and Marcus-Hush theory, inner sphere type reactions.

Unit-V

Metal-Ligand bonding

Limitation of crystal field theory, molecular orbital theory for bonding in octahedral, tetrahedral and square planar complexes, π-bonding and molecular orbital theory. John-Teller effect, Electronic spectra and transition metal complexes, spectroscopic term and microstates for the p^2 and d^2 configurations.

Books Suggested

1. Advanced Inorganic Chemistry, F.A. Cotton and Wilkinson, John Wiley.
2. Inorganic Chemistry, J.E. Huhey, Harpes & Row.

3. Chemistry of the Elements. N.N. Greenwood and A. Earnshow, Pergamon.
4. Inorganic Electronic Spectroscopy, A.B.P. Lever, Elsevier.
5. Magnetiochemistry, R.L. Carlin, Springer Verlag.
6. Comprehensive Coordiantion Chemistry eds., G. Wilkinson, R.D. Gillars and J.A. Mc Cleverty,Pergamon.
7. J.E. House, Inorganic Chemistry, Elsevier, 2008.
8. D.K. Sriver, P.W. Alkins and C.H. Langford, Inorganic Chemistry, Oxford University, Pra 51, Oxford, 1994.

COURSE OUTCOMES

The students will be able to

- know the Symmetry elements and symmetry operations covers a wide area of research in theoretical chemistry.
- know the shape of the molecules and their point groups
- Demonstrate and understanding of VSEPR theory
- evaluate the stability of metal ligand complexes
- Get knowledge about reaction mechanism and metal ligand bonding

SEMESTER–I
Paper-II
MCH-402: ORGANIC CHEMISTRY-I

COURSE OBJECTIVES

To make the student learn about the

- Concepts of aromaticity
- The basic concepts in stereochemistry
- To understand principles of organic reaction mechanism, substitution, elimination, homo- and hetero bond addition reactions.

Unit-I

Nature and Bonding in Organic Molecules

Delocalized chemical bonding-conjugation, cross conjugation, resonance hyperconjugation, bonding in fullerences, tautomerism. Aromaticity in benzenoid and non-benzoid compounds, alternate and non-alternate hydrocarbons. Huckel's rule, energy. Level of π-molecular orbitals, annulenes, anti-aromaticity, homo-aromaticity, PMO approach. Bonds weaker than covalent-addition compounds, crown ether complexs and cryptands, inclusion compounds, catenanes and rotaxanes.

Unit-II

Stereochemistry

Strain due to unavoidable crowding Elements of symmetry, chirality, molecules with more than one chiral center, threo and ertythro isomers, methods of resolution, optical purity, enantiotopic and diastereotopic atoms, groups and faces, stereospecific and stereoselective synthesis, Asymmetric synthesis. Optical activity in the absence of chiral carbon (biphenyls, allenes and spirane chirallity due to helical shape. Stereochemistry of the compounds containing nitrogen, sulphur and phosphorus.

Unit-III

Conformational analysis and linear free energy relationship

Conformational analysis of cycloalkanes, decalines, effect of conformation on reactivity, conformation of sugars. Generation, structure, stability and reactivity of carbocations, carbanions, free radicals, carbenes and nitrenes. The Hammett equation and linear free energy relationship, substituents and reaction constants, Taft equation.

Unit-IV

Reaction Mechanism : Structure and Reactivity

Type of mechanisms, types of reactions, thermodynamic and kinetic requirements, kinetic and thermodynamic control, Hammond's postulate, Curtir-Hammett principle. Potential energy diagrams, transition states and intermediates, methods of determining mechanisms, isotopes effects.

Unit-V

Aliphatic Nucleophilic Substitution

The S_N2, S_N1 mixed S_N1 and S_N2 and SET mechanism. The neighboring group mechanism, neighboring group participation by p and s bonds, anchimeric assistance. Classical and nonclassical carbocations, phenomium ions, norborynl systems, common carbocation rearrangements. Application of NMR spectroscopy in the detection of carbocations. The SN1 mechanism. Nucleophilic substitution at an allylic, aliphatic trigonal and a vinylic carbon. Reactivity effects of substrate structure, attacking nucleophile, leaving group and reaction medium, phase transfer catalysis and ultrasound, ambident nucleophile, regioselectivity.

BooksSuggested

1. Advanced Organic Chemistry-Reactions, Mechanism and Structure, Jerry March,John Wiley.

2. Advanced Organic Chemistry, F.A. Carey and R.J. Sunderg, Plenum.
3. A Guide Book to Mechanism in Organic Chemistry, Peter Sykes, Longman.
4. Structure and Mechanism in Organic Chemistry, C.K. Ingold, Comell UniversityPress.
5. Organic Chemistry, R.T. Morrison and R.N. Boyd, Prentice-Hall.
6. Modern Organic Reactions, H.O. House, Benjamin.
7. Principles of Organic Synthesis, R.O.C. Norman and J.M. Coxon, BlackieAcademic & Professionsl.
8. Reaction Mechanism in Organic Chemistry, S.M. Mukherji and S.P. Singh,Macmillan.
9. Pericyclic Reactions, S.M. Mukherji, Macmillan, India
10. Stereochemistry of Organic Compounds, D.Nasipuri, New Age International.
11. Stereochemisty of Organic Compounds, P.S. Kalsi, New Age International.
12. Spectroscopic methods in Organic Chemistry, D.H. Williams, I. Fleming, Tata McGraw-Hill.
13. Application of Spectroscopy of Organic Compounds, J.R. Dyer, Prentice Hall.
14. Organic Chemistry, J. McMurry, Thomson Asia.
15. Organic Chemistry, W. Kemp, ELBS, Macmillan.

COURSE OUTCOMES

The students will be able to

- Acquire the skills for correct stereo-chemical assignment and interpretation in rather simple organic molecules.
- Understanding of Organic reaction, rearrangement and cross-coupling reaction with their mechanism and application.

SEMESTER –I
Paper-III
MCH-403: PHYSICAL CHEMISTRY-I

COURSE OBJECTIVES

To make the student conversant with

- The objective of the course is to know the application of quantum mechanics in physical models and experiments of chemical systems. The student will be able to calculatethe Energy of the system including E_{HOMO},E_{LUMO} and bond order.
- The main objective of the course is to provide fundamental concepts of thermodynamics effects and relationships. The course is to give knowledge of comprehensive and rigorous treatment of classical thermodynamics, thermodynamics relations. Explain the concept of partial molar properties fugacity and activity.

Unit-I

Introduction to Exact Quantum Mechanical Results

Schrödinger equation and the postulates of quantum mechanics. Discussion of solutions of the Schrödinger equation to some model systems viz., particle in a box, the harmonic oscillator, the rigid rotor, the hydrogen atom and helium atom.

Unit-II

Approximate Methods

The variation theorem, linear variation principle. Perturbation theory (First order and nondegenerate). Applications of variation method and perturbation theory to the Helium atom.

Molecular Orbital Theory

Huckel theory of conjugated systems bond and charge density calculations. Applications to ethylene, butadiene, cyclopropenyl radical cyclobutadiene etc. Introduction to extended Huckel theory.

Unit-III

Angular Momentum

Ordinary angular momentum, generalized angular momentum, eigenfucntions for angular momentum, eigenvalues of angular momentum operator using ladder operators addition of angular momenta, spin, antisymmetry and Pauli exclusion principle.

Unit-IV

Classical Thermodynamics

Brief resume of concepts of laws of thermodynamics, free energy, chemical potential and entropies. Partial molar free energy, partial molar volume and partial molar heat content and their significance. Determinations of these quantities. Concept of fugacity and determination of fugacity. Non-ideal systems : Excess function s for non-ideal solutions. Activity, activity coefficient, Debye Huckel theory for activity coefficient fo electrolytic solutions; determination of activity and activity coefficients; ionic strength. Application of phase rule to three component systems; second order phase transitions.

Unit-V

Statistical Thermodynamics

Concept of distribution, thermodynamic probability and most probable distribution. Ensemble averaging, postulates of ensemble averaging. Canonical, grand canonical and micro-canonical ensembles, corresponding distribution laws (using Lagrange's method of undetermined multipliers). Partition functions-translation, rotational, vibrational and electronic partition functions, Calculation of thermodynamic properties in terms of partition. Application of partition functions. Fermi-Dirac Statistics, distribution law and applications to metal. Bose-Einstein statistics distribution Law and application to helium.

Books Suggested

1. Physical Chemistry, P.W. Atkins, ELBS.
2. Introduction to Quantum Chemistyry, A.K. Chandra, Tata Mc Graw Hill.
3. Quantum Chemistry, Ira N. Levine, Prentice Hall.
4. Coulson's Valence, R.Mc Ween y, ELBS.
5. Chemical Kinetics. K.J. Laidler, McGraw-Hill.
6. Kinetics and Mechanism of Chemical Transformation J.Rajaraman and J. Kuriacose, McMillan.
7. Micelles, Theoretical and Applied Aspects, V. MOraoi, Plenum.
8. Modern Electrochemistry Vol. 1 and Vol II J.O.M. Bockris and A.K.N. Reddy, Planum.
9. Introduction to Polymer Science, V.R. Gowarikar, N.V. Vishwanathan and J. Sridhar,Wiley Eastern.
10. Introduction to Quantum Chemistry-R.K. Prasad, New Age Publication.
11. Thermodynamics for students of Chemistry, Shobanlal Nagin Chand Co. 1986.

COURSE OUTCOMES

- Students will be able to grasp fundamental concepts of operators, algebra of operators and quantum mechanical and Schrodinger wave equations for single and multi electron systems.
- Students will be able to grasp fundamental concepts of operators, algebra of operators and quantum mechanical and Schrodinger wave equations for single and multi electron systems.
- The student will be able to perform energy calculation for conjugated hydrocarbon systems.
- Students will also understand various thermodynamic relationship, the concept of free energy and partial molar quantities, activity and activity coefficients and determination.

SEMESTER– I
Paper-IV
MCH-404: (a) MATHEMATICS FOR CHEMISTS
(For students without Mathematics in B.Sc.)

COURSE OBJECTIVES

The objective of the course is to know the basics of the mathematics which are generally applied in chemistry viz., vectors and matrix algebra,differential and integral calculus, permutation and probability

Unit-I
Vectors
Vectors, dot, cross and triple products etc. gradient, divergence and curl, Vector Calculus.
Matrix Algebra
Addition and multiplication; inverse, adjoint and transpose of matrices.

Unit-II
Differential Calculus
Functions, continuity and differentiability, rules for differentiation, applications of differential calculus including maxima and minima (examples related to maximally populated rotational energy levels, Bohr's radius and most probable velocity from Maxwell's distribution etc.).
Unit-III
Integral calculus
Basic rules for integration, integration by parts, partial fractions and substitution. Reduction formulae, applications of integral calculus. Functions of several variables, partial differentiation, co-ordinate transformations (e.g. Cartesian to spherical polar).

Unit-IV
Elementary Differential equations
First-order and first degree differential equations, homogenous, exact and linear equations. Applications to chemical kinetics, secular equilibria, quantum chemistry etc. second order differential equation and their solutions.

Unit-V
Permutation and Probability
Permutations and combinations, probability and probability theorems average, variance root means square deviation examples from the kinetic theory of gases etc., fitting (including least squares fit etc with a general polynomial fit.

Books Suggested

1. The chemistry Mathematics Book, E.Steiner, Oxford University Press.
2. Mathematics for chemistry, Doggett and Suiclific, Logman.
3. Mathematical for Physical chemistry : F. Daniels, Mc. Graw Hill.
4. Chemical Mathematics D.M. Hirst, Longman.
5. Applied Mathematics for Physical Chemistry, J.R. Barante, Prentice Hall.
6. Basic Mathematics for Chemists, Tebbutt, Wiley.
7. Mathematics for Chemists, Bhupendra Singh, Pragati Prakashan.
8. Defferential Calulus/Integral Calculus, Dr. G. Prasad, Ppthishala Pvt. Ltd.
9. A Course in Vectors and their Applications: R. S. Mishra, Prakashan Kendra, Lucknow.

COURSE OUTCOMES

Basic mathematics is the back bone of modern chemistry. Students from biology background are also taking admission in the Program. Hence, the course is useful in understanding topics where mathematics is involved.

SEMESTER –I
Paper-IV
MCH-404 (b) BIOLOGY FOR CHEMISTS
(For students without Biology in B.Sc.)

COURSE OBJECTIVES

The Chemistry involved in biological processes is need of the time. Therefore, the main objective of the course is to know the basics of the biology which are generally applied in chemistry. The students will be able to understand the biological process through the course.

Unit-I
Cell Structure and Functions
Structure prokaryotic and eukaryotic cells, intracellular organelles and their functions, comparison of plant and animal cells. Ove4rview and their functions, comparison of plant and animal cells. Overview of metabolic processes-catabolism and anabolism. ATP – the biological energy currency. Origin of life-unique properties of carbon chemical evolution and rise of living systems. Introduction to bio-molecules, building blocks of biomacromolecules.

Unit-II
Carbohydrates
Conformation of monosaccharides, structure and functions of important derivatives of mono-saccharides like glycosides, deoxy sugars, myoinositol, amino sugars. Nacetylmuramic acid, sialic acid disaccharides and polysaccharides. Structural polysaccharides cellulose and chitin. Storage polysaccharides-starch and glycogen. Structure and biological function of glucosaminoglycans of mucopolysaccharides. Carbohydrates of glycoporteins and glycolipids. Role of sugars in biological recognition. Blood group substances. Ascorbic acid.

Unit-III
Lipid
Fatty acids, essential fatty acids, structure and function of triacylglycerols, glycerophospholipids, sphingolipids, cholesterol, bile acids, prostaglandins. Liproproteins-compositiion and function, role in atherosclerosis. Properties of lipid aggregates-micelles, bilayers, liposomes and their possible biological functions. Biological membranes. Fluid mosaic model of membrane structure. Lipid metabolism-boxidation of fatty acids.

Unit-IV
Amino-acids, Peptides and Proteins
Chemical and enzymatic hydrolysis of proteins to peptides, amino acid sequencing. Secondary structure of proteins. force responsible for holding of secondary structures. ahelix, -b-sheets, super secondary structure, triple helix structure of collagen. Tertiary structure of protein-folding and domina structure. Quaternary structure. Amino acid metabolism-degradation and biosynthesis of amino acids, sequence determination: chemical/enzymatic/mass spectral, racemization/detection. Chemistry of oxytocin and tryptophan releasing hormone (TRH).

Unit-V
Nucleic Acids
Purine and pyrimidine bases of nucleic acids, base pairing via Hbounding. Structure of ribonucleic acids (RNA) and deoxyribonucleic acid (DNA), double helix model of DNA and forces responsible for holding it. Chemical and enzymatic hydrolysis of nucleic acids. The chemical basis for heredity, an overview of replication of DNA, transcription, translation and genetic code. Chemical synthesis of mono and trinucleoside.

Books Suggested

1. Principles of Biochemistry, A.L. Lehninger, Worth Publishers.
2. Biochemistry, L. Stryer, W.H. Freeman.
3. Biochemistry, J. David Rawan, Neil Patterson.
4. Biochemistry, Voet and Voet, John Wiley.
5. Outlines of Biochemistry E.E. Conn and P.K. Stumpf, John Wiley.

COURSE OUTCOMES

Basic knowledge of biology is also involved in chemistry related to real life problems which chemistry students must know. The students coming from Mathematics background are made aware o the basic knowledge required. Hence, the course is useful in understanding topics covered in this course.

SEMESTER –I
PRACTICAL
(Duration: 6 hrs in each branch)

Note- Practical examination of Inorganic/Organic/Physical will be conducts at the end of each semester during examination.

Inorganic Chemistry

COURSE OBJECTIVES

The students will learn

- The basics of quantitative estimation of metal complexes.
- To separate different ions by paper chromatography.
- The interpretation od IR spectra of metal complexes.

Experiment - 1	30
Experiment -2	30
Viva Voce	20
Record	20
Total	**100**

1. **Chromatographic Separations**
   (a) Cadmium and zinc
   (b) Zinc and magnesium
   (c) Lead and silver

2. **Complexometric titration**
   Estimation of Ca^{2+}, Mg^{2+} and Zn^{2+}

3. **Interpretation of IR spectra of some known inorganic complexes.**

Books Suggested

1. Synthesis and Characterization of Inorganic Compounds, W. L. Jolly, Prentice Hall.
2. Inorganic experiments, 3rd edition, J. D. Woollins, Wiley-VCHVerlag GmbH @Co.KGaA, 2012.
3. Foundations of College Chemistry in the Laboratory, M. Hein, J. N. Peisen and R. L. Miner, John Wiley and Sons, 2011.
4. In-house Laboratory Manual, Departmentof Chemistry, APSU Rewa.

COURSE OUTCOMES

The students will be able to

- Estimate the metals from metal complexes.
- Separate and analyze different metal ions using paper chromatography.
- Identify the different groups present in the complexes.

Physical Chemistry

COURSE OBJECTIVES

To introduce experiments in chemical kinetics and equilibrium chemistry.

Experiment – 1	30
Experiment -2	30
Viva Voce	20
Record	20
Total	**100**

1. **Chemical Kinetic**s
   (a) Determination of velocity constant of the hydrolysis of methyl acetate catalysed by an acid (say HCl, H_2SO_4, etc.).
   (b) Determination of velocity constant of saponification of ethyl acetate with sodium hydroxide.
   (c) Determination of velocity of the reaction between potassium persulphate and potassium iodide.
2. **To determine the distribution coefficient of benzoic acid between toluene and water at room temperature.**
3. **To determine equilibrium constant for the reaction between iodide and iodine by the method of distribution.**

Books Suggested

1. An introduction to Statistical Thermodynamics, T. A. Hill, Dover Publications Inc., 1987.
2. Chemical Kinetics, K. J. Laidler, Pearson Education, 3rd edition, 2011.
3. Findley's Practical Physical Chemistry, B. P. Levitt, Longman.
4. Practical Physical Chemisry, A. M. James and F. E. Prichard, Longman.

COURSE OUTCOMES

Students will obtain hands on experience on chemical kinetics and equilibrium parameters.

Organic Chemistry

COURSE OBJECTIVES

To introduce organic synthesis, purification and identification of organic compounds using physiochemical techniques.

Experiment - 1	30
Experiment -2	30
Viva Voce	20
Record	20
Total	**100**

1. **Qualitative Analysis**
   Separation, purification and identification of compounds of ternary mixture (one liquid and one solid) using TLC and columns chromatography, chemical tests. IR spectra to be used for functional group identification.

2. **Organic Synthesis**
   Acetylation : Acetylation of cholesterol and separation of cholesteryl acetate by columnchromatography. Oxidation : Adipic acid by chromic acid oxidation of cyclothexaneolGrignard reaction : Synthesis of triphenylmethanol from benzoic acid Aromatic electrophilic sustitutions : Synthesis of p-nitroaniline and pbromoaniline. Aldol condensation Dibenzal acetone from benzaldehyde. Synthesis of different Schiff bases using salicylaldehyde and amines, Synthesys of different dithiocarbamates. The Products may be characterized by Spectral Techniques.

3. **Qualitative analysis of Bi-functional compounds**
   (a) Anthranilic acid
   (b) p-aminobenzoic acid
   (c) Resorcinol
   (d) Acetamide
   (e) α/β-naphthole

Books Suggested

1. Laboratory Manual in Organic Chemistry, R. K. Bansal, Wiley, 2006.
2. Vogel's Textbook of Practical Organic Chemistry, ELBS.
3. Practical Organic Chemistry, F. G. Mann and B. C. Saunders, Orient Longman.
4. Experimental Organic Chemistry Vol 1 and 2, P. R; Singh, D. S. Gupta and K. S. Bajpai, Tata McGraw Hill.

COURSE OUTCOMES

Ensures the students to understand acquire knowledge and have hands on experience in organic synthesis and analysis by using physiochemical techniques.

SEMESTER –II
Paper-V
MCH-405: INORGANIC CHEMISTRY-II

COURSE OBJECTIVES

The complexes of transition metals are very important topics of applied chemistry. Even in Medicinal chemistry these complexes play important role. The main objective of the course is to provide fundamental concept of

- The electronic spectral studies of transition metal complexes.
- Magnetic properties of transition metal complexes.
- Metal π-complexes and metal clusters.
- Optical rotatory dispersion (ORD) and circular dichroism (CD).

Unit-I
Electronic Spectral Studies of Transition Metal Complexes
Spectroscopic ground states, correlation. Orgel and Tanabe-Sugano diagrams for transition metal complexes (d1-d9 states), Selection rule for electronic spectroscopy. Intensity of various type electronic transitions. Calculations of 10Dq, B and β parameters, charge transfer spectra.

Unit-II
Magnetic Properties of Transition Metal Complexes
Anomalous magnetic moments, Quenching of Orbital contribution. Orbital contribution to magnetic moment, magnetic exchange coupling and spin crossover.

Unit-III
Metal π-Complexes
Metal carbonyl, structure and bonding, vibrational spectra of metal carbonyls for bonding and structural elucidation, important reactions of metal carbonyls; preparation, bonding structure and important reaction of transition metal nitrosyl, dinitrogen and dioxgen complexes; tertiary phosphine as ligand, Wilkinson's catalyst.

Unit-IV
Metal Clusters
Synthesis, reactivity and bonding
Borane Chemistry
Higher boranes, carboranes, metalloboranes and metallo-carboranes compounds with metal metal multiple bonds.

Unit-V
Optical Rotatory Dispersion and Circular Dichroism
Linearly and circularly polarized lights; optical rotatory power and circular birefringence, elipticity and circular dichroism; ORD and Cotton effect, Faraday and Kerr effects; Assignment of electronic transitions; applications of ORD and CD for the determination of (i) absolute configuration of complexes and (ii) isomerism due to non-planarity of chelate rings.

Books Suggested :

1. Advanced Inorganic Chemistry, F.A. Cotton and Wilkinson, John Wiley.
2. Inorganic Chemistry, J.E. Huhey, Harpes & Row.
3. Chemistry of the Elements. N.N. Greenwood and A. Earnshow, Pergamon.
4. Inorganic Electronic Spectroscopy, A.B.P. Lever, Elsevier.
5. Magnetiochemistry, R.L. Carlin, Springer Verlag.
6. Comprehensive Coordiantion Chemistry eds., G. Wilkinson, R.D. Gillars and J.A. Mc Cleverty,Pergamon.

COURSE OUTCOMES

- Student will be able to understand the spectroscopic ground states of d^1 to d^9 systems.
- They will gain the knowledge of magnetic moment and magnetic exchange coupling of transition metal complexes.
- Student will get the basic idea about metal-π complexes and metal clusters.

SEMESTER –II
Paper-VI
MCH-406: ORGANIC CHEMISTRY-II

COURSE OBJECTIVES

Understanding of chemical reaction and their mechanism is essential part of chemistry. This course is introduced for the detailed study of aromatic electrophilic substitution, aromatic nucleophilic substitution, free radical reactions, addition reactions, addition to carbon-hetero multiple bonds, elimination reactions.This course also imparts knowledge on different classes of pericyclic reactions.

Unit-I

Aromatic Electrophilic Substitution

The arenium ion mechanism, orientation and reactivity, energy profile diagrams. The ortho/para ratio, ipso attack, orientation in other ring systems. Quantitative treatment of reactivity in substrates and electrophiles. Diazonium coupling, Vilsmeir reactiion, Gatterman-Koch reaction

Aromatic Nucleophilic Substitution

The SNAr SN^1, benzyne and SN^1 mechanism, Reactivity effect of substrate structure, leaving group and attacking nucleophile. The Von Richte. Sommelet-Hauser, and Smiles rearrangements.

Unit-II

Free Radical Reactions

Types of free radical reactions, free radical substitution mechanism, mechanism at an aromatic substrate, neighbouring group assistance. Reactivity for aliphatic and aromatic substrates at a bridgehead. Reactivity in the attacking radicals. The effect of solvents on reactivity. Allylic halogenation (NBS), oxidation of aldehydes to carboyxlic acids, autooxidation, coupling of alkynes and arylation of aromatic compounds by diazonium salts, Sandmeyer reaction. Free radical rearrangement. Hunsdiecker reaction.

Unit III

Addition Reactions

Mechanistic and stereochemical aspects of addition reactions involving electrophiles, nucleophiles and free radicals, regio-and chemoselectivity, orientation and reactivity. Addition to cyclopropane ring. Hydrogenation of double and triple bounds, hydrogenation of aromatic rings. Hydroboration, Michael reaction, sharpless asymmetric epoxidation.

Unit-IV

Addition to Carbon-Hetero Multiple bonds

Mechanism of metal hydride reduction of saturated and unsaturated carbonyl compounds,acid esters and nitriles. Addition of Grignard reagents, organozinc and organolithium reagents to carbonyl and usaturated carbonyl compounds. Witting reaction. Mechanism of condensation reactions involving enolates-Aldol, Knoevenagel, Claisen, Mannich, Benzoin, Perkin and Stobbe reactions. Hydrolysis of esters and amides, ammonolysis of esters.

Elimination Reactions

The E2, E1 and E1 cB mechanisms and their spectrum. Orientation of the double bond. Reactitivty-effects of substrate structures, attacking base, the leavign group and the medium. Mechanism and orientation in pyrolytic elimination.

Unit-V

Pericyclic Reactions

Molecular orbital symmetry, Frontier orbitals of ethylene, 1,3-butadiene, 1,3,5-hexatriene

and allyl system. Classification of periycyclic reactions. Woodward-Hoffmann correlatino diagrams. FMO and PMO approach. Electrocyclic reactions-conrotatory and disrotatory motions, 4n 4n+2 and allyl systems. Cycloadditions-antarafacial and suprafacial additions, 4n and 4n+2 systems, 2+2 addition of ketenes, 1,3 dipolar cycloadditions and cheleotrpic reactions. Sigmatropic rearrangements-suprafacial and antarafacial shifts of H, sigmatropic involving carbon moieties, 3,3- and 5,5 sigmatropic rearrangements. Claise n, Cope and aza-Cope rearrangements. Fluxional tautomerism. Ene reaction.

Books Suggested

1. Advanced Organic Chemistry-Reactions, Mechanism and Structure, Jerry March, John Wiley.
2. Organic Chemistry, R.T. Morrison and R.N. Boyd, Prentice-Hall.
3. Modern Organic Reactions, H.O. House, Benjamin.
4. Principles of Organic Synthesis, R.O.C. Norman and J.M. Coxon, Blackie.
5. Reaction Mechanism in Organic Chemistry, S.M. Mukherji and S.P. Singh, Macmillan.
6. Pericyclic Reactions, S.M. Mukherji, Macmillan, India.
7. Stereochemisty of Organic Compounds, P.S. Kalsi, New Age International.
8. Spectroscopic Methods in Organic Chemistry, D.H. Williams, I. Fleming, Tata McGraw-Hill.
9. Organic Chemistry, P.Y. Bruice, Pearson Education Asia.

COURSE OUTCOMES

- The student will be able to know the different types of organic reactions.
- Students will also understand the stereochemical aspects of different classes of pericyclic reactions.

SEMESTER–II
Paper-VII
MCH-407: PHYSICAL CHEMISTRY-II

COURSE OBJECTIVES

- Students will gain knowledge of chemical dynamics and non-equilibrium thermodynamics.
- Student will understand different aspects of the surface chemistry
- Student will develop skills to solve problems relating to molecular weights of macromolecules.
- The students will understand advance knowledge of electrochemistry.

Unit-I

Chemical Dynamics

Methods of determining rate laws, collision theory of reaction rates, steric factor, activated complex theory, Arrhenius equation and the activated complex theory; ionic reactions, kinetic salt effects, steady state kinetics, kinetic and thermodynamic control of reactions, treatment of unimolecular reactions. Dyamic chain (hydrogen-bromine reaction, pyrolysis of acetaldehyde, decomposition of ethane), photochemical (hydrogenbromine and hydrogen-chlorine reactions) and homogenous catalysis, kinetics of enzyme reactions, general features fo fast reactions, study of fast reactions by flow method, relaxation method, flash photolysis ad the nuclear magnetic resonance method, dynamics of unimolecular reactiosn (Lindemann Hinshelwood and Rice-Ramsperger-Kassel- Marcus (RRKM) theories for unimolecular reactions).

Unit-II

Surface Chemistry

Adsorption

Surface tension, capillary action, pressure difference across curved surface (Laplace equation), vapour pressure of droplets (Kelvin equation), Gibbs adsorption isotherm, estimation of surface area (BET equation), Surface films on liquids (Electro-kinetic phenomenon).

Micelles

Surface active agents, classification of surface active agents, micellization, hydrophobic interaction, critical micellar concentration (CMC), factors affecting the CMC of surfactants, counter ion binding to micelles, thermodynamics of micellization-phase separation and mass action models, solublization, micro emulsion, reverse micelles.

Unit-III

Macromolecules

Polymer-definition, types of polymers, electrically conducting, fire resistant, liquid crystal polymers, kinetics of polymerization, mechanism of polymerization. Molecular mass, number and mass average molecular mass, molecular mass determination (Osmometry, viscometry, diffusion and light scattering methods), sedimentation, chain configuration of macromolecules, calculation of average dimension of various chain structures.

Emulsions

Theories of emulsification, coagulation, slow and rapid coagulation. Kenitics of coagulation. Von Smoluchouski equation and its verification.

Unit-IV

Non Equilibrium Theromodynamics

Thermodynamic criteria for non-equilibrium states, entropy production and entropy flow,
entropy balance equations for different irreversible processes (e.g., heat flow, chemical reaction etc.) transformations of the generalized fluxes and forces, non equilibrium stationary states, phenomenological equations, microscopic reversibility and Onsager's reciprocity relations, electrokinetic phenomena, diffusion, electric conduction.

Unit-V

Electrochemistry

Electrochemistry of solutions. Debye-Huckel-Onsager treatment and its extension, ion solvent interactions. Debye-Huckel-Jerum mode. Thermodynamics of electrified interface equations. Derivation of electro capillarity, Lippmann equations (surface excess), methods of determination. Structure of electrified interfaces. Overpotentials, exchange current density, derivation of Butler Volmer equation, Tafel plot. Quantum aspects of charge transfer at electrodes-solution interfaces, quantization of charge transfer, tunneling. Semiconductor interfaces-theory of double layer at semiconductor, electrolyte solution interfaces, structure of double layer interfaces. Effect of light at semiconductor solution interface. Polarography theory, Ilkovic equation; half wave potential and its significance.

Books Suggested

1. Physical Chemistry, P.W. Atkins, ELBS.
2. Introduction to Quantum Chemistry, A.K. Chandra, Tata Mc Graw Hill.
3. Quantum Chemistry, Ira N. Levine, Prentice Hall.
4. Coulson's Valence, R.Mc Ween y, ELBS.
5. Chemical Kinetics. K.J. Laidler, McGraw-Hill.
6. Kineties and Mechanism of Chemical Transformation J.Rajaraman and J. Kuriacose, Mc Millan.
7. Micelles, Theoretical and Applied Aspects, V. MOraoi, Plenum.
8. Modern Electrochemistry Vol. 1 and Vol II J.O.M. Bockris and A.K.N. Reddy, Planum.
9. Introduction to Polymer Science, V.R. Gowarikar, N.V. Vishwanathan and J. Sridhar, Wiley Eastern.
10. Physical Chemistry, P.C. Rakshit.
11. Quantum Chemistry, Eyring and Kimball.

COURSE OUTCOMES

- Students will be able to explain the process taking place in any chemical reaction.
- The basics of non-equilibrium thermodynamics will also be understood.
- Students will be able to have understanding about surface chemistry and its applications.
- Students will be able to solve the problems related to molecular weights of macromolecules.
- Students will understand the advance electrochemistry.

SEMESTER –II
Paper-VIII
MCH-408: Spectroscopy and Diffraction Methods

COURSE OBJECTIVES

The objective of this course is to give basic principles and applications of modern spectroscopic techniques (Nuclear Magnetic Resonance Spectroscopy, Nuclear Quadrupole Resonance Spectroscopy and Electron Spin Resonance Spectroscopy)and Diffraction Techniques (X-ray Diffraction, Electron Diffraction and Neutron Diffraction).

Unit-I

Nuclear Magnetic Resonance Spectroscopy

Nuclear spin, nuclear resonance, saturation, shielding of magnetic nuclei, chemical shift and its measurements, factors, influencing chemical shift, deshielding, spin-spin interactions, factors influencing coupling constant "j" Classification (AXB, AMX, ABC, A2B2 etc.). spin decoupling; basic ideas about instrument, NMR studies of nuclei other than protin-13C, 19F and ^{31}P. FT NMR, advantages of FT NMR.

Unit II

Nuclear Quadrupole Resonance Spectroscopy

Quadrupole nuclei, quadrupole moments, electric field gradient, coupling constant, splitting, General principles and Instrumentation, Applications.

Unit-III

Electron Spin Resonance Spectroscopy

Basic principles, zero field splitting and Kramer's degeneracy, factors affecting the 'g' value. Isotropic and anisotropic hyperfine coupling constants, some representative examples of esr spectra of Cu^{2+} and $V(O)^{2+}$ complexes, spin Hamiltonian, spin densities and Mc Connell relationship, measurement techniques, applications.

Unit-IV

X-ray Diffraction

Bragg condition, Miller indices, Laue Method, Bragg method, Debye Scherrer method of X-ray structural analysis of crystals, index reflections, identification of unit cells from systematic absences in diffraction pattern, Structure of simple lattices and X-ray intensities, structure factor and its relation to intensity and electron density, phase problem. Description of the procedure for an X-ray structure analysis, absolute configuration of molecules.

Unit-V

Electron Diffraction

Scattering intensity vs. scattering angle, Wierl equation, measurement technique, elucidation of structure of simple gas phase molecules. Low energy electron diffraction and structure of surfaces.

Neutron Diffraction

Scattering of neutrons by solids measurement techniques, Elucidation of structure of magnetically ordered unit cells.

Books suggested

1. Modern Spectroscopy, J.M. Hollas, John Viley.
2. Applied Electron Spectroscopy for chemical analysis d. H. Windawi and F.L. Ho, Wiley Interscience.
3. NMR, NQR, EPr and Mossbauer Spectroscopy in Inorganic Chemistry, R.V. Parish, Ellis Harwood.
4. Nuclear Qudrupole Resonance Spectroscopy, T.P. Das and E.L. Hann, Academic Press, New York and London, 1958.
5. Physical Methods in Chemistry, R.S. Drago, Saunders College.
6. Chemical Applications of Group Theory, F.A. Cotton.

7. Introduction to Molecular Spectroscopy, G.M. Barrow, Mc Graw Hill.
8. Basic Principles of Spectroscopy, R. Chang, Mc Graw Hill.
9. Theory and Application of UV Spectroscopy, H.H. Jaffe and M. Orchin, IBHOxford.
10. Introduction to Photoelectron Spectroscopy, P.K. Ghosh, John Wiley.
11. Introduction to Magnetic Resonance. A Carrington and A.D. Maclachalan, harper & Row.

COURSE OUTCOMES

- The Knowledge of modern spectroscopy such as NMR, NQR and ESR, symmetry of structure etc. and their applications is useful in understanding the different inorganic and organic molecules.
- Student will able to solve the molecular structures using different diffraction techniques.

SEMESTER –II
PRACTICAL
(Duration: 6 hrs in each branch)

Inorganic Chemistry

COURSE OBJECTIVES

The students will learn estimation of metal ions (gravimetrically and volumetrically) and inorganic synthesis.

Experiment - 1	30
Experiment -2	30
Viva Voce	20
Record	20
Total	**100**

1. **Separation and estimation of two metal ions**
   (a) Estimation of copper and nickel both by gravimetric method.
   (b) Estimation of barium gravimetrically and copper volumetrically methods.
   (c) Estimation of copper and zinc in a mixed solution of both by gravimetric methods.
   (d) Estimationof nickel and zinc in a mixed solution of both by gravimetric methods.

2. **Preparation and synthesis of metal complexes**
   (a) $VO(acac)_2$
   (b) $Ni(acac)_2$
   (c) $K_3[Fe(C_2O_4)_3]$
   (d) Prussian Blue, Turnbull's Blue.
   (e) $Co(NH_3)_6]$ $[Co(NO_2)_6]$
   (f) $Hg[Co(SCN)_4]$
   (g) $[Cu(NH_3)_4]SO_4.H_2O$
   (h) $[Ni(NH_3)_6]Cl_2$
   (i) $Ni(dmg)_2$

3. **Interpretation of Electron Paramagnetic Resonance (epr) spectra of some paramagnetic complexes.**

Books Suggested

1. Synthesis and Technique in Inorganic Chemistry: A Laboratory Manual, 3rd edition, G. S. Girolami, T. B. Rauchfuss and R. J. Angelici, University Science Books, 1999.
2. Advanced Practical Chemistry, R. Mukhopadyay and P. Chatterjee, Books & Allied (P) Ltd., 2007.
3. Quantitative Chemical Analysis, 6th edition, J. Mendham, R. C. Denney, M. J. K. Thomas David and J. Barnes, Prentice Hall, 2000.
4. Analytical Chemistry, S. M. Khopker, New Age International Ltd., Dew Delhi.

COURSE OUTCOMES

The students will be able to understand estimation of metal ions and synthesizing inorganic complexes.

Physical Chemistry

COURSE OBJECTIVES

To make the students expertise in electrochemistry and interpretation of thermodynamic, kinetic and QSAR parameters.

Experiment - 1	30
Experiment -2	30
Viva Voce	20
Record	20
Total	**100**

1. **Determination of composition of a mixture of weak and strong acids by conductor metric titration of following acids:**
   (a) HCl and CH_3COOH
   (b) HNO_3 and CH_3COOH
   (c) H_2SO_4 and CH_3COOH

2. **Determination of composition of a mixture of weak and strong acids by pH metric titration of followings acids:**
   (a) HCl and CH_3COOH
   (b) HNO_3 and CH_3COOH
   (c) H_2SO_4 and CH_3COOH

3. **Theoretical interpretation of Thermodynamic parameters, kinetic parameters and QSAR parameters.**

Books Suggested

1. Experimental Physical Chemistry, V. D. Athawale, New Age International, 2007.
2. Practical Physical Chemistry, B. Viswanathan and P.S. Raghavan, Viva Books Pvt. Ltd., 2005.
3. Experimental Physical Chemistry, R. C. Das and B. Behera, Tata McGraw Hill.
4. Practical Physical Chemistry, A. M. James and F. E. Prichard, Longman.

COURSE OUTCOMES

Students will be able to

- Determine the composition of mixtures of two acids using conductometric and pH-metric methods.
- Difference thermodynamics, kinetic and QSAR parameters.

Organic Chemistry

COURSE OBJECTIVES

To make the students conversant with

- Identification of hydroxyl groups in organic compounds.
- Estimation amines and phenols.
- Oil sample estimation.
- Determination of water quality parameters.
- Multistep synthesis.

Experiment - 1	30
Experiment -2	30
Viva Voce	20
Record	20
Total	**100**

1. **Quantitative Analysis**
   Determination of the percentage or number of hydroxyl groups in an organic compound by acetylation method. Estimation of amines/phenols using bromate bromide solution/or acetylation method. Determination of iodine and Saponification values of an oil sample. Determination of DO, COD and BOD of water sample.

2. **Multistep preparation**
   (a) m-nitro aniline from nitrobenzene
   (b) Hippuric acid from glycine
   (c) Aspirin from salicylic acid
   (d) p-bromo aniline from aniline
   (e) phthalamide from phthlic acid

3. **Interpretation of some IR and NMR spectra of some known compounds.**

Books Suggested

1. Experiments and techniques in Organic Chemistry, D. Pasto, C. Johnson and M. Miller, Prentice Hall.
2. Organic Chemistry-Lab Manual, N. S. Gnanapragasam, G. Ramamurthy and S. Viswanathan Co. Pvt. Ltd., 1998.
3. Vogel's Practical Organic Chemistry, A. I. Vogel, A. R. Tatchell, B. S. Furnis, A. J. Hannaford and P. W. G. Smith, 5th edition, Pearson education Ltd., 1996.
4. Handbook of Organic Analysis-Qualitative and Quantitative, H. Clarke and A. Arnold.

COURSE OUTCOMES

At the end of semester, the students will be able to

- Identify the hydroxyl groups in organic compounds.
- Estimate amines and phenols.
- Determine water quality parameters from water samples.

SEMESTER –III
Paper-I
MCH-502: APPLICATION OF SPECTROSCOPY

COURSE OBJECTIVES

The paper of application of spectroscopy is introduced for the detailed studies of fundamental concepts, tools and techniques used behind UV-visible, infra red, Raman, NMR, Mössbauer and Mass Spectrometric methods for structural determination of molecules.

Unit-I
Ultraviolet and Visible spectroscopy

Various electronic transitions (185-800 nm) Beer-Lambert law, effect of solvent on electronic transitions, ultraviolet bands for carbonyl compounds, unsaturated carbonyl compounds, dienes, conjugated polyenes, Fieser Woodward rules for conjugated dienes and carbonyl compounds, ultraviolet spectra of aromatic compounds. Steric effect in biphenyls. Electronic Spectral Studies for d^1- d^9 systems in octahedral, tetrahedral and square planar complexes with some representative examples of electronic spectra with some representative examples of electronic spectra.

Unit-II
Infrared and Raman Spectroscopy

Characteristic vibrational frequencies of alkanes, alkenes, alkynes, aromatic compounds, alcohols, ether's, phenols and amines. Detailed study of vibrational frequencies of carbonyl compounds (ketone's, aldehyde's, esters, amides, acids, anhydride's, lactones, lactams and conjugated carbonyl compounds). Effect of hydrogen bonding and solvent effect on vibrational frequencies, overtones, combination bands and fermi resonance. Infrared and Raman spectra of AB_3, AB_4, AB_5 and AB_6, mode of bonding of ambidentate ligands, nitrosyl, ethylenediamine and diketonato complexes, application of resonance Raman spectroscopy and its applications.

Unit-III
Nuclear Magnetic Resonance Spectroscopy – I

General introduction and definition, Chemical shift, spin – spin interaction, shielding and deshilding mechanism, mechanism of measurement of chemical shift values and correlation for protons bonded to carbon (aliphatic, olefinic, aldehydic and aromatic) and other nuclei (alcohols, phenols, enols, carboxylic acids, and amides & mercapto).

Nuclear Magnetic Resonance Spectroscopy – II

Chemical exchange, effect of deuteration, Complex spin – spin interation between two, three, four and five nuclei (I order spectra) Stereochemistry, hindered rotation, Karplus curve-variation of coupling constant with disordered angle, NMR shift reagents, solvent effects, Nuclear overhauser effect (NOE).

Unit-IV
Mössbauer Spectroscopy

Basic principles, spectral parameters and spectrum display. Application of the technique to the studies of (1) bonding and structures of Fe^{+2} and Fe^{+3} compounds including those of intermediate spin, (2) Sn^{+2} and Sn^{+4} compounds nature of M-L bond, coordination number, structure and (3) detection of oxidation state and in equivalent MB atoms.

Unit V
Mass Spectrometry

Introduction ion production E1, C1 FD, ESI and FAB, factors affecting fragmentation, ion analysis, ion abundance Mass spectral fragmentation of organic compounds, common functional groups, molecular ion

peak, metastable peak. Me Lafferty rearrangement. Nitrogen rule. High resolution mass spectrometry. Structure elucidation of simple molecules using UV – Visible, IR, NMR and mass spectral techniques.

Books Suggested

1. Physical Methods for Chemistry, R.S. Drago, Saunders Compnay.
2. Structural Methods in Inorganic Chemistry, E.A.V. Ebsworth, D.W.H. Rankin and S. Cradock, ELBS.
3. Infrared and Raman Spectral : Inorganic and Coordination Compounds K. Nakamoto, Wiley.
4. Progress in Inorganic Chemistry vol., 8, ed., F.A. Cotton, vol., 15 ed. S.J. Lippard, Wiley.
5. Transition Metal Chemistry ed. R.L. Carlin vol. 3 dekker.
6. Inorganic Electronic Spectroscopy, A.P.B. Lever, Elsevier.
7. NMR, NQR, EPR and Mossbauer Spectroscopy in Inorganic Chemistry, .V. Parish, Ellis Haywood.
8. Practical NMR Spectroscopy, M.L. Martin. J.J. Deepish and G.J. Martin, Heyden.
9. Spectrometric Identification of Organic Compounds, R.M. Silverstein, G.C. Bassler adn T.C. Morrill, John Wiley.
10. Introduction to NMR spectroscopy, R.J. Abraham, J. Fisher and P. Loftus, Wiley.
11. Application of Spectroscopy of Organic Compounds, J.R. Dyer Prentice Hall.
12. Spectroscopic Methods in Organic Chemistry D.H. Williams, I. Fleming, Tata McGraw-Hill.

COURSE OUTCOMES

After studying this course the student will be able to

- Understand the basics of UV-visible, infra red, Raman, NMR, Mössbauer and Mass Spectrometric techniques.
- Solve numerical and experimental graphs of all of the above techniques.
- Cover wide area of research in above spectroscopic methods.

SEMESTER –III
Paper II
MCH-501: PHOTOCHEMISTRY

COURSE OBJECTIVES

- To provide the students the basics of photochemistry and reaction mechanism.
- To impart the knowledge of photochemistry of carbonyl compounds and different type of photochemical reactions.

Unit-I
Photochemical Reactions
Interaction of electromagnetic radiation with matter, types of excitations, fate of excitedmolecule, quantum yield, transfer of excitation energy, actinometry.

Unit -II
Determination of Reaction Mechanism
Classification, rate constants and life times of reactive energy state determination of rate constants of reactions, Effect of light intensity on the rate of photochemical reactions, Types of photochemical reactions-photo dissociation, gas-phase photolysis.

Unit -III
Photochemistry of Alkene
Intramolecular reactions of the olefinic bond-geometrical isomerism, cyclisationreactions, rearrangement of 1,4- and 1,5-dienes.
Photochemistry of Aromatic Compounds
Isomerisations, additions and substitutions.

Unit-IV
Photochemistry of Carbonyl Compounds
Intramolecular reactions of carbonyl compounds-saturated, cyclic and acyclic, α, β, γ unsaturated and α, β, unsaturated compounds, cyclohexadienones, Intermolecularcyloaddition reactions-dimerisations and oxetane formation.

Unit-V
Miscellaneous Photochemical Reactions.
Photo-Fries reactions of annelids, Photo-Fries rearrangement, Barton reaction, Singletmolecular oxygen and its reactions, Photochemical formation of smog, Photodegration ofpolymers, Photochemistry of vision.

Books Suggested

1. Fundamentals of Photochemistry, K.K. Rothagi-Mukheriji, Wiley-Eastern.
2. Essentials of Molecular Photochemistry, A Gilbert and J. Baggott, BlackwellScientific Publication.
3. Molecular Photochemistry, N.J. Turro, W.A. Benjamin.
4. Introductory Photochemistry, A. Cox and t. Camp, McGraw Hill.
5. Photochemistry, R.P. Kundall and A. Gilbert. Thomson Nelson.
6. Organic Photochemistry, J. Coxon and B. Halton, Cambridge University Press.
7. Photochemistry and Pericyclic reactions, J. Singh and J. Singh, New Age International, New Delhi.
8. Modern Molecular Photochemistry, N.J. Turro, University Science Book, California.

COURSE OUTCOMES

The students able to

- Get the knowledge of photochemical reactions and mechanism of photochemical reactions.
- Gain the knowledge of photochemistry of alkenes, aromatic compounds and carbonyl compounds along with miscellaneous photochemical reactions.

SEMESTER –IV
DISCIPLINE ELECTIVE
Paper III
MCH-503: Organotransition Metal Chemistry

COURSE OBJECTIVES

Organotransition metal chemistry is the study of chemical compounds containing at least one chemical bond between a carbon atom of an organic molecule and a transition metal. This paper is introduced for the detailed studies of transition metal organometallic compounds, organotransition metal catalysts and basic ideas of fluxional organometallic compounds.

Unit -I
Alkyls and Aryls of Transition Metals
Types, routes of synthesis, stability and decomposition pathways organocopper in organic synthesis.

Compounds of Transition Metal-Carbon Multiple Bonds
Alkylidenes, alkylidynes, low valent carbenes and carbynes-synthesis, nature of bond, structural characteristics, nucleophilic and electrophilic reactions on the ligands, role in organic synthesis.

Unit -II
Transition Metal π-Complexes
Transition metal π-Complexes with unsaturated organic molecules, alkenes, alkynes, allyl, diene, dienyl, arene and trienyl complexes, preparation, properties, nature of bonding and structural features. Important reactions relating to nucleophilic and electrophilic attack on ligands and to organic synthesis.

Unit -III
Transition organometalic compounds
Transition metal compounds with bonds to hydrogen, boron, silicon

Unit -IV
Homogeneous Catalysis
Stoichiometric reactions for catalysis, homogeneous catalytic hydrogenation, Zeigler- Natta polymerization of olefins, catalytic reactions involving carbon monoxide such as hydrocarbonylation of olefins (oxoreaction), explanation reactions, activation of C-H bond.

Unit -V
Fluxional Organometallic Compounds
Flexionality and dynamic equilibrium in compounds such as η^2 olefine, η^3-allyl and dienyl complexes.

Books Suggested

1. Principles and Application of Organotransition Metal Chemistry, J.P. Collman, L.S. Hegsdus, J.R. Norton and R.G. Finke, University Science Books.
2. The Organometallic Chemistry of the Transition Metals, R.H. Crabtree. John Wiley.
3. Metallo-organic Chemistry, A.J. Pearson, Wiley.
4. Organometallic Chemistry, R.C. Mehrotra and A. Singh New Age International.

COURSE OUTCOMES

On completion of the course students will be able to

- Acquire understanding of various classes of organotransition metal compounds- alkyl and aryls of transition metals, transition metal complexes of carbenes and carbynes and transition metal pi-complexes.

- Have understanding of catalysis reactions involving organotransition metal compounds and basics of fluxional organometallic compounds.
- Develop ideas for further research in the field of organotransition metal chemistry.

SEMESTER –III
DISCIPLINE ELECTIVE
Paper III
MCH-504: Heterocyclic Chemistry

COURSE OBJECTIVES
To provide knowledge on

- Heterocycles and non-aromatic heterocycles.
- Synthesis and characterization of various natural compounds of biological importance.
- heterocyclic compounds of biological and pharmaceutical importance.

Unit-I
Nomenclature of Heterocycles
Replacement and systematic nomenclature (HantzsMCH-Widman system) formonocyclic fused and bridged heterocycles.
Aromatic Heterocycles
General chemical behaviour of aromatic heterocycles, classification (structural type),criteria of aromaticity (bond lengths, ring current and chemical shifts in 1H NMRspectra.Empirical resonance energy, delocalization energy and Dewar resonance energy,diamagnetic susceptibility exaltations). Heteroaromatic reactivity and tautomerism inaromatic heterocycles.

Unit-II
Non-aromatic Heterocycles
Strain-bond angle and torsional strains and their consequences in small ring heterocycles.Conformatino of six-membered heterocycles with reference to molecular geometry,barrier to ring inversion, pyramidal inversino and 1,3-diaxial interaction. Stereo-electronic effects anomeric and related effects, Attractive interactions-hydrogen bondingand intermolecular nucleophilic lectrophilic interactions. Heterocyclic SynthesisPrincples of heterocyclic synthesis involing cyclization reactions and cycloadditionreactions.

Unit-III
Small Ring Heterocycles
Three-membered and four-membered heterocycles-synthesis and reactions of azirodines,oxiranes, thiranes, azetidines, oxetanes and thietanes.

Benzo-Fused Five-Membered Heterocycles
Synthesis and reactions including medicinal applications of benzopyrroles, bezofuransand benzothiophenes.

Unit-IV
Meso-ionic Heterocycles
General classification, chemistry of some important meso-ionic heterocycles of type-Aand B and their applications.

Six-Membered Heterocycles with one Heteroatom
Synthesis and reactions of pyrylium salts and pyrones and their comparison withpyridinium & thiopyrylium salts and phridones. Synthesis and reactions of quionliziniumand benzopyrylium salts, coumarins and chromones.

Unit-V
Six Membered Heterocycles with Two or More Heteroatoms Synthesis and reactions ofdiazones, triazines, tetrazines and thiazines. Seven-and Large-Membered HeterocyclesSynthesis and reactions of azepines, oxepines, thiepines, diazepines thiazepines, azocines,diazocines, dioxocines and dithiocines.

Heterocyclic Systems Containing P, As, Sb and B

Heterocyclic rings containing phosphorus : Introduction, nomenclature, synthesis andcharacteristics of 5- and 6-membered ring systemsphosphorinaes, phosphorines,phospholanes and phospholes. Heterocyclic rings containing As and Sb: Introduction,synthesis and characteristics of 5- and 6-membered ring system. Heterocyclic ringscontaining B : Introduction, synthesis reactivity and spectral characteristics of 3- 5- and6- membered ring system.

Books Suggested

1. Heterocyclic Chemistry Vol. 1-3, R.R. Gupta, M. Kumar and V.Gupta, SpringerVerlag.
2. The Chemistry of Heterocycles, T. Eicher and S. Hauptmann, Thieme.
3. Heterocyclic chemistry J.A. Joule, K. Mills and g.F. Smith, Chapman and Hall.
4. Heterocyclic Chemistry, T.L. Gilchrist, Longman Scietific Techinal.
5. Contemporary Hetrocyclic Chemistry, G,.R. Newkome and W.W. Paudler,Wiley-Inter Science.
6. An Introductiion to the Heterocyclic Compounds, R.M. Acheson, Johnwiely.
7. Comprehensive Heterocyclic Chemistry, A.R. Katrizky and C.W. Rees, eds.Pergamon Press.

COURSE OUTCOMES

- Students will achieve insight on isolation, characterization and synthesis of various natural compounds of biological importance.
- Students will acquire knowledge on different heterocylic compounds.

SEMESTER –III
DISCIPLINE ELECTIVE
Paper III
MCH-505: Electrochemistry

COURSE OBJECTIVES

The objective of this course is

- To introduce students to conversion and storage of electrochemical energy
- To introduce students to give the basic idea about corrosion and stability of the metals.
- To introduce students to how different kinetic parameters for quasi and irreversible or evaluated etc.

Unit-I

Conversion and Storage of Electrochemical Energy Present status of energy Consumption

Pollution problem. History of fuel cells, Direct energy conversion by electrochemical means. Maximum intrinsic efficiency of an electrochemical converter. Physical interpretation of the Carnot efficiency factor in electrochemical energy converters. Power outputs. Electrochemical Generators (Fuel Cells): Hydrogen oxygen cells, Hydrogen Air cell, Hydrocarbon air cell, Alkane fuel cell, Phosphoric and fuel cell, direct NaOH fuel cells, applications of fuel cells.

Electrochemical Energy Storage

Properties of Electrochemical energy storage : Measure of battery performance, Charging and discharging of a battery, Storage Density, Energy Density. Classical Batteries: (i) Lead Acid (ii)Nickel-Cadmium, (iii) Zinc manganese dioxide. Modern Batteries: (i) Zinc-Air (ii) Nickel-Metal Hydride, (iii) Lithium Battery, Future Electricity storers: Storage in (i) Hydrogen, (ii) Alkali Metals, (iii) Non aqueous solutions.

Unit-II

Corrosion and Stability of Metals

Civilization and Surface mechanism of the corrosion of the metals; Thermodynamics and the stability of metals, Potential -pH (or Pourbaix) Diaphragmsl; uses and abuses, Corrosion current and corrosion potential -Evans diagrams. Measurement of corrosion rate: (i) Weight Loss method, (ii) Electrochemical Method.

Inhibiting Corrosion

Cathodic and Anodic Protection. (i) Inhibition by addition of substrates to the electrolyte environment, (ii) by charging the corroding method from external source, anodic Protection, Organic inhibitors, The fuller Story Green inhibitors.

Passivation

Structure of Passivation films, Mechanism of Passivation, Spontaneous Passivation Nature's method for stabilizing surfaces.

Unit-III

Bioelectrochemistry

bioelectrodics, Membrane Potentials, Simplistic theory, Modern theory, Electrical conductance in biological organism: Electronic, Protonic electrochemical mechanism of nervous systems, enzymes as electrodes.

Kinetic of Electrode Process

Essentials of Electrode reaction. Current Density, Overpotential, Tafel Equation, Butler Volmer equation. Standard rate constant (K) and Transfer coefficient (a), Exchange Current.

Irreversible Electrode processes

Criteria of irreversibility, informatino from irreversible wave.

Unit-IV

Methods of determining kinetic parameters for quasi-rversible and irreversible waves

Koutecky's methods, Meits Israel Method, Gellings method.

Electrocatalysis

Chemical catalysts and Electrochemical catalysts with special reference to purostates, porphyrin oxides of rare earths. Electrocatalysis in simple redox reactions, in reaction involving adsorbed species. Influence of various parameters.

Unit-V

Potential Sweep Method

Linear sweep Voltammetry, Cyclic Voltammetry, theory and applications. Diagnostic criteria of cycli voltammetry. Controlled current microelectrode techniques : comparison with controlled potentials methods, chronopotentiometry, theory ad applications.

Bulk Electrolysis Methods

Controlled potential coulometry, Controlled Coulometry, Electroorganic synthesis and its important applications. Stripping analysis : anodic and Cathodic modes, Pre electrolysis and Stripping steps, applications of Stripping Analysis.

Books Suggested

1. Modern Electrochemistry Vol. I, IIa, Vol. IIB J'OM Bockris and A.K.N. Reddy, Plenum Publication, New York.
2. Polarographic Techniques by L. Meites, Interscience.
3. "Fuel Cells : Thjeir electrochemistry". McGraw Hill Book Company, New York.
4. Modern Polarographic Methods by A.M. Bond, Marcell Dekker.
5. Polarography and allied techniques by K. Zutshi, New age International publicatin. New Delhi.
6. "Electroaalytical Chemistry by Basil H. Vessor & Galen W. ; Wiley Interscience.
7. Electroanalytical Chemistry by Basil H. Vessor & alen w. ; Wiley Interscience.
8. Topics in pure and Applied Chemistry, Ed. S. K. Rangrajan, SAEST Publication, Karaikudi (India)

COURSE OUTCOMES

- Students to understand the concept of electrochemistry and it's various theories.
- Students will be able to determine various parameters / properties using different techniques, the knowledge of which helps them to use in different fields.

SEMESTER –III
GENERIC ELECTIVE
Paper IV
MCH-506: INDUSTRIAL CHEMISTRY

COURSE OBJECTIVES

The course provides an introduction to

- Industrial Gases and Inorganic Chemicals.
- To impart basic knowledge of Petroleum Chemistry.
- To learn how to make Glasses, Ceramics and Cements.
- To learn the manufacturing of Sugar, Papers, Leathers and Fertilizers.

Unit I
Industrial Gases and Inorganic Chemicals
Industrial Gases
Large scale production, uses, storage and hazards in handling of the following gases: oxygen, nitrogen, argon, neon, helium, hydrogen, acetylene, carbon monoxide, chlorine, fluorine, sulphur dioxide and phosgene.

Inorganic Chemicals
Manufacture, application, analysis and hazards in handling the following chemicals: hydrochloric acid, nitric acid, sulphuric acid, caustic soda, common salt, borax, bleaching powder, sodium thiosulphate, hydrogen peroxide, potash alum, chrome alum, potassium dichromate and potassium permanganate.

Industrial Metallurgy
Preparation of metals (ferrous and nonferrous) and ultra pure metals for semiconductor technology.

Unit II
Fuel Chemistry
Review of energy sources (renewable and non-renewable). Classification of fuels and their calorific value.

Petroleum and Petrochemical Industry
Composition of crude petroleum, Refining and different types of petroleum products and their applications. Fractional Distillation (Principle and process), Cracking (Thermal and catalytic cracking), Reforming Petroleum and non-petroleum fuels (LPG, CNG, LNG, bio-gas, fuels derived from biomass), fuel from waste, synthetic fuels (gaseous and liquids), clean fuels. Petrochemicals: Vinyl acetate, Propylene oxide, Isoprene, Butadiene, Toluene and its derivatives Xylene.

Lubricants
Classification of lubricants, lubricating oils (conducting and non-conducting) Solid and semisolid lubricants, synthetic lubricants. Properties of lubricants (viscosity index, cloud point, pore point) and their determination.

Unit III
Silicate Industries
Glass
Glassy state and its properties, classification (silicate and non silicate glasses). Manufacture and processing of glass. Composition and properties of the following types of glasses: Soda lime glass, lead glass, armoured glass, safety glass, borosilicate glass, fluorosilicate, coloured glass, photosensitive glass.

Ceramics
Important clays and feldspar, ceramic, their types and manufacture. High technology ceramics and their applications, super conducting and semi conducting oxides, fullerenes carbon nanotubes and carbon fiber.

Cements
Classification of cement, ingredients and their role, Manufacture of cement and the setting process, quick setting cements.

Unit IV
Sugar
Intruduction , Raw materials, Manufacture of sugar from Cane sugar, Cane sugar refining, By-products from sugar industries and their uses.

Pulp & paper
Various types of Pulps, Manufacture of pulps, Papers, Polymer modified papers, Board and structural materials.

Unit V
Leather
Introduction, Animal skins, Manufacture of leather, Byproducts, Chemicals used in leather industries.

Fertilizers
Introduction, Classification, Manufacturing of; Urea, Ammonium nitrate, Normal super phosphate & Triple super phosphate.

Books Suggested

1. E. Stocchi: Industrial Chemistry, Vol-I, Ellis Horwood Ltd. UK.
2. S. S. Dara: A Textbook of Engineering Chemistry, S. Chand & Company Ltd. New Delhi.
3. A. K. De, Environmental Chemistry: New Age International Pvt, Ltd, New Delhi.
4. O. P. Vermani, A. K. Narula: Industrial Chemistry, Galgotia Publications Pvt. Ltd., New Delhi.
5. P. C. Jain, M. Jain: Engineering Chemistry, Dhanpat Rai & Sons, Delhi.
6. P. C. Jain, M. Jain: Engineering Chemistry, Dhanpat Rai & Sons, Delhi.
7. Plastic Additives Technology Hand Book: Himadri Panda, Engineers India Research Institute.
8. Chemical process principales: part 1 & II – O.A / Hougen, K.M Watson RA Ragatz (CBS).

COURSE OUTCOMES

At the completion of this course, students should be able to

- Understand the basic concepts of Industrial Gases and Fuel Chemistry.
- Understand the manufacturing of Glasses, Ceramics, Cements, Sugar, Papers, Leathers and Fertilizers.

SEMESTER –III
GENERIC ELECTIVE
Paper IV
MCH-507: Medicinal Chemistry

COURSE OBJECTIVES
The objective of this course is

- Topic of Medicinal Chemistry due to its wide applications in our daily life. Medicinal Chemistry is an important discipline at the intersection of chemistry, especially synthetic organic chemistry, and pharmacology and various other biological specialties, where they are involved with design, chemical synthesis and development for market of pharmaceutical medicines.

Unit-I
Structure and activity
Relationship between chemical structure and biological activity (SAR). Receptor Site Theory. Approaches to drug design. Introduction to combinatorial synthesis in drug discovery. Factors affecting bioactivity. QSAR-Free-Wilson analysis, Hansch analysis, relationship between Free-Wilson analysis and Hansch analysis.

Unit-II
Pharmacodynamics
Introduction, elementary treatment of enzymes stimulation, enzyme inhibition, sulfonamides, membrane active drugs, drug metabolism, xenobiotics, biotransformation, significance of drug metabolism in medicinal chemistry.

Unit-III
Antibiotics and antibacterials
Introduction, Antibiotic β-Lactam type - Penicillins, Cephalosporins, Antitubercular. Streptomycin, Broad spectrum antibiotics . Tetracyclines, Anticancer – Dactinomycin (Actinomycin D)

Unit-IV
Antifungal
Polyenes, Antibacterial - Ciprofloxacin, Norfloxacin, Antiviral . Acyclovir .

Antimalarials: Chemotherapy of malaria. SAR. Chloroquine, Chloroguanide and Mefloquine

Unit-V
Non-steroidal Anti-inflammatory Drugs
Diclofenac Sodium, Ibuprofen and Netopam.

Antihistaminic and antiasthmatic agents
Terfenadine, Cinnarizine, Salbutamol and Beclomethasone dipropionate.

Books Suggested

1. Introduction to medicinal chemistry, A. Gringuage, Wiley-VCH.
2. Wilson and Gisvold's Text Book of Organic Medicinal and Pharmaceutial Chemistry, Ed. Robert F. Dorge.
3. An Introduction to Drug Design, S.S. Pandeya and J. R. Dimmock, New Age International.
4. Burger's Medicinal Chemistry and Drug Discovery, Vol-I (Chapter 9 and Chapter 14), Ed. M.E. Wolff, John Wiley.
5. Goodman and Gilman's Pharmacoloical Basis of Therapeutics, Mc-GRaw- Hill.
6. The organic Chemistry of Drug Design and Drug Action, R.B. Silverman, Academic Press.

7. Strategies for Organic Drug Synthesis and Design, D.Ledinicer, John Wiley.
8. Principals of Medicinal Chemistry W.O. Foye.
9. Medicinal Chemistry; The role of organic chemist in Drug Research, S.M. Roberts and B. J. Pricer.

COURSE OUTCOMES

- Understand Drug metabolism and mechanism pathway.
- Recognize and comment on different synthetic strategies and methods for stereocontrol when faced with synthetic drugs.
- Understood different system of human body. Application of drug molecules.
- To learn theories and principle related to medicinal chemistry.

SEMESTER –III
PRACTICAL
(Duration: 6-8 hrs in each branch)

Inorganic Chemistry

COURSE OBJECTIVES

The students will learn

- Separation of metals using chromatographic techniques.
- Complexometric titration.
- Estimation of Ca^{2+}, Mg^{2+} and Zn^{2+} using flame photometers.

Experiment - 1	30
Experiment -2	30
Viva Voce	20
Record	20
Total	**100**

1. **Chromatographic seperations and estimation**
   (a) Paper chromatography-separation of nickel, manganese, cobalt and zinc. Determination of R_f values.
   (b) Separation and estimation of permagnate and dichromate ions by absorption chromatography.
2. **Quantitative analysis**
   Estimation of metal complexes by different techniques
   a. Cu-EDTA (Volumetrically)
   b. Cu-NH_4CNS (Gravimetrically)
   c. Ni-DMG (Gravimetrically)
   d. Oxalate-$KMnO_4$ (Volumetrically)

3. **Paper chromatography**
   Separation of cations by Paper Chromatography of following cations
   (a) Ag(I), Pb(II) and Hg_2(II)
   (b) Hg(II), Cu(II) and Pb(II)
   (c) Ni(II), Co(II) and Zn(II)
   (d) Ni(II), Co(II) and Cu(II)

Books Suggested

1. A handbook of Analytical Inorganic Chemistry, International Scientific Publishing Academy, India, 2005.
2. Synthesis and Characterization of Inorganic Compounds, W. L. Jolly, Prentice Hall.
3. Vogel's Textbook of Quantitative Analysis, revised, J. Bassett, R. C. Denney, G. H. Jeffery and J. Mendham, ELBS.
4. A collection of Inorganic General Chemistry Experiments, A. J. Elias, Universities Press, Sangam Books Ltd., 2002.

COURSE OUTCOMES

The students will be able to

- Separate metals using chromatographic techniques.
- Estimate metal ions complexometrically.
- Estimate metals using flame photometric.

Physical Chemistry

COURSE OBJECTIVES

To introduce experiments in chemical kinetics and equivalent conductivity.

Experiment - 1	30
Experiment -2	30
Viva Voce	20
Record	20
Total	**100**

1. **Chemical Kinetics (determination of strength of two acids)**
   (a) Determination of relative strengths of HCl and H_2SO_4 (k_1 / k_2) for the hydrolysis of methyl acetate.
   (b) Determination of relative strengths of HNO_3 and H_2SO_4 (k_1 / k_2) for the hydrolysis of methyl acetate.

2. **Determination of Equivalence conductance of following strong electrolyte**
   (a) KCl
   (b) NaCl
   (c) $AgNO_3$
   (d) HCl
   (e) KNO_3

Books Suggested

1. Experimental Physical Chemistry: A. M. Halpern, G. C. McBane and W. H. Freeman, A Laboratory Prescribed Book, 3rd ed., 2006.
2. Senior Practical Physical Chemistry, B. D. Khosla, R. Chand and Co., New Delhi, 2007.
3. Practical Physical Chemistry, A. M. James and F. E. Prichard, Longman.
4. Findley's Practical Physical Chemistry, B. P. Levitt, Longman.

COURSE OUTCOMES

The students will be able to

- Determine the strength of two acids.
- Determine equivalence conductance of electrolytes.
- Calculate different electrochemical parameters.

Organic Chemistry

COURSE OBJECTIVES

The students will learn

- To determine vitamin C in drugs and in fruits.
- To separate and identify the sugars from given mixtures of glucose, fructose and sucrose.
- To interpretate ^{1}H and ^{13}C NMR spectroscopy of known samples.

Experiment - 1	30
Experiment -2	30
Viva Voce	20
Record	20
Total	**100**

1. **Quantitative analysis**
   Determination of vitamin C in drug formulations and in fruits.

2. **Paper Chromatography**
   Separation and identification of the sugars present in the given mixture of glucose, fructose and sucrose by paper chromatography and determination of R_F values.

3. **Interpretation of ions of ^{1}H and ^{13}C NMR spectra of known organic compounds.**

Books Suggested

1. The Systematic Identification of Organic Compounds, R.L. Shriner and D.Y. curlin.
2. A Practical text book by Singh and Yadav, Pragati Prakashan.
3. Practical Organic Chemistry, F. G. Mann and B. C. Saunders, Orient Longman.
4. Experiments and techniques in Organic Chemistry, D. Pasto, C. Johnson and M. Miller, Prentice Hall.

COURSE OUTCOMES

Students will be able

- To identify vitamin C.
- To separate and identify the sugars.
- To interpretate the NMR spectra.

SEMESTER –IV
Paper-V
MCH-508: NATURAL PRODUCT

COURSE OBJECTIVES

To provide knowledge on various natural products of biological importance.

Unit-I

Terpenoids and Carotenoids

Calcifications, nomenclature, occurrence, isolation, general methods of structure determination, isoprene rule. Structure determination, stereochemistry, biosynthesis and synthesis of the following representative molecules: Citral, Geraniol α-Terpeneol, Menthol, Farnesol, Zingiberence, Santonin, Phytol, Abietic acid and β-Carotene.

Unit-II

Alkaloids

Definition, nomenclature and physiological action, occurrence, isolation, general methods of structure elucidation, degradation, classification based on nitrogen heterocyclic ring, role of alkaloids in plants. Structure, stereochemistry, synthesis and biosynthesis of the following: Ephedrine, (+)- Coniine, Nicotine, Atropine, Quinine and Morphine.

Unit-III

Steroids

Occurrence, nomenclature, basic skeleton, Diel's hydrocarbon and stereochemistry, Isolation, Structure determination and synthesis of Cholesterol, Bile acids, Androsterone, Testosterone, Estrone, Progesterone, Aldosterone, Biosynthesis of Steroids.

Unit-IV

Plant Pigments

Occurrence, nomenclature and general methods of structure determination. Isolation and synthesis of Apigenin, Luteolin Quercetin, Myrcetin, Quercetin 3-glucoside, Vitexin, Diadzein, Aureusin, Cyanidin-7arabinoside, Cyanidin, Hirsutidin, Biosynthesis of flavonoids: Acetate pathway and Shikimic acid pathway.

Prophyrins

Structure and synthesis of Haemoglobin and Chlorophyll.

Unit V

Prostaglandis

Occurrence, nomenclature, classification, biogenesis and physiological effects. Synthesis of PGE2 and PGF2a.

Pyrethroids and Rotenones

Synthesis and reactions of Pyrethroids and Rotenones. (For structure elucidation, emphasis is to be placed on the use of spectral parameters wherever possible).

Books Suggested

1. Natural Products : Chemistry and Biological Significance, J. Mann, R.S. Davidson, J.B. Hobbs, D.V. Banthrope adn J.B. Harbome, Longman, Esses.
2. Organic Chemistry : Vol. 2 1L. Finar, ELBS
3. Stereoselective Synthesis : A Practical Approach, M. Norgradi, VCH.
4. Rodd's Chemistry of Carbon Compounds, Ed. S. Coffey, Elsevier.
5. Chemistry, Biological and Pharmacological Properties of Medicinal Plants from the Americas, Ed. Kurt Hostettmann, M.P. Gupta and A. Marston. Harwood Academic Publishers.
6. Introduction to Flavonoids, B.A. Bohm. Harwood Academic Publishers.

7. New Trends in Natural Product chemistry, Ataaur Rahman and M.L. Choudhary, Harwood Academic Publishers.
8. Insecticides of Natural Origin, Sukh Dev, Harwood Academic Publishers.

COURSE OUTCOMES

Students will achieve insight on various natural products of biological importance.

SEMESTER –IV
Paper-VI
MCH-509: SOLID STATE CHEMISTRY

COURSE OBJECTIVES

- The students will obtain required knowledge for understanding material science problems. Initially, they will study the structure of solids and get introduced with the importance of chemical and physical bonds, crystal (dis)order and defects for materials properties.
- They will get insight into electronic structure of crystals and compare it with the electronic structure of nanomaterials – to understand the 'nano' prefix.
- The students will understand high temperature phase equilibria and learn thermodynamic and kinetic treatments of phase transitions.

Unit-I
Solid State Reactions
General principles, experimental procedure, co-precipitation as a precursor to solid state reactions, kinetics of solid state reactions.

Unit-II
Crystal Defects and Non-Stoichiometry
Perfect and imperfect crystals, intrinsic and extrinsic defects-point defects, line and plane defects, vacancies-Schottky detects and Frenkel defects. Thermodynamics of Schottky and Frenkel defect formation, colour centres, non-stoichiometry defects.

Unit-III
Electronic Properties and Band Theory
Metals insulators and semiconductors, electronic structure of solid band theory band structure of metals, insulators and semiconductors, Intrinsic and extrinsic semiconductors, doping semiconductors, p-n junctions, super conductors. Optical properties-Application of optical and electron microscopy. Magnetic Properties-Classification of materials : Effect of temperature calculation of magnetic moment, mechanism of ferro and anti ferromagnetic ordering super exchange.

Unit-IV
Organic Solids
Electrically conducting solids. organic charge transfer complex, organic metals, new superconductors.

Unit-V
Liquid Crystals:
Types of liquid crystals: Nematic, Smectic, Ferroelectric, Antiferroelectric, Various theories of LC, Liquid crystal display, New materials.

Books Suggested.

1. Solid state chemistry and its applications, A.R. West, Student Edition Wiley.
2. Principles of the Solid State, H.V. Keer, Wiley Eastern.
3. Solid State Chemistry, N.B. Hannay.
4. Solid State Chemistry, D.K. Chakrabarty, New Wiley Eastern.
5. Solid State Chemistry, S.K. Joshi and R.A. Mashelker, World Scientific, Singapore.

COURSE OUTCOMES

To obtain the knowledge on design and development of materials with pre-required properties based on understanding the structure of solids in its influence on physico-chemical

properties, understanding of phase relations, chemical synthesis, reaction kinetics as well as characterization methods.

SEMESTER –IV
DISCIPLINE ELECTIVE
Paper VII
MCH-510: Analytical Chemistry

COURSE OBJECTIVES

The objective of this course is

- To study concepts and theories behind basic methods and techniques used in analytical chemistry. This theory can be used to solve many rigorous problems of universe.
- To prepare the students for further research in analytical methods of chemistry.

Unit-I

Introduction

Role of analytical chemistry Classification of analytical methods classical and instrumental. Types of instrumental analysis. Selecting an analytical method. Neatness and cleanliness. laboratory operations and practices. Analytical balance. Techniques of weighing, errors. Volumetric glassware cleaning and calibration of glassware. Sample Volumetric glassware cleaning and Calibration of glassware. Sample preparationdissolution and decompositions. Gravimetric techniques. Selecting and handling or reagents. Laboratory notebooks. Safety in the analytical laboratory.

Errors and Evaluation

Definition of terms in mean and median. Precision-standard deviation, relative standard deviation. Accuracy-absolute error, relative error. Types of error in experimental data determinate (systematic), indeterminate (or random) and gross. Sources of error and the effects upon the analytical results. Methods for reporting analytical data. Statistical evaluation of data-indeterminate errors. The uses of statistics.

Unit-II

Food analysis

Moisture, ash, crude protein, fat crude fiber, carbohydrates, calcium, potassium, sodium and phosphate. Food adulteration-common adulterants in food, contamination of foods stuffs. Microscopic examination of foods for adulterants. Pesticide analysis in food prodcuts. Extraction and purification of sample. HPLC. Gas chromatography for organophosphates. Thin-layer chromatography for identification of chlorinated pesticides in food products.

Unit-III

Analysis of Water Pollution

Origin of Waste water, types, water pollutants and their effects. Sources of water pollution-domestic, industrial, agricultural soil and radioactive wastes as sources of pollution. Objectives of analysis-parameter for analysis-colour, turbidity, total solids, conductivity, acidity, alakalinity, hardness, chloride, sulphate, fluoride, silica, phosphates and different forms of nitrogen, Heavy metal pollution-public health significance of cadmium, chromium, copper, lead, zinc, managanese, mercurry and arsenic. General survey of instrumental technique for the analysis of heavy metals in aqueous systems. Measurements of DO, BOD, and COD. Pesticides as water pollutants and analysis. Water pollution laws and standards.

Unit-IV

Analysis of soil, Fuel, Body Fluids and Drugs

Analysis of Soil, moisture pH total nitrogen, phosphorus, silica, lime, magnesia, manganese, sulphur and alkali salts.

Fuel analysis : liquid and gas. Ultimate and proximate analysis-heating valuesgrading of coal. Liquid fuels-flash point, aniline point, octane number and carbon residue. Gaseous fuels-produced gas and water gas-calorific value.

Unit-V

Clinical Chemistry and Drug analysis

Composition of blood-collection and preservation of samples. Clinical analysis. Serum electrolytes, blood glucose, blood urea nitrogen, uric acid, albumin, globulins, barbiturates, acid and alkaline phosphates. Immunoassay: principles of radio immunoassay (RIA) and applications. The blood gas analysis trace elements n the body. Narcotics and dangerous drug. Classification of drugs. Screening by gas and thin-layer chromatography and spectrophotometeric measurements.

Books Suggested

1. Analytical Chemistry, G.D. Christian, J.Wicy.
2. Fundamentals o analytical Chemistry. D.A. Skoog. D.M. West and F.J. Hooler, W.B. Saunders.
3. Analytical Chemistry-Principles. J.H. Kennedy. W.B. Saunders.
4. Analytical Chemistry-Principles and Techniques. LG. Hargis. Prentice Hall.
5. Principles of Instrumental analysis D.A. Skoog and J.L. Loary, W.B. Saunders.
6. Principles of Instrumental Analysis D.A. Skoog W.B. Saunders.
7. Quantitative Analysis, R.A. Day, Jr. and A.L. Underwood, Prentice Hall.
8. Environmental Solution, S.M. Khopkar, Wiley Eastern.
9. Basic Concepts of Analysis Chemistry, S.M. Khopkar, Wiley Eastern.
10. Handbook of Instrumental Techniques for Analytical Chemistry, F. Settle, Prentice Hall.

COURSE OUTCOMES

After studying this course the student will be able to

- Understand the basic of this course and think & develop new ideas and concepts in analytical chemistry.
- Know about electroanayltical, thermoanalytical, radiochemical, chromatographic and spectral techniques.

SEMESTER –IV
DISCIPLINE ELECTIVE
Paper VII
MCH-511: Organic Synthesis

COURSE OBJECTIVES

To provide the knowledge on

- Advances in organic synthesis- applications of selective name reactions and catalysts used in synthetic organic laboratories.
- Cover wide area of research in organic chemistry.

Unit-I

Disconnection Approach

An introduction to synthons and synthetic equivalents. Disconnection approach, functional group inter-conversions, the importance of the order of events in organic synthesis, one group C-X and two group C-X disconnections, chemoselectivity, reversal of polarity, cyclisation reaction, amine synthesis, Protection of groups, chemo region and stereo selectivity.

Unit-II

One Group C-C Disconnections

Alcohols and carbonyl compounds, regioselectivity, alkene synthesis, use of acetylenes and aliphatic Nitro compounds in organic synthesis.

Two Group C-C Disconnections

Diels-Alder Reaction, 1,3-difunctionalised compounds, a-b- unsaturated carbonyl compounds, control in carbonyl condensations, 1,5-difunctionalised compounds. Micheal addition and Robinson annelation.

Unit-III

Oxidation

Introduction, Different oxidative processes. Hydrocarbons-alkenes, aromatic rings, saturated C-H groups (activated and unactivated) Alcohols, diols, aldehyde's, ketones, ketals and carboxylic acids, amines, hydrazines, and sulphides. Oxidations with ruthenium tetraoxide, iodobenzene diacetate and thallium. (III) Nitrate.

Reduction

Introduction, Different reductive processes. Alkanes, alkenes, alkynes, and aromatic rings. Carbonyl compounds-aldehydes, ketones, acids and their derivatives. Epoxides. Nitro, nitroso, azo and oxime groups. Expoxide, Nitro, Nitroso, azo and oxime groups. Hydrogenolysis.

Unit IV

Organometallic Reagents

Principle, preparations, properties and applications of the following in organic synthesis with mechanistic details. Group I and II metal organic compounds Li, Mg, Hg, Cd, Zn and Ce Compounds.

Unit V

Synthesis of some complex molecules

Application of the above in the synthesis of following compounds: Canphor, longifoline, cartisone, reserpine, vitamin D, juvabion, aphidicolin and fredericamycin. A

Books Suggested

1. Designing Organic Synthesis, S. Warren. Wiley.
2. Organic Synthesis-Concept, Methods and Starting Materials, J. Fuhrhop.

3. Some Modern Methods of Organic Synthesis. W. carruthers, Cambridge Univ. Press.
4. Modern Synthetic Reactions H.O. House, W.A Benjamin.
5. Advanced Organic Chemistry : Reactions, Mechanisms and Structure, J. March. Wiley.
6. Principles, of Organic Chemistry Part B. F.a. Carey and R.J. Sundberg, Plenum Press.

COURSE OUTCOMES

Organic synthesis– reactions and catalysts is the backbone of organic chemistry and will train students to develop ideas for further research in the field of synthetic organic chemistry.

SEMESTER –IV
DISCIPLINE ELECTIVE
Paper VII
MCH-512: Polymers

COURSE OBJECTIVES

To make the student conversant with the

- Basic concepts of polymers, molecular weight and its distribution.
- Kinetics and mechanism of Addition, Coordination and Condensation polymerization.
- Various polymerization techniques.
- Various mechanical and electrical testing methods.
- Effect of polymer structure on mechanical, electrical and optical properties.

Unit-I
Basics

Importance of polymers. Basic concepts : Monomers, repeat units, degree of polymerization Linear, branched and network polymers. Classification of polymers. Polymerization: condensation, addition/radical chain-ionic and co-ordination and copolymerization. Polymerization conditions and polymer reactions. Polymerization in homogeneous and heterogeneous systems.

Unit-II
Polymer Characterization

Polydispersion-average molecular weight concept. Number, weight and viscosity average molecular weights. Polydispersity and molecular weight distribution. The practical significance of molecular weight. Measurement of molecular-weights. End-group, viscosity, light scattering, osmotic and ultracentrifugation methods.

Unit-III
Analysis and testing of polymers

Chemical analysis of polymers, spectroscopic methods, X-ray diffraction study. Microscopy. Thermal analysis and physical testing-tensile strength. Fatigue, impact. Tear resistance, Hardness and abrasion resistance.

Unit-IV
Inorganic Polymers

A general survey and scope of Inorganic Polymers special characteristics, classification, homo and hetero atomic polymers. Structure, Properties and Applications of

a. Polymers based on boron-borazines, boranes and carboranes.
b. Polymers based on Silicon, silicone's polymetalloxanes and polymetallosiloxanes, silazanes.

Unit V
Structure, Properties and Application of

a. Polymers based on Phosphorous-Phosphazenes, Polyphosphates
b. Polymers based on Sulphure-Tetrasulphur tetranitride and related compounds.
c. Co-ordination and metal chelate polymers.

Books Suggested

1. Inorganic Chemistry, J.E. Huheey, Harper Row.
2. Developments in Inorganic polymer Chemistry, M.F. Lappert and G.J. Leigh.
3. Inorganic polymers- N.H. Ray.
4. Inorganic polymers, Graham and Stone.
5. Inorganic Rings and Cages : D.A. Armitage.

6. Textbook of Polymers Science, F.W. Billmeyer Jr. Wiley.
7. Contemporary Polymer Chemistry, H.R. Al cock and F.W. Lambe, Prentice Hall.

COURSE OUTCOMES

- The students will become familiar with the basic concepts of polymers, mechanism and kinetics of polymerization, polymerization techniques and molecular weight determination.
- This knowledge would help the students to synthesize polymers and mechanism involved in it.
- It will enable the students to interpret their experimental data using the characterization techniques and structure-property relationship for their final semester research project.

SEMESTER –IV
GENERIC ELECTIVE
Paper VIII
MCH-513: ENVIRONMENTAL CHEMISTRY

COURSE OBJECTIVES

Objective f this course is

- To provide the systematic study of Atmospheric and Tropospheric Photochemistry.
- To help in understanding the causes of environmental pollution and can open up new methods for environmental pollution control.
- To make the students to learn about the environmental ecosystem, waste water handling and analysis.

Unit-I

Atmospheric Chemistry

Atmospheric layers, Vertical temperature profile, heat/radiation budget of the earth atmosphere systems. Properties of troposphere, thermodynamic derivation of lapse rate. Temperature inversion. Calculation of Global mean temperature of the atmosphere. Pressure variation in atmosphere and scale height. Biogeochemical cycles of carbon, nitrogen, sulphure, phosphorus oxygen. Residence times.Sources of trace atmospheric constituents: nitrogen oxides, sulphuredioxide and other sulphure compounds, carbondioxides, chlorofluorocarbons and other halogen compounds, methane and other hydrocarbons.

Tropospheric Photochemistry

Mechanism of Photochemical decomposition of NO_2 and formation of ozone. Formation of oxygen atoms, hydroxyl, hydroperoxy and organic radicals and hydrogen peroxide. Reactions of hydroxyl radicals with methane and other organic compounds. Reaction of OH radicals with SO_2 and NO_2. Formation of Nitrate radical and its reactions. Photochemical smog meteorological conditions and chemistry of its formation.

Unit-II

Air Pollution

Air pollutants and their classifications. Aerosols-sources, size distribution and effect on visibility, climate and health.

Acid Rain

Definition, Acid rain precursors and their aqueous and gas phase atmospheric Oxidation reactions. Damaging effects on aquatic life, plants, buildings and health. Monitoring of SO_2 and NO_2. Acid rain control strategies.

Stratospheric Ozone Depletion

Mechanism of Ozone formation, Mechanism of catalytic ozone depletion, Discovery of Antarctic Ozone hole and Role of chemistry and meteorology. Control Strategies.

Green House Effect

Terrestrial and solar radiation Spectra, Major green house gases and their sources and Global warming potentials. Climate change and consequences.

Urban Air Pollution

Exhaust emissions, damaging effects of carbon monoxide. Monitoring of CO. Control strategies.

Unit-III

Aquatic Chemistry and Water Pollution

Redox chemistry in natural waters. Dissolved oxygen, biological oxygen demand, chemical oxygen demand, determination of DO, BOD and COD. Aerobic and anaerobic reactions of organic sulphure and nitrogen compounds in water acid-base chemistry of fresh water and sea water. Aluminum, nitrate and fluoride in water. Petrification. Sources of water pollution. Treatment of waste and sewage. Purification of drinking water, techniques of purification and disinfection.

Unit IVEnvironmental Toxicology

Toxic heavy metals

Mercury, lead, arsenic and cadmium. Causes of toxicity. Bioaccumulation, sources of heavy metals. Chemical speciation of Hg, Pb, As, and Cd. Biochemical and damaging effects.

Toxic Organic Compound

Pesticides, classification, properties and uses of organochlorine and ionospheres pesticides detection and damaging effects.

Polychlorinated biphenyls

Properties, use and environmental continuation and effects.

Polynuclear Aromatic Hydrocarbons

Source, structures and as pollutants.

Unit-V

Soil and Environmental Disasters

Soil composition, micro and macronutrients, soil pollution by fertilizers, plastic an metals. Methods of re-mediation of soil. Bhopal gas tragedy, Chernobyl, three mile island, Minimtata Disease, Sevoso (Italy), London smog.

Books Suggested

1. Environmental Chemistry, Colin Baird, W.H. Freeman Co. New York, 1998.
2. Chemistry of Atmospheres, R.P. Wayne, Oxford.
3. Environment Chemistry, A.K. De, Wiley Eastern, 2004.
4. Environmental Chemistry, S.E. Manahan, Lewis Publishers.
5. Introduction to atmospheric Chemistry, P.V. Hobbs, Cambridge.

COURSE OUTCOMES

- Students will be able to have applied understanding of Atmospheric and Tropospheric Photochemistry.
- Students understanding the principles of water and air analysis.
- The course is also useful in understanding various aspects of Environmental Toxicology and Environmental Disasters.

SEMESTER –IV
GENERIC ELECTIVE
Paper VIII
MCH-514: COMPOTER-AIDED DRUG DISCOVRY

COURSE OBJECTIVES

The objective of this course is

- To provide theoretical knowledge about the use of computer in drug discovery.
- To understand the correlation of drug activity with structure of molecules.
- To understand the statistical tools applicable in Hansch analysis and regression analysis.
- Theoretically understanding the drug interaction with receptor.

Unit I

General information about drugs

Measuring drug activity, drug absorption, lipophilicity, pharmacokinetics factors, distribution of drugs,protein binding of drugs.Rational approaches to lead Discovery based on traditional medicine random screening non random screening lead Discovery based on drug metabolism and clinical observation.

Unit II

SAR vs Quantitative Structure-Activity Relationship

History and development of USA yaar types of physical chemical parameters experimental and theoretical approaches for the determination of physical chemical parameters such as partition Coefficient and its substitution constant and taps study constant hansch analysis free Wilson analysis 3D, QSAR approaches like COMFA and COMSIA.

Unit III

Topological modeling

Molecular graphs, atom connectivity, different types of matrices: distance matrix, adjacency matrix, Deutore matrix, Randic Connectivity indices, Kier and Hall valence connectivity indices Wiener index, Path Numbers, Sz index, Sadhana index, PI index , Balaban index for simple molecules : Derivatives of Benzene, Biphenyl, Quinolines, Acridines etc.

Unit IV

Regression analysis

Statistical parameters: R, F, SE, Pogliani quality factor, testing of models, Cross validation parameters, univariate and multivariate modelling. Computer softwares for modeling, Degree of freedom, de novo constants.Outliers.

Virtual screening techniques drug like Ne screaming concept of pharmacophore mapping and pharmacophore based screening molecular Docking

Unit V

Molecular Modeling

Introduction to molecular mechanics energy minimization methods and conformational analysis Global conformational minima determination introduction to bioinformatics kemo Informatics. Introduction to bioinformatics chemoinformatics.

Books Suggested

1. Medicinal chemistry: ASHUTOSH KAR, New Age International Publishers New Age International Publishers.
2. Medicinal chemistry and drug discovery, M.E. Wolf, John Wiley and Sons, NY.
3. Burgers Med. chemistry and drug discovery 6th Edition, John Wiley, New York.
4. Qualitative Structure Activity Relationship in Drug Design Vol I,C. Hanch, Academic Press,

5. Molecular Connectivity in Chemistry and Drug Research, L.B. Kier, L.H. Hall, Academic Press.London.
6. Quantitative Aspects of Chemical Pharmacology, R.B. Barlow, Vroom Helm, London.
7. Principles of Organic Medicinal Chemistry , Ramarao,Bande ndls, New Age International P Ltd,
8. Graph Theory and Topology in Chemistry, Ed. R. B. King and D.H. Roury, Elsevier Sc. Publishers. AMSTERDAM.
9. Topological indices and Related Descriptors in QSAR and QSPR, James Defilers, CTC Press, 2000.
10. Sadhana Index in Nanotechnology, Khadi kar, Agrawal, Aziz, Lambert, Amazon.

COURSE OUTCOMES

After studying the course, the students will be able to

- Calculate various indices (Physicochemical Topological) for obtaining models for predicting the biological activities of new molecules.
- Learn the statistical methods and tools.
- Perform 3Q QSAR and docking which will help in selecting new functional groups for belle activity.
- Work in pharmacy industries for developing new drugs by way of QSAR.

SEMESTER –IV
PRACTICAL
(Duration: 6 hrs in each branch)

Inorganic Chemistry

COURSE OBJECTIVES

The students will learn

- Quantitative determination of different metal ions.
- Synthesis and characterization of metal complexes.

Experiment - 1	30
Experiment -2	30
Viva Voce	20
Record	20
Total	**100**

1. **Quantitative determinations of metal ions from three component mixture**
   One volumetrically and two gravimetrically
   (a) Cu^{+2}, Ni^{+2}, Zn^{+2}
   (b) Cu^{+2}, Ni^{+2}, Ag^{+2}
   (c) Cu^{+2}, Ni^{+2}, Ba^{+2}

2. **Synthesis and characterization of following metal complexes**
   (a) Sodium tetrathionate $Na_2S_4O_6$
   (b) Metal complex of dimethyl sulfoxide: $CuCl_2$.2DMSO
   (c) Synthesis of metal acetylacetonate
   (d) Synthesis of copper and nickel Schiff base complexes
   (e) Synthesis of copper and nickel dithiocarbamates

Books Suggested

1. Synthesis and characterization of Inorganic Compounds, W. L. Jolly, Prentice Hall.
2. A Handbook of Analytical Inorganic Chemistry, D. Sharma, International Scientific Publishing Academy, India, 2005.
3. A collection of Interesting General Chemistry Experiments, A. J. Elias, Universities Press, Sangam Books Ltd., 2002.
4. Vogel's Textbook of Quantitative Analysis, revised, J. Bassett, R. C. Denney, G. H. Jeffery and J. Mendham, ELBS.

COURSE OUTCOMES

The students will be able to

- Determine the metal ions from a three component mixture.
- Synthesis and characterize the metal complexes.

Physical Chemistry

COURSE OBJECTIVES

The students will learn

- Identification and determination of $E_{1/2}$ of compounds.
- Determination of pK value of indicators and stability of Iron complex.

Experiment - 1	30
Experiment -2	30
Viva Voce	20
Record	20
Total	**100**

1. **Electrochemistry**
   (a) Identification and estimation of metal ions such as Cd^{2+}, Pb^{2+}, Zn^{2+} and I^{2+} etc. polarographically.
   (b) Study of a metal ligand complex polarographically (using Lingane's method).

2. **Spectroscopy**
   (a) Determination of pK_a of an indicator (e.g. methyl red) in (a) aqueousand (b) micellarMedia.
   (b) Determination of stoichiometry and stability constant of Ferricisothiocyanate ion complex in solution.

Books Suggested

1. Experimental Physical Chemistry, R. C. Das and B. Behera, Tata McGraw Hill.
2. Practical Physical Chemistry, A. M. James and F. E. Prichard, Longman.
3. Experimental Physical Chemistry: A Laboratory Prescribed Book, A. M. Halpern, G. C. McBane and W. H. Freeman, 3rd ed., 2006.
4. Experimental Physical Chemistry, V. D. Athawale, New Age International, 2007.

COURSE OUTCOMES

The students will be able to

- Identify and estimate the polarograms.
- Determine pK value of indicator and stability of Iron complex.

Organic Chemistry

COURSE OBJECTIVES

Students will learn

- Multistep synthesis of organic compounds.
- Isolation of compounds from natural products.

Experiment - 1	30
Experiment -2	30
Viva Voce	20
Record	20
Total	**100**

1. **Multi-step Synthesis of Organic Compounds**
   The exercise should illustrate the use of organic reagents and may involve purification of the products by chromatographic techniques. Prepreparation in steps: Benzophenone →Benzpinacol→Benzpinacolone Beckmann rearrangement : Benzanilide from benzene, Benzene →Benzophenone →Benzphenone oxime→ Benzanilide, Benzilic acid rearrangement : Benzilic acid from benzoin, Benzoin→Benzil→Benzilic acid Synthesis of heterocyclic compounds Skraup synthesis : Preparation of quinoline from aniline, Fisher Indole synthesis : Preparation of 2-phenylindole from phenylhydrazine, Enzymatic synthesis Enzymatic synthesis Enzymatic reduction : reduction of ethyl acetoacetate using Baker's yeast to yield enantiomeric excess of S (+) ehtyl-3-hydroxybutanoate and determine its optical purity. Biosynthesis of ethanol from sucrose. Synthesis using microwave Alkylation of diethyl malonate with benzyl chloride. Synthesis using phase transfer catalyst. Alkylation of diethyl malonate or ethyl acetoacetate with an alkylhalide.

2. **Isolation**
   (a) Isolation of caffeine from tea leaves.
   (b) Isolation of casein from milk (the students are required to try some typical colour reactions of proteins).
   (c) Isolation of lactose from milk (purity of sugar should be checked by LC and PC and Rf values reported).
   (d) Isolation of nicotine dipicrate from tobacco.
   (e) Isolation of piperine from black pepper.
   (f) Isolation of lycopene from tomatoes.
   (g) Isolation of b-carotene from carrots.
   (h) Isolation of eugenol from clove.
   (i) Isolation of (+) limonine from citrus rind

Books Suggested

1. The systematic Identification of Organic Compounds, R.L. Shriner and D.Y. curlin.
2. A Practical text book by Singh and Yadav, Pragati prakashan.
3. Vogel's Textbook of Practical Organic Chemistry, ELBS.
4. Macroscale and Microscale Organic Experiments, K. L. Williamson and D. C. Heath.

COURSE OUTCOMES

Students will gain knowledge of

- Multistep organic synthesis.
- Isolation of compound from natural products.

STUDY CENTRE FOR BIOCHEMISTRY

DEPARTMENT OF CHEMISTRY

COURSE STRUCTURE

for

(M.Sc. Biochemistry)
Four Semesters (Two Year)

Programme

Based on

Choice Based Credit System (CBCS)
(As per Ordinance-14)

I & II Semester 2020-21
III & IV Semester 2021-22

AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

Semester Course of M.Sc. Biochemistry

Programme	:	**M.Sc. Biochemistry**
Programme Code	:	**78**
Duration	:	**4 Semester (Two Year)**
Eligibility	:	Graduation with Chemistry, Biotechnology, Microbiology and Biochemistry as a subject.
Age Limit	:	No age limit
Admission Procedure	:	The admission will be done as per merit of qualifying examinations

PROGRAMME OBJECTIVES & STRUCTURE

PO #	PROGRAMME OUTCOME
PO 1	**Critical Thinking**: Take informed actions after identifying the assumptions that frame our thinking and actions, check out the degree to which these assumptions are accurate and valid, and look at our ideas anddecisions(intellectual,organizational,andpersonal)fromdifferent Perspectives.
PO 2	**Effective Communication**: Speak, read, write and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media and Technology.
PO 3	**Social Interaction**: Elicit views of others, mediated is agreements and help reach conclusions in group settings.
PO 4	**Effective Citizenship**: Demonstrate empathetic social concern and equity-centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
PO 5	**Ethics**: Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.
PO 6	**Environment and Sustainability**: Understand the issues of environmental contexts and sustainable development.
PO 7	**Self-directed and Life-long Learning**: Acquire the ability to engage in independent and life-long learning in the broadest context of socio-technological changes.

PROGRAMME SPECIFIC OUTCOME

PSO #	PROGRAMME SPECIFIC OUTCOME
PSO 1	To gain essential knowledge and skills to pursue a career in research, industry and in academic set up.
PSO 2	To integrate and apply the techniques in Analytical biochemistry, Clinical biochemistry, Microbiology, Molecular biology and Bioinformatics.
PSO 3	To understand the depth of scientific knowledge in the broad range of fields including Cell biology, Metabolism, Pharmaceutical Biochemistry, Genetics, Nutritional Biochemistry, Immunology and Enzymology.
PSO 4	Provide the biochemical basis of human diseases, protein structure and conformation, non-invasive diagnostics, biochemical pathway regulation and drug development and synthesize this knowledge and apply the same for multitude of laboratory applications.

Course Outcome (COs)

S.No.	**Course Name**	**Course Code**
Semester-I		
101	**Bio-organic Chemistry**	**BCH-101**
	Course Outcome	
CO1	Understand occurrence and classification of carbohydrate	
CO2	Understand definition and classification of lipids	
CO3	Discuss classification and properties of proteins	
CO4	Understand nature of genetic material of nucleic acid	
CO5	Explain classification of porphyrins	
102	**Cell Biology**	**BCH-102**
	Course Outcome	
CO1	Understand the structures and purposes of basic components	
CO2	Explain molecular organization and biogenesis and function mitochondria	
CO3	Discuss Bio-membrane transport	
CO4	Understand cell cycle	
CO5	Discuss molecular organization and nucleus	
103	**Human Physiology and Endocrinology**	**BCH-103**

Course Outcome		
CO1	Understand composition of blood and blood coagulation	
CO2	Understand digestive system	
CO3	Understand excretory system	
CO4	Understand structure of skeletal muscles	
CO5	Discuss hormonal action in human body	
104	**Biophysical Chemistry & Techniques**	**BCH-104**
Course Outcome		
CO1	Understand physical properties and structure of water	
CO2	Understand basic principle of centrifugation	
CO3	Explain thermodynamics	
CO4	Understand general principle of chromatography	
CO5	Learn basic concepts of spectroscopy	
105	**Lab I: Bio-organic Chemistry and Biophysical Chemistry & Techniques**	**BCH-105**
Course Outcome		
CO1	Understand qualitative analysis	
CO2	Discuss cell fractionation	
CO3	Understand colorimetric and spectrophotometric analysis	
CO4	Understand chromatography analysis	
CO5	Demonstration of electrophoresis	
106	**Lab II: Human physiology & Endocrinology and cell biology**	**BCH-106**
Course Outcome		
CO1	Determine Hb% in blood samples	
CO2	Learn microscopic observations	
CO3	Understand blood film preparation and identification of cells	
CO4	Explain isolation of cell organelles	
CO5	Estimation of proteins from animal cell material	
Semester-II		
201	**Enzymology**	**BCH-201**
	Course Outcome	
CO1	Understand nomenclature and classification of enzymes	
CO2	Discuss co-enzyme and cofactors	
CO3	Explain multi enzyme and allosteric enzymes	
CO4	Understand mechanism of catalysis	
CO5	Understand general mechanisms of enzyme regulation	

202	**Microbial Biochemistry**	**BCH-202**
	Course Outcome	
CO1	Understand classification of microorganisms	
CO2	Explain general organization of bacterial cells and bacteriological media	
CO3	Explain role of microorganisms in food spoilage	
CO4	Understand viruses structure	
CO5	Discuss sterilization and disinfection	
203	**Biostatistics and Computational Bioinformatics**	**BCH-203**
	Course Outcome	
CO1	Explain introduction of Biostatistics	
CO2	Understand probability	
CO3	Understand correlation and regression analysis	
CO4	Discuss computer fundamentals	
CO5	Understand internet and its applications	
204	**Molecular Biology**	**BCH-204**
	Course Outcome	
CO1	Understand chemical nature of genetic materials	
CO2	Understand transcription mechanism	
CO3	Explain bacterial recombination	
CO4	Understand DNA binding properties	
CO5	Discuss Mutation types	
205	**Lab I: Enzymology and Molecular Biology**	**BCH-205**
	Course Outcome	
CO1	Understand Enzyme assay	
CO2	Determine specific activity of enzymes	
CO3	Estimation of DNA	
CO4	Estimation of RNA	
CO5	Understand electrophoresis of genomic DNA	
206	**Lab II: Microbial Biochemistry and Bioinformatics**	**BCH-206**
	Course Outcome	
CO1	Preparation of culture media	
CO2	Understand VRDL test	
CO3	Explain drug and target databases	
CO4	Explain protein structure database	
CO5	Understand gram staining	

Semester-III		
301	**Metabolism and Plant Biochemistry**	**BCH-301**
	Course Outcome	
CO1	Understand bioenergetics and carbohydrate metabolism	
CO2	Discuss lipid metabolism	
CO3	Explain nucleic acid metabolism	
CO4	Discuss protein metabolism	
CO5	Understand photosystem	
302	**Immunology**	**BCH-302**
	Course Outcome	
CO1	Explain introduction of immune system	
CO2	Understand effect or mechanism of immunity	
CO3	Understand antigen	
CO4	Understand transplantation immunology	
CO5	Understand immunity to infection and immunological techniques	
303	**Clinical Biochemistry**	**BCH-303**
	Course Outcome	
CO1	Understand LFT and KFT	
CO2	Understand disorders of metabolisms	
CO3	Understand Biochemical aspects of Hematology	
CO4	Explain mechanism of drug action	
CO5	Discuss disorders of erythrocyte metabolism	
304	**Genetic Engineering**	**BCH-304**
Course Outcome		
CO 1	Understand laws of Mendels	
CO 2	Understand Recombinant DNA Technology	
CO 3	Explain Tissue Culture	
CO 4	Discuss population genetics	
CO 5	Understand Gene Techniques	
305	**Lab I: Genetic Engineering and**	**BCH-305**
	Course Outcome	
CO1	Isolation of genomic DNA	
CO2	Understand Western Blotting	
CO3	Understand Hematology	

CO4	Understand Assay of serum marker enzymes	
CO5	Understand Blood and Urine analysis	
306	**Lab II: Plant Biochemistry and Immunology**	**BCH-306**
	Course Outcome	
CO1	Estimation of plant lipids and carbohydrates	
CO2	Understand Mitosis	
CO3	Understand single immune diffusion	
CO4	Understand blood grouping	
CO5	Understand Sandwich ELISA	
Semester-IV		
401	**Pharmaceutical Biochemistry**	**BCH-401**
	Course Outcome	
CO1	Discuss Pharmacokinetics	
CO2	Understand pharmacodynamics and drug target	
CO3	Explain regulatory affairs and pharmacvigilance	
CO4	Understand Intellectual property rights	
CO5	Understand pharmaceutical associated toxicity	
402	**Biochemical Toxicology and Clinical Research**	**BCH-402**
	Course Outcome	
CO1	Understand nutrition toxicology and immune toxicology	
CO2	Explain pre clinical toxicology	
CO3	Discuss clinical research	
CO4	Discuss biological testing and bioassays during clinical trials	
CO5	Understand bioavailability and bioequivalence studies	
403	**Food and Nutritional Biochemistry**	**BCH-403**
	Course Outcome	
CO 1	Gain detail understanding of Nutraceuticals; use of nutraceuticals in traditionalhealth sciences from intestine in to blood it affect the body	
CO 2	Understanding of factors that affect food digestion and absorption, Bioavailabilityand Bioequivalence concept	
CO 3	Understanding of importance of food for existence of life	
CO 4	Learn how to processing and loss of nutrients take place during processing andcooking	
CO 5	Recommended dietary allowances for different categories of human	

	beings	
404	**Industrial Biochemistry**	**BCH-404**
Course Outcome		
CO 1	Gain detail understanding of Techniques of fermentation systems, Role ofFermentation, Biochemistry of Fermentation for industrial product development	
CO 2	Understanding of commercial enzyme in beverages and their associated biochemicalprocess	
CO 3	Understanding of importance of food, Food additives, artificial food additives andtheir biochemistry	
CO 4	Learn how to processing are involve in prebiotics and probiotics production inindustry	
CO 5	Learning in the development and production of different bioactive product forhuman welfare	
405	**La I: Pharmaceutical Biochemistry and Industrial Biochemistry**	**BCH-405**
Course Outcome		
CO1	Qualitative analysis of lipids	
CO2	Saponification value of fats	
CO3	Drug stability and solubility analysis	
CO4	Quality validation of process	
CO5	Standard operating procedure updating and review	
406	**Lab II: Biochemical Toxicology & Clinical Research and Nutrition Biochemistry**	**BCH-406**
Course Outcome		
CO1	Determination of metal content in samples	
CO2	Understand Food processing and fortification test	
CO3	Understand BMR calculation	
CO4	Estimation of Minerals quantitative test	
CO5	Understand Enzymes related toxicity testing	

M.Sc. BIOCHEMISTRY
(FOUR SEMESTER COURSE)
SCHEME OF EXAMINATION
(CBCS Syllabus)
(Effective from 2020-21)

Semester-I

Paper	Course	Title of the Paper	Credit	Marks
Paper I	BCH-101	Bio-organic Chemistry	4	100(60+40)
Paper II	BCH-102	Cell Biology	4	100(60+40)
Paper III	BCH-103	Human Physiology and Endocrinology	4	100(60+40)
Paper IV (GenericElective)	BCH-104	Biophysical Chemistry & Techniques	4	100(60+40)
Practical (Lab I + Lab II)			4	200(100+100)
Comprehensive Viva Voce			4*	100
Total			**24**	**700**

*Virtual Credit

Semester-II

Paper	Course Code	Title of the Paper	Credits	Marks
Paper I	BCH-201	Enzymology	4	100(60+40)
Paper II	BCH-202	Microbial Biochemistry	4	100(60+40)
Paper III	BCH-203	Molecular Biology	4	100(60+40)
Paper IV (Generic Elective)	BCH-204	Bio statistics and Computational Bioinformatics	4	100(60+40)
Practical (Lab I + Lab II)			4	200(1000+100)
Comprehensive Viva Voce			4*	100
Total			**24**	**700**

*Virtual Credit

Semester-III

Paper	Course Code	Title of the Paper	Credits	Marks
Paper I	BCH-301	Metabolism and Plant Biochemistry	4	100(60+40)
Paper II	BCH-302	Immunology	4	100(60+40)
Paper III (Discipline Elective)	BCH-303	Clinical Biochemistry	4	100(60+40)
Paper IV (Generic Elective)	BCH-304	Genetic Engineering	4	100(60+40)
Practical (Lab I + Lab II)			4	200(100+100)
Comprehensive Viva Voce			4 *	100
Total			**24**	**700**

*Virtual Credit

Semester-IV

Paper	Course Code	Title of the Paper	Credits	Marks
Paper I	BCH-401	Pharmaceutical Biochemistry	4	100(60+40)
Paper II	BCH-402	Biochemical Toxicology and Clinical Research	4	100(60+40)
Paper III (Discipline Elective)	BCH-403	Food and Nutrition Biochemistry	4	100(60+40)
Paper IV (Generic Elective)	BCH-404	Industrial Biochemistry	4	100(60+40)
Practical (Lab I + Lab II)			4	200(100+100)
Comprehensive Viva Voce			4*	
Total			**24**	**700**

*Virtual Credit

Grand Total Marks M.Sc. (Ist to IVth Sem) = **2800**

M.Sc. BIOCHEMISTRY
Semester-I
Paper-I
BCH-101: Bio-organic Chemistry

COURSE OBJECTIVES

The objective of this paper is to provide students with a basic understanding of

- The physical and chemical properties of the components of living things.
- The principles of bioenergetics.
- Structural, chemical biology and three-dimensional construction of macromolecules (carbohydrates, proteins, nucleic acids and lipids).
- Functional properties and importance of carbohydrates, proteins, nucleic acids and lipids.

UNIT-I

Carbohydrate- Occurance, Classification, structures, propertise, and biological importance of mono, oligo and polysaccharide, stereo isomerism, optical isomerism and reaction of aldehyde and ketone groups of sugars, mutarotation, ring structure of mono saccharides.

UNIT-II

Lipids- Definition and classification, structure, properties of fatty acids and prostaglandins, claasification distribution and biological importance of fats, waxes compound and derived lipids, physical and chemical properties of fats, steroids, cholesterol and bile acids, characterization of fats.

UNIT-III

Proteins- Introduction, classification and properties of amino acids, Biologically active peptides, classification based on solubility, shape composition and function structure and properties of peptide and proteins. Protection and deprotection of N-terminal and C-terminal ends functional groups in the side. Chain denaturation and Renaturation of protein. Determination of amino and sequences of a polypeptide chain.

UNIT-IV

Nucleic acid- Nature of genetic material, evidances that DNA is the genetic materical, Structure & constitution of nucleic acids (purines, pyrimidines, nucleoside) features of double helix DNA, structure, types, composition, of RNA &DNA, biological role of DNA & RNA. Nucleoproteins, central degma of molecular biology.

UNIT-V

Porphyrins- Porphyrins Nucleus and classification of Porphyrins. Important meiallophyrines. Biosynthesis and degradation of porphyrins. Bile pigments chemical nature and their physiological significance.

Books Suggested

1. Biochemistry by L. Stryer, W.H. Freeman and Co. 5th 2002.
2. Fundamentals of Biochemistry by Voet and Voet, John Wiley and sons NY (2002).
3. Lehninger's Principle of Biochemistry by David L. Nelson and Michael M. Cox. W. H. Freeman; 4th edition (2004).
4. Text Book of Biochemistry with clinical correlation by Thomas .M. Devlin, John Wiley-Liss, Hobokhen N. J. publishers (2006).
5. Biochemistry by Zubey, GL WCB Publishers.

COURSE OUTCOMES

- To understand the concepts of preparation of buffers, molarity, normality, ionization, molality.
- The understanding of different types of chemical bonding, molecular machinery of living cells, principles that govern the structures of macromolecules and their participation in living system.

- To identify with the classification and structural properties of carbohydrates, proteins, nucleic acids and lipids, glycoproteins and glycolipids and their significance in biological systems.
- By the end of the course, the students will be able to demonstrate advanced knowledge and understanding of aspects of physical and chemical properties of aqueous solutions, concepts of free energy.

M.Sc. BIOCHEMISTRY
Semester – I
Paper-II
BCH-102: Cell Biology

COURSE OBJECTIVES

- To equip students with a basic knowledge of the structural and functional properties of cells
- To examine properties of differentiated cell systems and tissues.
- Aspect of cell cycle and cell death.
- To introduce the fascinating mechanism of cell signaling along with brief overview on developmental biology.
- To provide thorough knowledge on classical genetics.

UNIT-I

Cell, cell wall and Extracellular Matrix (ECM), composition, cellular dimensions, Evolution, Organisation, differentiation of prokaryotic and Eukaryotic cells, Virus, bacteria, cyanobacteria, mycoplasma and prions.

UNIT-II

Molecular organisation and biogenesis and functin Mitochondria, endoplasmic reticulam, golgi apparatus, plastids chloroplast, Leucoplast, centrosome, lysosome, ribosome, peroxisome, Nucleus and nucleolus. Endo membrane system, concept of compartmentalization.

UNIT-III

Bio-membrane Transport- Physiochemical propertise of cell membranes. Molecular constitute of membranes, asymmetrical organisation of lipids and proteins. Solute transport across membrane's-fick's law, simple diffusion, passive-facilitated Diffusion, active transport- primary and secondary group translocation, transport ATPases, Membrane transport in bacteria and animals Transport mechanism- mobile carriers and pores mechanisms. Transport by vesicle formation, endocytosis, exocytosis, cell respiration.

UNIT-IV

Cell cycle- Cell division by mitosis and meosis, Comparison of Meiosis an Mitosis, regulation of cell cycle, cell lysis, Cytokinesis, Cell signaling, Cell communication, Cell adhesion and Cell junction, apoeptosis, cell cycle checkpoints.

UNIT - V

Molecular organization and Nucleus, nucleolus, composition, properties, envelop, structure properties, stability, cleavage, functions and types of chromosomes, chromosomal arrangement, Chromosome staning, chromosomal observation aberration, chromatin, structure, homocrometin, hetro and polychromatin.

Books Suggested

1. Cell Biology Protocols by Harris, R., Graham, J. & Rickwood, D.
2. Color Atlas of Biochemistry by Koolman, J. & Roehm, K. H.
3. Molecular Biology of The Cell - Bruce Alberts.
4. Molecular cell Biology by Harvey Lodish. W. H. Freeman; Sol edition (2007).
5. Cell Biology Protocols by Harris, R., Graham, J. & Rickwood, D.
6. Current Protocols in Protein Science (All Vol) John Wiley & Sons.
7. The World of the cell by Becker, Kleinsmith and Harden Academic Internet Publishers; 5th edition (2006).
8. The Cell: A Molecular Approach, Fourth Edition by Geoffrey M. Cooper and Robert E. Hausman.
9. Cell and Molecular Biology by concepts and experiments by Gerald Karp (2005) John Wiley sons & Inc.

COURSE OUTCOMES

- Students will understand the structures and purposes of basic components of cell, especially membranes and organelles.
- Appreciate the cellular components underlying cell division along with a deep insight to cell division, cell death and uncontrolled cell division.
- Students will learn the basic principles of inheritance and patterns of heredity.
- Students will test and deepen their mastery of genetics by applying this knowledge in a variety of problem-solving situations.

M.Sc. BIOCHEMISTRY
Semester-I
Paper-III
BCH-103: Human Physiology and Endocrinology

COURSE OBJECTIVES

- The course is designed to assist the students to learn and understand fundamental concepts and principles of respiratory, renal, digestive, cardiovascular, muscle and neuro physiology.
- To develop a vocabulary of appropriate terminology to effectively communicate information related to anatomy and physiology.
- To study the interrelationships within and between anatomical and physiological systems of the human body.
- To understand the basic mechanisms of homeostasis by integrating the functions of cells, tissues, organs, and organ systems.
- To study the roll and mechanism of endocrine system in metabolism, regulation of normal homeostatic condition of body and other physiological functions.

UNIT-I

Blood- Composition of blood, structure & functions of formed elements, plasma and its consistuents & function of plasma proteins.

Blood coagulation- Mechanism & regulation, fibrinolysis, role of Hb in oxygen & corbon dioxide transports or 2,3 Dpce, Bohr effect and chloride shift.

UNIT-II

Digestive system- Composition, function& regulation of digestive juices, Digestion, absorption of carohydrate, proteions and fats of nucleic acids, minerals and vitamins.

UNIT-III

I. Excretory system-Structure of nephron, mechanism of urine formation, clearance values, composition of urine, Homeostasis & acid- base balance & imbalance.

II. Structure of neuron conduction of impulses across the nerve fibre salutary conduction. Synaptic transmission, role of neurotransmitter.

UNIT-IV

Muscles- Structure of skeletal muscles, Bio-chemical characterization of extra cellular matrix, plasma lemma, transverse tubular system, sarcoplasmic reticulum and myofibrils.

Actin, myosin, tropomysin, troponin, Z-disc and H-line components. The sliding filament mechanisms and other theories metabolic and chemical changes during muscle constriction.

UNIT-V

Hormones- endocrine system, basic knowledge of endocrinology, Classification of endocrine system, structure, function and disorders of pituitary, anterior and posterior pituitary gland, thyroid and parathyroid, adrenal, pancreases and reproductive hormones in case of human and female.

Books Suggested

1. Human Physiology by Devis.
2. Harper's Biochemistry (Lange Medical Books) (Paperback)By Robert K. Murray,Daryl K. Granner, Peter A. Mayes and Victor W. Rodwell. Publisher: Appelton and Lange.
3. Clinical Biochemistry By Richard Luxton. Scion Publishing Ltd.
4. Text book of Biochemistry and Human Biology -Talwar , G.P. and Srivastava. L.M., Printice Hall of india.
5. Human Physiology Chatterjee.C.C, Medical Allied Agency.
6. Textbook of Medical Biochemistry By MN Chatterjea and Rana Shinde, Jaypee Brothers. 1. Principles of Anatomy & Physiology by Tortora, G.J.
7. Textbook of Medical Physiology by Guyton and Hall.
8. Essentials of Medical Physiology by Sembulingam K.
9. Proteins: structure and function by Whitford, D.

COURSE OUTCOMES

- This course will provide a sound basis in human physiology to support in-depth understanding of physiological processes of all body systems in detail and on an appropriate level.
- Students will able to explain how the activities of organs are integrated for maximum efficiency.
- Students will be prepared to identify how changes in normal physiology lead to disease and it will support further study in health and medical sciences or related fields.

- This paper will also provide understanding of hormonal action in human body to regulate normal physiological activity of different organ system as well as metabolic process.

M.Sc. BIOCHEMISTRY
Semester-I
Generic Elective
Paper-IV
BCH-104: Biophysical Chemistry & Techniques

COURSE OBJECTIVE

- The objectives of this paper is to develop student's knowledge and capabilities in areas of analytical chemistry that are particularly relevant to the analysis of a range of sample types
- To understand the physical principles of a range of quantitative and quantitative analytical techniques.
- To study the range of spectroscopic technique to characterize the biomolecules.
- To understand the governing mechanisms and driving forces of various advanced separation processes.

UNIT-I

Water- Physical properties & Structure of water, hydrogen bonding, ionisation of water. pH scale concept of acids-bases & buffers, buffer ionisation behavior of amino acids and proteins. Henderson-Hasselbalch equation, biological buffering system. Principale of osmosis- Electroendomosis, Donan-membrane equilibrioum & its biological applications.

UNIT-II

Centrifugation- Basic principle of sedimentation, centrifuge and their uses. Preparative & analytical centrifugation and their application in biochemistry. Electrophoresis-General principle, factors affecting electrophoretic mobility, moving boundary & zonal electrophoresis, paper & gel electrophoreis, isoelectric focusing.

UNIT-III

Thermodynamics- Open, closed & isolated system, first & second laws of thermodynamics and their applications in living organisms. Molecular basis of entropy, Helmholtz & Gibbs free energy, equilibrium constant. Chemical potential, Phosphate group transfer potential coupled reactions.

UNIT-IV

Chromatography- General principle of partition, absorption, paper, column, thin layer, ion exchange & gas chromatography (GLC, GSC). Affinity & high performance liquid chromatography (HPLC) & Gel filtration chromatography.

UNIT – V

Spectroscopic techniques- Basic concepts of spectroscopy, General principle of NMR, ESR, UV, IR & Visible spectrophotometers Single beam and Double beam, Nanodrop spectrophotometer and X-ray diffraction technique.

Books Suggested

1. Analytical Biochemistry by Holme, D. J. & Peck, H.
2. Biochemical calculation by Segel.

3. Introduction to Protein Architecture: The structural biology of proteins by Lesk, A. M.
4. Modern Experimental Biochemistry by Boyer, R.
5. Biochemistry by Todd, W. B., Mason, M., Bruggen, R. V. & Macmillan
6. Wilson.K.AndWalker.J.Pub:CambridgePress2.PhysicalBiochemistry-Friefelder,Publisher D.W.H.FreemanPress.
7. Biophysical Chemistry:Principles and Techniques, 2nd edition by A.Upadhyay, K. Upadhyayand N.Nath. Himalaya Publishing House.

COURSE OUTCOMES

- To understand the concepts of preparation of buffers, molarity, normality, ionization, molality.
- The understanding of different types of chemical bonding, molecular machinery of living cells, principles that govern the structures of macromolecules and their participation in living system.

- To identify with the classification and structural properties of carbohydrates, proteins, nucleic acids and lipids,glycoproteins and glycolipids and their significance in biological systems.
- By the end of the course, the students will be able to demonstrate advanced knowledge and understanding of aspects of physical and chemical properties of aqueous solutions, concepts of free energy.

SEMESTER-I
PRACTICAL
(Duration: 6 hrs.)

Note- Practical examination of Bio-organic Chemistry/ Cell Biology/ Human Physiology and Endocrinology/ Biophysical Chemistry & Techniques will be conducted at the end of each semester during examination. Students will be given two exercises in the practical examination.

Lab I: Bio-organic Chemistry and Biophysical Chemistry & Techniques

Experiment - 1	30
Experiment -2	30
Viva Voce	20
Record	20
Total	**100**

Bio-organic Chemistry

Qualitative /Qualitative Analysis

1. Monosaccharides, Disaccharides and Polysaccharides.
2. Extraction of Starch from potato.
3. Extraction of Casein from milk.
4. Extraction of Lecithin from egg yolk.
5. Standard curve of maltose.
6. Standard curve of BSA.
7. Preparation of Buffers and determination of pH.
8. Titration of a weak acid.

Biophysical Chemistry & Techniques

Colorimetric and Spectrophotometric analysis:

1. Absorption spectrum determination based on Beer Lambert's Law.
2. Estimation of glucose by O T method.
3. Estimation of fructose by Seliwanoff's method.
4. Estimation of Ribose by Bial's method.
5. Estimation of Protein by Biuret method.
6. Estimation of Cholesterol by Zak's method.
7. Estimation of Phosphorus by Fiske Subbarow method.
8. Estimation of Iron -Wang's method.
9. Estimation of amino acid by Ninhydrin method.

Chromatography Analysis

1. Separation of sugar & amino acid by paper chromatography.
2. Separation of colour substances by paper chromatography.

Spectrophotometric analysis:

- Protein estimation by UV Spectroscopy.
- Cell fractionation (centrifuge).
- Demonstration of Electrophoresis.

Books Suggested

1. Biochemical Methods 1992, by S. Sadasivam and A. Manickam, Second Edition, New Age International Publishers, New Delhi.
2. Laboratory Manual in Biochemistry, 1981. J. Jayaraman, New Age International publishers, New Delhi.
3. An introduction to practical biochemistry. By: David T Plummer. Publisher Tata McGraw- Hill.
4. Biochemical Calculations - Segel, I.H. John Wiley & sons.
5. Experimental Biochemistry: A Student companion- Sashidhar Rao, B and Deshpande, V. IK International (P) Ltd.
6. Experiments And Techniques In Biochemistry: by Sheel Sharma, Galgotia publications

COURSE OUTCOMES

The students will be able to-

1. Estimate the qualitative and quantitative measurement of bioactive molecule from the different sources.
2. Separate and analyze different biomolecules present in different samples.
3. Student know the knowledge and handling with standard protocols and modern instrumentation.

Lab II: Human Physiology &Endocrinology and Cell Biology

Experiment - 1	30
Experiment -2	30
Viva Voce	20
Record	20
Total	**100**

Human Physiology and Endocrinology

1. To determine Hb% by Sahli's hemometer in blood samples.
2. To determine the hematocrit.
3. To determine the concentration of heparin in blood samples.
4. To determine the PTT in blood samples.
5. To demonstrate the effect of diet and hormones on the glycogen content of rat liver.
6. Microscopic observation of LS and TS of Reproductive organs and tissue.
7. Microscopic observation of LS and TS of Stomach related tissue.
8. Microscopic observation of Skin Muscles.
9. Microscopic observation of heart Muscles.

Cell Biology

1. Blood film preparation and identification of cells.
2. Cell organs fraction analysis by centrifuge.
3. Cell organelles observation under microscopy.
4. Isolation of cell organelles.
5. Cell membrane protein and lipid extraction.
6. Blood Film preparation and identification of cells.
7. Extraction and estimation of proteins from plant cell material.

8. Extraction and estimation of proteins from animal cell material.
9. Microscopic slide based observation of cellular division.
10. Bacterial cell staining and identification and characterization.

Books Suggested

1. Physiology by Guyton and Hall.
2. Medical Physiology by Best and Taylor.
3. Physiology by Garrett.
4. Harper's Reviews of Biochemistry.
5. Experiments and Techniques in Biochemistry: by Sheel Sharma, Galgotia publications.
6. Biochemical Methods 1992, by S.Sadasivam and A. Manickam, Second Edition, New Age International Publishers, New Delhi.
7. Laboratory Manual in Biochemistry, 1981. J.Jayaraman, New Age International publishers, New Delhi.
8. Experimental Biochemistry: A Student companion- Sashidhar Rao, B and Deshpande, V. IK International (P) Ltd.
9. Experiments and Techniques In Biochemistry: by Sheel Sharma, Galgotia publications.

COURSE OUTCOMES

The students will be able to

1. Estimate the qualitative physiological functional measurement according to their structure.
2. Separate and isolated by the fraction preparation of cellular components from any cellular /organ based samples.
3. Student know the knowledge and handling with standard protocols and modern instrumentation related to cell and organelles etc.

M.Sc. BIOCHEMISTRY
Semester- II
Paper-I
BCH-201: Enzymology

COURSE OBJECTIVES

- To study classification and basic structural properties of enzyme
- Detailed study on mechanical and kinetics properties of enzyme including various models of kinetics and various types of inhibition
- To acquire a detail knowledge of mechanism of enzyme action, regulation and allostery in enzyme
- To develop an understating on application and technological aspects of commercial valuable enzyme.

UNIT-I

Nomenclature and classification of enzymes, factors affecting the rate of enzyme catalyzed reactions, Michaelis-Menten concept of uni-substrate reaction, Briggs-Haldane relationship, Enzyme turnover and its significance, concept of Bi and multisubtrate reaction with classification and examples, kinetics of multisubstrate reaction, Ping-pond and ordered bi-bi mechanism.

UNIT-II

Co-enzyme and cofactors, metallo enzymes, protein-ligand binding, cooperativity, Hill equation and plot, immobilized enzymes and their industrial applications**.**

UNIT-III

Multi enzyme and allosteric enzymes; occurrence and properties of multienzyme system, mechanism of action and regulation of pyruvate dehydrogenase and fatty acid synthetase complexs, symmetrical and sequential models for action of allosteric enzymes and their significance.

UNIT – IV

Mechanism of catalysis: acid-base catalysis, electrostatic catalysis,covalent catalysis, serine protease ribonuclease, chymotrypsin, lysozyme, triose phosphate isomerase.

UNIT-V

Enzyme regulation general mechanisms of enzyme regulation, feedback inhibition and feed forward stimulation, control of enzyme activity by products and substrate. Enzymes repression, reversible and irreversible inhibition, covalent modification of enzymes.

Books Suggested

1. Enzymes By Palmar.
2. Fundamentals of Enzymology, Price. NC. and Stevens. L., Oxford University Press.
3. Enzymes-Biochemistry, Biotechnology, Clinical chemistry-Palmer,T.
4. Lehninger Principles of Biochemistry, DavidL. Nelson, Michael M. Cox Pub.: W.H Freeman.
5. Enzymes by Dixxon and Webb.
6. Fundamental of Enzymology by Price and Steveas.
7. Enzymes reaction Mechanisms by Walsch.
8. Enzymes structure and Mechanism by Alan Fershit.

COURSE OUTCOMES

- Students will be prepared for theoretically & practically to understand properties of enzyme.
- Enzymes are functional and its role in living system is unique.

- To understand ability to difference between a chemical catalyst and biocatalyst along with concept of enzymes-substrate kinetics and its importance in biological reactions.
- Enzymology paper is core Biochemistry subject, detailed understating of enzymology will help students to prepare their mind for interdisciplinary functional properties of protein.

- This paper gives platform to develop vast range of application of industrially valuable enzymes.

M.Sc. BIOCHEMISTRY
Semester – II
Paper – II
BCH-202: Microbial Biochemistry

COURSE OBJECTIVES

- To enable the student to learn the regulation of genes in bacteria.
- Morphology, classification and types of viruses.
- To introduce to the process of biological nitrogen fixation.
- Detailed information on antibiotics.

UNIT – I

Classification of microorganisms, general characteristics of main groups of microorganism's classification of bacteria, structure, recombination**.**

UNIT II

General organization of bacterial cells, gram-positive and gram-negative organisms, structure and function of bacteria physiology, membrane transport, locomotion and reproduction of bacteria, aerobic & anaerobic respiration.

Bacteriological media: types, and their use, culture characteristics of bacteria on different media. Cultivation, maintenance and preservation of culture, bacterial growth kinetics, growth curve, batch, continuous and synchronous culture, measurement of growth and factora affecting growth.

UNIT III

Role of microorganisms in food spoilage, food and food additives, food poisoning, food born infections and sewage (domestic and industrial) disposal, microbiology of food and dairy products, Industrial production of ethyl alcohol, lactic acid, ascorbic acid and penicillin, production of vaccine. Microorganism associated disease.

UNIT IV

Viruses structure, isoplation, identification, properties and classification, replication of RNA, viruses negative strand (VSV), positive strand (polio), retroviruses, replication of DNA (Adenovirus or SV 40), Plant viruses, Animal virus, Bacteriophages, Viroids, virus and cancer.

UNIT V

Sterilization and disinfection, culture media methods of securing pure culture, fermentation, stock cultures, fermentation media, continuous and multiple fermentation.

Control of microorganisms-Microbial death, concept of bioburden, thermal death and decimal reduction time. Control of microorganism by physical and chemical agent, Antimicrobial agent, antimicrobial sensitivity.

Books Suggested

1. Food microbiology -Adams, M.R. and Moss M.O.
2. Foundations in Microbiology -Kathleen Talaro and Arthur Talaro.
3. Industrial Microbiology -Patel, H.P.
4. Industrial Microbiology –Casida.
5. Industrial Microbiology -Prescott and Dunn.
6. Microbiology Concepts and Applications -Paul A. Ketchum.
7. Microbiology Concepts and Applications -McKane and Kandel.

COURSE OUTCOMES

- Students will be able to appreciate the entire spectrum of microscopic life forms - from relatively simple, small but unique viruses to bacteria.
- Enable the students to understand the fine mechanism of regulation of gene expression.
- Awareness will be created on different types of viruses and diseases caused by them.
- Appreciate the crucial role played by bacteria in nitrogen metabolism. 30
- Students will get deep insight to antimicrobials.

M.Sc. BIOCHEMISTRY
Semester- II
Generic Elective
Paper-I
BCH-203: Bio statistics and Computational Bioinformatics

COURSE OBJECTIVE

- Detailed understanding of genome projects, related disciplines of Bioinformatics use of Databases and Tools in Biological Discovery, Major Bioinformatics Resources.

- To gain detail on biological databases like primary sequence databases, protein three dimensional databases, Protein Structure Mathematical model databases, PCR and quantitative PCR primer databases, Chemical Databases, Drug & Drug Target /Therapeutic Target Databases, Disease databases, Immunological database.

- In depth study of various types of tools including sequence submission tools, Chemical molecule designing software, Protein & Chemical molecule visualization tools, Docking software, Molecular dynamics software; QSAR, ADME Toxicity prediction, Allergen prediction, Venomics & Antivenomics.

UNIT– I

Introduction to Biostatistics, applications, Methods of sampling, tabulation of data, its diagrammatic and graphical representation. Measurement of central tendency – mean, median and average. Measures of dispersion, variance and standard deviation, mean deviation, standard error, Range, Coefficient of variation.

UNIT– II
Probability, frequency distribution, measurement of central value frequency table, cumulative and relative frequency correlation, covariance correlation analysis and coefficient.

UNIT– III
Correlation and Regression, analysis, correlation and regression coefficients, linear regression and regression equation, test and types of significance, t-test, chisquare test and analysis of variance. Design of experiment, randomization, replication, local control, complementary randomized block design. Factor analysis, path analysis.

UNIT IV
introduction to computer fundamentals storage of data, operating system, concept of hardware and software and general operating commands (MS-DOS, MSWORD, Excel, PowerPoint), open office in Linex: Word Processor, spreadsheet Introduction to programming in basic and C.

UNIT-V
Introduction to internet and its application, introduction to bioinformatics: Introduction to MEDLINE on PubMed system for accessing biological information, Entrez, Swissport, PIR, NCBI. Stastical analysis software's, Plant Genome Database, Sequence Database: Content, structure and annotation for Human Genome Database, Multiple sequence allgnment programme- Clustal w, x. File management, file transfer (ftp, Wsftp), email.

Books Suggested

1. Fundamentals of Biostatistics by Bernard Rosner 5th Ed.
2. Bioinformatics Methods and Applications by Rastogi, S.C.
3. Bioinformatics for Dummies by Jean-Michel Claverie.
4. Textbook of bioinformatics by Subramaniam, C.
5. Introductory Biostatistics by Chap T. Le.
6. Fundamentals of Biostatistics by Bernard Rosner.
7. Review & Research papers from Bioinformatics & related Journals.
8. Arthur M. Lesk, Introduction to Bioinformatics, Oxford University Press, 2008.
9. David W. Mount, Bioinformatics- Sequence and Genome analysis, 2004.

COURSE OUTCOMES

- Students will choose appropriate experimental strategy for research in basic and applied biology.
- Explanation and integration of bioinformatics principles and its applications to basic and applied biology.
- Students will gain *in silico* training on data mining, database searching, software application, quantitative analysis and interpretation, molecular modeling, QSAR and various DNA, RNA and Protein analytical tools.
- Moreover, this paper enables students to acquire the knowledge of statistical analysis and its principles.

M.Sc. BIOCHEMISTRY
Semester – II
Paper – IV
BCH-204: Molecular Biology

COURSE OBJECTIVE

- Detailed understanding of prokaryotic and eukaryotic replication, types of DNA polymerases and inhibitors of DNA replication
- To gain detail on prokaryotic and eukaryotic transcription, translation and gene expression regulation
- To develop an understating of advanced technologies like RFLP, Sequencing, SSR, REMAP, SCAR and various types of PCR

UNIT I
Organisation, Identification and chemical nature of genetic materials, Gene concept morphology, chemical structure, concept of codon viral and prokaryotic DNA replication, Enzymology of DNA replication.

UNIT II
Transcription mechanism of both prokaryotes and eukaryotes, transcription factors,Translation, anti-genes RNA, regulation of gene expression in prokaryotes. Post transcription modification in eukaryotes, Post translation modification types and significance, Genetic code: evidence and properties.

UNIT-III
Bacterial recombination, conjugation, transformation,transduction, transposons, transposable element in prokaryotes and eukaryotes, types and significance retrovirus, DNA damage and repair, cot values C value, paradox DNA sequencing technique di-deoxynucleotide, partial rib substitution and gilbert etc PAGE detection and extraction of DNA from gels.

UNIT IV
Satellite DNA, recombination of DNA, DNA binding properties, split genes, Overlapping genes, Pseudogene, Cryptic genes, centromere DNA, Promiscuous DNA. Rearrangement of DNA.

UNIT V
Mutations types, classification and mechanism, mutagens types structures mode of functioning mutagenesis, site directed mutagenesis suppressor mutation, mutations determination, Mutation rate.

Books Suggested

1. Genes VIII, by Benjamin Lewin.
2. Molecular Biology, by Turner et al.
3. Cell and Molecular Biology: Concept and Experiments, by Geraid Karp.
4. An Introduction to grnrtic Analysis by Griffiths et al.
5. The Biochemistry of Cell Signaling, Helmreich JM, Oxford Press.
6. Cell signaling – John T Hancock, Oxford University press.
7. Cell and Molecular biology. Second edition: Edited by C A Smith and E J Wood. Chapman & Hall publication.

COURSE OUTCOMES

- Students will choose appropriate experimental strategy for research in basic and molecular biology.

- To perform laboratory techniques in basic biology, molecular biology, and advanced techniques. Explanation and integration of biological principles, as applied to basic and molecular biology.
- Development of strong diversified background in modern biology, appropriate to the individual student goals. Develop critical-thinking, and problem based learning skills.
- This paper will open an understanding of current trends in molecular and genetic research, and critically appraise published work.

SEMESTER-II
PRACTICAL
(Duration: 6 hrs.)

Note-Practical examination of Inorganic Enzymology/ Molecular Biology/ Microbial Biochemistry will be conducts at the end of each semester during examination. Students will be given two exercises in the practical examination.

Lab I: Enzymology and Molecular Biology

Experiment - 1	30
Experiment -2	30
Viva Voce	20
Record	20
Total	**100**

Enzymology

Enzyme assay

1. Determination of specific activity, effect of pH, temperature and substrate concentration of:
   (a) Salivary Amylase
   (b) Urease
2. Enzyme curve of amylase
3. Temperature curve of amylase
4. pH curve of amylase
5. Substrate curve
6. Specific activity of amylase
7. Activity staining of amylase
8. Activity of Immobilized Amylase
9. Fractionate BSA by salt precipitation
10. Specificity of enzyme action
11. Time course of enzymatic reaction

Molecular Biology

1. Estimation of DNA by diphenylamine method.
2. Estimation of RNA by Orcinol method.
3. Spectroscopic determination of melting temperature(Tm) of calf thymus DNA.
4. Demonstration of Amplification of desirable gene by Polymerase chain reaction.
5. Isolation, quantification and characterization (Spectrophotometric and agarose gel
6. Electrophoresis of total RNA, mRNA from plant and microbial sources.
7. Isolation, quantification and characterization (Spectrophotometric and agarose gel

8. Electrophoresis of genomic DNA from bacteria (E. *coli*).
9. Isolation, quantification and characterization (Spectrophotometric and agarose gel electrophoresis of genomic DNA from plant.
10. Molecular Profiling of Blood Plasma.
11. Molecular profiling of Animal tissues.

Books Suggested

1. Biochemical Methods 1992, by S.Sadasivam and A. Manickam, Second Edition, New Age International Publishers, New Delhi.
2. Laboratory Manual in Biochemistry, 1981. J.Jayaraman, New Age International publishers, New Delhi.
3. Enzyme assays- A Practical Approach, Eisenthal, R and Dawson, MJ, IRL press
4. Practical Biochemistry- Rameshwar. A, Kalyani Publisher.
5. Principles of Genetics by Eldon John Gardner, Michael J. Simmons, D. Peter Snustad; John Wiley.
6. Modern Genetic Analysis Anthony JF Griffiths, William M Gelbart, Jeffrey H Miller, and Richard C Lewontin. Pub. W. H. Freeman.
7. Statistics, Basic Concepts and Methodology for the Health Sciences Daniel WW, Pub Wiley India.
8. Lehninger Principles of Biochemistry, David L. Nelson, Michael M. Cox Publisher: W. H. Freeman.

COURSE OUTCOMES

1. Student will learn about the enzymatic reaction and standardization etc.
2. Student will learn about the pH and temperature and associated other factors necessary for the curve development.
3. Determination of specific activity will also acknowledge by the students.
4. Student will learn about the bioactive molecules separation by using the electrical charges.
5. Student will learn about the demonstration of Amplification of desirable gene by Polymerase chain reaction.
6. Isolation, quantification and characterization by using Spectrophotometric technique with involvement of agarose gel electrophoresis of genomic DNA from plant and animal tissue are also understand by the students.

Lab II: <u>Microbial Biochemistry and Bioinformatics</u>

Experiment - 1	30
Experiment -2	30
Viva Voce	20
Record	20
Total	**100**

<u>Microbial Biochemistry</u>

1. Preparation of culture media and sterilization methods.
2. Isolation of pure cultures: Streak plate method and Serial dilution method.
3. Gram Staining.
4. Differential staining: Acid fast staining, Giemsa staining, Leishmann staining.
5. Methods of isolation and identification of gram+ve and gram -ve bacteria.
6. Methods of isolation and identification of Fungi (Soil fungi).
7. Bacterial growth curve.
8. Widal test, VDRL test.

9. Antibiotic sensitivity by Disc diffusion and Broth dilution Methods.
10. Assay of pencillin and streptomycin as secondary metabolites.
11. Biotransformation of Antibiotics and Steroids.
12. Biodegradation of lignocellulosic waste.
13. Biodegradation of phenolic compounds.
14. Biodegradation of hydrocarbons.
15. Dye decolourization by microorganisms.
16. Isolation of bacteriophages from sewage / waste water
17. Reactivation of lysogenic viruses.
18. Plaque assay.
19. One-step growth assay.
20. Plaque reduction neutralization test

Bioinformatics

1. Retrieve Sequence From Nucleotide Databases (Genbank, Ena, Ddbj).
2. Retrieve Sequence From Protein Primary Sequence Database: Unipro.
3. Study of Literature Database-Pubmed.
4. Study of Compound Database-Pubchem.
5. Drug and Target Databases.
6. BLAST Search and Phylogenetic Tree.
7. Download Protein 3D Structure From Pdb.
8. Protein 3D Structure Visualization Tool-Rasmol.
9. Protein Structure database.

Books Suggested

1. Kannan N (1996) Laboratory Manual in General Microbiology. 1st Edition, Palani Paramount Publications, Palani, Tamilnadu.
2. Sundararaj T. Microbiology – Laboratory Manual. Revised and Published by Aswathy Sundararaj,No.5. 1st Cross Street, Thirumalai Nagar, Perundgudi, Chennai.
3. Aneja KR (2005). Experiments in Microbiology, Plant pathology and Biotechnology. 4th Edition, New Age International Publishers, Chennai.
4. James G Cappuccino & Natalie Sherman (2008) Microbiology: A Laboratory manual. 8th Edition, Published by Pearson Education.
5. Statistics, Basic Concepts and Methodology for Health Sciences Daniel W, Pub Wiley India
6. Biostatistics Arora & Malhan, Himalaya Publishing House. .

COURSE OUTCOMES

1. Student will learn about genomic database study.
2. Student will learn about the all Study of molecular and Compound Database along with their structures etc.
3. Bioinformatics and stastical tools along with computer application are essential it benefitted to student for new drug research and development fields etc.
4. Student will learn about the Microbial handling, isolation, purification and identification etc.
5. Student will learn about the all basic experimental handling concern to microbial testing and disease identification etc.
6. Microbial biochemistry knowledge in student establish microbial biochemical process and their management etc.

M.Sc. BIOCHEMISTRY
Semester-III
Paper-I
BCH-301: Metabolism and Plant Biochemistry

COURSE OBJECTIVES

- An advanced understanding of the core principles and topics of metabolic process and their biochemical reactions.
- To enable students to acquire a specialized knowledge and understanding of how enzymes and metabolites in living system works to produce energy and synthesizing different biomolecules.
- To study biochemical pathways involved in intermediary metabolism.
- To understand the principles and major mechanisms of metabolic control and of molecular signaling by hormones.
- The metabolism of dietary and endogenous carbohydrate, lipid and protein.

UNIT-I

Bioenergetics-Biological oxidations, oxygeneses, hydroxylases and dehydrogenanases, Gibb's energy, free energy changes, and redox potentials, phosphate potential, electron transport chain, substrate level phosphoryation and oxidative phosphorylation.

Carbohydrate Metabolism-Glycolysis, gluconeogenesis, Kreb's Cycle, hexose monophosphate shunt and glyoxylate pathway.
Glycogenolysis-glycogenesis, synthesis of mucopolysaccharides and bacterial cell wall polysaccharides.

UNIT-II

Lipid metabolism-Fatty acid oxidation-Beta oxidation and w oxidation. Biosynthesis and degradation of fatty acids triglycerides and phospholipids, cholesterol and bile acids, ketone bodies.

UNIT-III

Nucleic acid Metabolism-Nucleic acid metabolism, degradation of nucleoprotein, Catabolism of purin Pyrimidines, Biosynthesis of Purine, Pyrimidines, nucleolides and its regulation. - Gout and Liesch nyhan Syndrome.

UNIT-IV

Protein Metabolism-Proteolysis, deamination, transamination and decarboxylation reactions, urea cycle, Metabolism of individual amino acids. Plant Harmones-Growth regulationg substances and their mode of action, molecular effects of auxin, gibberellic, abscisic acids and cytokinins, gaseous plant hormone.

UNIT-V

Phtosystem I & II, their location, Mechanism of quantum capture and energy transfer between photo systems- ferridoxin, plastocyanin, photoquinone, carotenoids The Hill reaction, photophosphorylation and reduction of CO_2. C3, C4 and CAM metabolism, light and dark reaction and photorespiration.

Books Suggested

1. Biochemistry by Mathews
2. Biochemistry by Satyanarayana, U.
3. Biochemistry: The Chemical Reactions of Living Cells by Metzler, D. E.
4. Lehninger Principles of Biochemistry, David L. Nelson, Michael M. Cox Publisher: W.H. Freeman.

5. Molecular Biology of the Cell,3rd edition. Bruce Alberts, Dennis Bray, Julian Lewis, Martin Raff, Keith Roberts, and James D Watson. Publisher New York: Garland Science.
6. Biochemistry, 4th Edition-Donald Voet, Judith G.Voet–Publisher John Wiley & Sons.
7. The Cell: A Molecular Approach, by Geoffrey M. Cooper & Robert E. Hausman, Pub.
8. Molecular Cell Biology, Baltimore et. al. (1995) Scientific American Publication.

COURSE OUTCOMES

- Metabolism refers to all biochemical reactions which occur in the living organisms.
- By studying this paper students will able to differentiate the anabolic and catabolic pathways and their important enzymatic steps, understand how glycolysis produces metabolic energy as well as producing intermediates for further metabolic reactions.
- To acquire knowledge related to the principles and basic mechanisms of metabolic control and how regulation of biochemical pathways leads to normal integrated metabolism, understand the organization of a typical mitochondrion, locating membranes, enzymes, respiratory complexes, the F0-F1 complex, important transporter proteins and how it functions to synthesize ATP.
- To understand the importance of Integration of Metabolism, degradation, catabolism, hormonal regulation of metabolism etc will be exposed with the fact that perturbations in the bimoleculas lead to various diseases. To open new way into metabolic engineering for the production of useful compounds.

M.Sc. BIOCHEMISTRY
Semester-III
Paper-II
BCH-302: Immunology

COURSE OBJECTIVE

- In-depth knowledge and understanding of major cellular and molecular mechanisms underlying immunological processes in health and diseases
- To acquire a knowledge of immunochemical techniques in qualitative and quantitative analysis of antibodies and antigens.
- An understanding of the factors that determine the effectiveness of immune responses to microorganisms (bacteria, viruses, parasites) and tumours and how protective immunity can be elicited by vaccination.

UNIT-I

Introduction of immune system: Innate and acquired immunity, Active-passive immunity, Structure and functions of lymphoid organs, Cells involved in immune response (development of immune cells), Phagocytic cells & their killing mechanisms.

UNIT-II

effect or mechanism of immunity: Macrophage activation, Cell mediated cytotoxicity, Hypersensitivity and its types, MHC genes organization, types, functions.

UNIT-III

Antigen: Types of antigen, Immunoglobulins- structure, occurrence & functions, Antigen-antibody reaction, Antigen binding sites, Hybridoma technology, Monoclonal antibodies production, principle of selection, characterization, application in diagnosis , therapy and basis research.

Antibody engineering: Chimeric and Humanized monoclonal antibodies, Mice engineered with Human Ig loci, Phase display library for monoclonal antibody.

UNIT-IV

Transplantation immunology: immunologic basis of graft rejection & HLA tissue typing, Transplantation diseases, Complementation system – mode of activation, classical - alternative pathways, Biological functions of complement proteins, Cell mediated & humoral immune response. Cancer immunology: tumor antigen, immune reponse to tumor, oncogene and induction, cancer immunotherapy.

UNIT-V

Immunity to infection: Immune tolerance, Immunosupression, Immunodeficiency disorders, Autoimmunity, Vaccines- Active and Passive immunization whole organism vaccine, purified macromolecule as a vaccine, DNA vaccine, Recombinant vaccine and Subunit vaccine & diseases.

Immunological techniques: Immunoelectrophoresis, Radial & Double immunodifussion, RIA & ELISA, Western blotting and Immuneo-histochemical technique.

Books Suggested

1. Kuby Immunology, Thomas J. Kindt, Richard A Goldsby, Publisher WH Freeman & Co.
2. Immunology- Ashort Course.
3. Immunology by Tizzard.
4. Fundamental of Immunology by William Paul.
5. Immunolgy by Abbas.
6. Roitt's Essential Immunology, Tenth Edition, Ivan Roitt, Peter Delves
7. Veterinary Immunology: Ian R. Tizard, I.R. Thomson press
8. The Immune System. By Peter Parham Publisher Garland publishing
9. Biochemistry - J. David Rawn – Neil Patterson publication, NC.

COURSE OUTCOMES

- To attain a working knowledge of current immunological principles as they relate to the cells and molecules of the immune system.
- Understanding of mechanism of interaction in defending the body against invading microorganisms.
- Students will get knowledge of development and acquisition of ability to recognize antigens and finally how they malfunction in autoimmune diseases.
- Students will extend and solidify their understanding of the presented principles through critical readings from the primary research literature.

M.Sc. BIOCHEMISTRY
Semester-III
Paper-III
BCH-303: Clinical Biochemistry (Discipline Elective)

COURSE OBJECTIVE

- To study the classification and functional properties of blood components.
- To understand the coagulation, anti-coagulation mechanism of blood and its disorders.
- To study the biochemical, clinical, pathological and diagnostic aspects of diseases.

- To study dietary types, requirements, utilization and functions of different class of diet.
- To study the nutrition deficiency disorders and balance diet.

UNIT-I

Fluid & electrolyte balance and imbalance in various diseases.

Liver Function Tests: Van den Bergh test for bilirubin, urine and fecal urobilinogen, Determination of galactose, epinephrine test, Detoxification and excretion tests, Prothrombin Time, Determination of blood ammonia.

Kidney Function Tests: Urea clearance test, Creatinine clearance test, renal plasma flow, Concentration and dilution test, Function tests of pancreases,

UNIT-II

Disorders of Carbohydrates Metabolism: Diabetes mellitus Glycated hemoglobins, Blood sugars hypoglycemias, various types of glucose tolerance tests.

Disorders of Lipids: Hypoliproteinemia, Hyperlipoproteinemia, Atherosclerosis

Diagnostic tests for apolipoproteins, HDL - cholesterol, LDL - cholesterol and triglycerides. Fatty liver, Fats in diseases, Lipoproteins disorders, Ketone bodies.

Diagnostic Tests for Proteins: Total protein, albumin, globulin and fibrinogen

Disorders of Thyroid: Hyperthyroidism, Hypothyroidism. Thyroid function Tests: T3, T4, TSH, TRH

UNIT-III

Enzymes in different diagonosis of disease & their clinical significance: Serum Aspartate aminotransferase, alanine aminotransferase, creatine kinase, gamma glutamyl transpeptidase, alkaline phosphatase.

Biochemical Aspects of Hematology:

Complete blood count (CBC)- RBC, WBC, platelet counts, Hb, Bleeding time, clotting time

Cerebrospinal fluid (CSF) chemistry and clinical significance.

- Biochemistry of detoxification, Xenobiotic metabolism.
- Metal ion toxicity, chelation therapy, antioxidant therapy.
- Biochemistry of Ageing, Cancer, AIDS, Cholera-Vibriotoxins, pathogenesis. Jaundice, Arthrities, Nutrition and Chronic clinical disease.

UNIT-IV

Mechanism of drug action- Penicillin, Tetracycline, Streptomycin, Chloramphenicol & Sulphonamides.

Apoptosis: Carcinogens, Cancerous growth & Chemotherapy, radioactivity: radioisotopes in medicine.

UNIT-V

Disorders of mineral metabolism and trace elements: Hypo-Hypercalcemia, Hypo-Hyperphosphatemia, Disorders of amino acids, steroids and vitamins.

Disorders of erythrocyte metabolism: hemoglobinopathis, thalassemias & anemia's.

Biochemical Hazards of dangerous environment pollutants.

Books Suggested

1. Text book of Biochemistry and Human Biology –Talwar , G.P. and Srivastava. L.M., Printice Hall of india.
2. Human Physiology - Chatterjee. C.C, Medical Allied Agency.
3. Textbook of Medical Biochemistry By MN Chatterjea and Rana Shinde, Jaypee Brothers.

4. Lehninger Principles of Biochemistry 5th edition ByDavid L. Nelson and MichaelM. Cox,WH, Freeman and Company.
5. Clinical Biochemistry: An Illustrated Colour Text (Paperback) 3rd Edn By Allan Gaw, Michael Murphy, Robert Cowan, Denis O'Reilly, Michael Stewart and James, Shepherd. Publisher: Churchill Livingstone.
6. Harper's Biochemistry (Lange Medical Books) (Paperback)By Robert K. Murray.
7. Granner, Peter A. Mayes and Victor W. Rodwell. Publisher: Appelton and Lange.
8. Clinical Biochemistry By Richard Luxton. Scion Publishing Ltd.

COURSE OUTCOMES

- Advanced understanding and knowledge of theoretical and practical aspects of blood biochemistry and its components.
- Connection of blood to entire organ system of body in single circulatory channel and consequences of environmental and genetic factors of blood disorders.
- Rationale and theoretical basis for methods and tools used in the diagnosis of common biochemical disorders.
- Distinguish between between fat-soluble vitamins and water-soluble vitamins, biochemical functions and synthesis for these vitamins.

M.Sc. BIOCHEMISTRY
Semester-III
Generic Elective
Paper-IV
BCH-304: Genetic Engineering

COURSE OBJECTIVE

- To equip students with a basic knowledge of the structural and functional properties of cells.
- To examine properties of differentiated cell systems and tissues.
- Aspect of cell cycle and cell death.
- To introduce the fascinating mechanism of cell signaling along with brief overview on developmental biology.
- To provide thorough knowledge on classical genetics.

UNIT-I

Laws of Mendels-Applications and deviations, Monohybrid and dihybrid crosses, Sex etermination and Sex linked inheritance, Sex differentiation, Blood group inheritance and determination, Maternal affects and cytoplasmic inheritance, Fine structure of gene.

UNIT-II

Recombinant DNA Technology

Restriction enzymes- nomenculture, classification and mode of action. Cloning vectors- Plasmid, Bacteriophages, cosmid, phagemid and animal virus. Purification of DNA from living cells, Manipulation of purified DNA, Cloning in Pro & eukaryotic cells, DNA hybridization and blotting techniques. cDNA library. DNA probe, Nick translation, Genetic mapping.

UNIT-III

Tissue Culture

Micropropagation, somatic cell culture, Somatic cell hybridization. Protoplast isolation - fusion, Nif gene transfer. Transformation techniques, integration and analysis or conformation of transgene

integration. Transgenic plant and transgenic animals, Application of recombinant DNA technology or Genetics engineering in agriculture, medicine DNA vaccine and molecular diagnostic.

UNIT-IV

Population genetics- Gene pool and gene frequency, models of gene pool structure-Classical hypothesis, Balanced hypothesis, Hardy- Weinberg law and its application in calculating gene frequencies, deviations from Hardy-Weinberg equilibrium.

Genetics involved-Sickle cell anaemia, Thalessemia and Cancer.

UNIT-V

Gene Techniques - DNA finger printing, DNA foot printing, RFLP, RAPDs, Molecular markers, PCR, Immuno-PCR, Antisense RNA technology, Biosensor development and applications, Microarray chips, types and their application, Human Genome project (HGP). Biosafty and ethical consideration for GMOs.

Book Suggested

1. Gene and Genome by Premrose.
2. Genetics by P. K. Gupta.
3. Cell Biology Protocols by Harris, R., Graham, J. & Rickwood, D.
4. Color Atlas of Biochemistry by Koolman, J. & Roehm, K. H.
5. Molecular Biology of The Cell - Bruce Alberts
6. Molecular Cell Biology by Lodish, H.
7. PrinciplesofGeneticsbyEldonJohnGardner,MichaelJ.Simmons,D.PeterSnustad;JohnWiley3.
8. Molecular Genetices of the gene by Watson.
9. Genes IX by Lewin, B.
10. Essential Molecular Biology by T. A. Brown
11. Biotechnology by B. D. Singh.
12. Route map in gene technology by Walker and Rapley.

COURSE OUTCOMES

- To provide thorough knowledge on classical and population genetics along with evolutions.
- Understanding of application of recombinant DNA technology or Genetics engineering in agriculture, medicine DNA vaccine and molecular diagnostic.
- Understanding of Biosafty and ethical consideration for genetic modified organism and crops developments.
- Understanding of modern gene techniques, operation and advantages in recovery and hilling of genetics involved disease.
- Understanding of Blood group, sex and other associated genetic inheritance process.

SEMESTER-III
PRACTICAL
(Duration: 6 hrs.)

Note- Practical examination of Inorganic Enzymology/ Molecular Biology/ Microbial Biochemistry will be conducted at the end of each semester during examination. Students will be given two exercises in the practical examination.

Lab I: Genetic Engineering and Clinical Biochemistry

Experiment - 1	30
Experiment -2	30
Viva Voce	20
Record	20
Total	**100**

Genetic Engineering

1. Restriction Digestive Enzymes identification.
2. Isolation of Plasmid DNA and Separation in Electrophoresis.
3. Isolation of genomic DNA.
4. Chromosome microscopic observation during the cell division of different phases.
5. Demonstration of Gel Electrophoresis
6. Isolation of DNA from Blood
7. Bacterial Transformation
8. Western Blotting
9. Isolation of Plasmid DNA By Alkaline Lysis Method
10. Bacterial Genomic DNA Isolation
11. DNA Extraction from Plant Tissue (Strawberry)
12. Nucleic Acid Purity Assessment Using A260/A280 Ratio.

Clinical Biochemistry

I. Hematology

1. Estimation of Hemoglobin – colorimetric method
2. Enumeration of RBC & WBC
3. Differential Smear – Blood cells count
4. Bleeding time & Clotting time
5. Identification of blood grouping & typing
6. Evaluate ESR & PCV
7. Ascorbic Acid Estimation
8. Iron Estimation

ii. Assay of serum marker enzymes

1. Determination of activity of SGOT and SGPT
2. Determination of activity Acid Phosphatase and Alkaline Phosphatse.
3. LFT(Liver function Test), KFT (Kidney function test).

iii. Blood analysis

1. Estimation of blood glucose by Asatoor and King method.

2. Estimation of serum creatine and creatinine by - Alkali-Picrate method.
3. Estimation of Determination of Total proteins in whole blood Biuret method.
4. Determination of urea in serum.
5. Estimation of Cholesterol in serum.
6. Estimation of Tryglyceride in serum.
7. Determination of Bilirubin (Conjugated & Unconjugated) in serum.

IV. Urine analysis

1. Estimation of Urea in urine
2. Determination of Creatine and Creatinine in urine-Alkali-Picrate method
3. Estimation of Uric acid
4. Determination Chloride
5. Physical properties of urine: Microscopic and visual observation for normal and abnormal constituents, color, density, crystals and pH etc.

Books Suggested

1. Biochemical Methods (1992), by S. Sadasivam and A. Manickam, Second Edition, New Age International Publishers, New Delhi.
2. Introductory practical Biochemistry (2005), by S. K. Sawhney and Radhir singh, Alpha Science International publishers, 2nd Edition.
3. Practical Clinical Biochemistry –Varley, H. CBS Publications
4. Practical Clinical Biochemistry-Methods and Interpretations – Ranjna Chawla- Jaypee
5. Lab Manual in Biochemistry, Immunology and Biotechnology – Arti Nigam and Archana Ayyagari, Tata McGraw-Hill New Delhi.
6. Biochemical Methods (1992), by S. Sadasivam and A. Manickam, Second Edition, New Age International Publishers, New Delhi.
7. Introductory practical Biochemistry (2005), by S. K. Sawhney and Radhir singh, Alpha Science International publishers, 2nd Edition.

COURSE OUTCOMES

1. The students will be able to Performed all hematological tests related to human body system.
2. The students will be able to perform functional test of the body like LFT, KFT related to diagnosis purpose.
3. Student understands the process of disease diagnosis, related to other collected body fluids.
4. Students understand the concept of Histopathology, biochemical test, pathological investigation, recovery response etc.
5. The students will be able to isolate the DNA from different resource.
6. The students will be able to perform the Nucleic Acid Purity Assessment Using A260/A280 Ratio.
7. Student understands the process of Restriction Digestion by using the enzymes.
8. Students understand the concept of bacterial transformation, isolation of Plasmid DNA and manipulation etc.

Lab II: Plant Biochemistry and Immunology

Experiment - 1	30
Experiment -2	30
Viva Voce	20
Record	20
Total	**100**

Plant Biochemistry

1. Estimation of plant lipids and carbohydrates
2. Estimation of plant proteins
3. Microscopic observation of plant cell.
4. Isolation of Chlorophyll
5. Mitosis
6. Osmosis in Onion Cells
7. Effect of Temperature on Plant Cell Membrane
8. Isolation of Chloroplast
9. Extraction, separation and determination of absorption spectra of plant pigments.
10. Fractionation of cell organelles from plant tissues.
11. Estimation of nitrogenase.
12. Estimation of nitrate reductase- *in vivo* method.
13. Fruit ripening. Estimation of total phenolic compounds.
14. Estimation of anthrocyanin pigments.

Immunology

1. Single (Radial) Immuno diffusion.
2. Double (Outcherlony) immune diffusion.
3. Immuno electrophoresis.
4. Blood Grouping
5. Widal Test
6. Immuno diagnosis related to Ag-Ab interaction concept.
7. Testing kit related diagnosis based on Ag-Ab reaction etc.
8. Sandwich ELISA
9. Lymphoid organs and their microscopic organization.

Books Suggested

1. Biochemical Methods (1992), by S. Sadasivam and A. Manickam, Second Edition, New Age International Publishers, New Delhi.
2. Introductory practical Biochemistry (2005), by S. K. Sawhney and Radhir singh, Alpha Science International publishers, 2nd Edition.
3. Biochemical Methods (1992), by S. Sadasivam and A. Manickam, Second Edition, New Age International Publishers, New Delhi.
4. Introductory practical Biochemistry (2005) by S. K. Sawhney and Radhir singh, Alpha Science International publishers, 2nd Edition.

COURSE OUTCOMES

1. The students will be able to perform, immune diagnosis related to Ag-Ab interaction concept.
2. The students will be able to perform, blood and other fluid related Ag-Ab interaction concept.
3. The students understand the role of immunology in case of various diseases related to allergy, bacteria, virus, AIDS, Arthritis, skin allergens etc.
4. The students will be able to Performed all bioactive molecule and compound separation related to plant cells.
5. The students will be able to perform estimation of essential beneficial pigments.
6. Student understands the process of disease diagnosis related to plants parts and products.
7. Students understand the concept of estimation of plant proteins, Chloroplast etc.

M.Sc. BIOCHEMISTRY
Semester-IV
Paper-I
BCH-401: Pharmaceutical Biochemistry

COURSE OBJECTIVES

- To study the drug development process, absorption and metabolism
- To develop a concept of drug action, receptor interaction, roll of enzyme in stimulation or inhibition of drug activity
- To understand the lethal and effective dose of drug; Mechanism of drug delivery systems.
- To study the different guidelines for manufacturing of drugs.
- In-depth study of intellectual property rights.

UNIT-I
Pharmacokinetics
Source and nature of drugs, classification, nomenclature. principles of drug action, absorption, distribution and elimination of drugs, routes of drug administration. Drug–protein interactions. dose response curve - ED50 and LD50, Origin of drug from plants and animals, Uses of Pharmacokinetics In Drug Development Process, Concept of Prodrug and Soft Drug. Synergism and Antagonism, Acute and chronic exposures, factors influencing toxicity.

UNIT-II
Pharmacodynamics and drug target
Introduction, Concept of Receptor Agonists and Antagonists, Drug Receptors receptors, Enzymes, carrier proteins Interactions, Theories of Drug Activity Relationship, Forces involved in drug - receptor interaction, Receptor theories. Cholinergic and anticholinergic drugs, adrenergic and adrenergic blockers, General anesthetics, Local anesthetics. Adverse reactions to drugs and common drug receptor interactions,.Treatment of Diseases by Enzyme Stimulation, Elementary treatment of drug Receptor Interaction, Ld50, Ed50, Mic and Mec, Membrane Active Drugs,. Mechanisms of drug effects, Drug delivery Systems, Liposomes.

UNIT-III
Regulatory Affairs and Pharmacovigilance
Pharmaceutical Products-their Manufacturing, Analytical Aspect, Product Registration and their Requirement looking to WHO-GMP, European DMF, US-FDA Regulations, ICH Guidelines, pharmacopael and extra pharmacopaeal Entry.

Definition and aims of pharmacovigilance, Adverse drug reactions, Classification, mechanism, predisposing factors and causality assessment. Role of clinical pharmacist in reporting, evaluation, monitoring, prevention and management of ADR, drug induced diseases. Pharmaco epidemiology, Epidemiological approach, measurements epidemiology, (rates, ratios, and proportions), measurement of mortality, morbidity. Descriptive, analytical and experimental epidemiology.

UNIT-IV
Intellectual Property Rights
Documentation Required for Filing Patent, Chemical, Physical and Biological (Clinical) Data Documentation, Patent Writing Art and Introduction of Concept of Non-infringing Patent Ability, Looking to GATT-WTO Scenario, Computer Based Data Mining in Drug Research, Pharmaceutical Product Management Aspect.

UNIT-V

Pharmaceutical associated toxicity

Xenobiotics metabolism, Phase-I reactions, Oxidation, reduction, hydrolysis & hydration. Phase-II reactions\conjugation, Methylation, glutathione & amino acid conjuctions, detoxifications. Metabolism of CCl_4 & Paracetamol & their effect in liver & kidney.

Book Suggested

1. Environmental Biology and Toxicology, P. D. Sharma, Rastogi.
2. Textbook of Toxicology, BalramPani, IK.
3. Casarett&Doull's Essentials of Toxicology, Klaassen, MGH.
4. Toxicology: Principles and Applications, Niesink, CRC.
5. Clinical Toxicology, FACMT, Saunders.
6. Environmental Pollution and Toxicology, Johi, APH.

COURSE OUTCOMES

- Gain detail understanding of how drug act inside the body after absorption from intestine in to blood.
- Understanding of factors that affect drug absorption, interaction with target receptors and inhibition of enzymes.
- Understanding of process of product registration and different guidelines which control the manufacturer to follow correct strategy for manufacturing of drug.
- Learn how to write and file the patent; how to document clinical data of the concern drug research.

M.Sc. BIOCHEMISTRY
Semester-IV
Paper-II
BCH-402: Biochemical Toxicology and Clinical Research

COURSE OBJECTIVES

- To study the ICMR and Ethical Guidelines as per standardized toxicological values.
- To understand the in vitro-in vivo performed experimentation.
- To study the Biological testing and bioassays during Clinical trials observation.
- To study about the Single dose and repeat dose toxicity studies.
- To study the Nutrition toxicology and Immunotoxicology.

UNIT-I

Nutrition toxicology and Immunotoxicology: Determination of metal content in samples, Neurotoxicology, Occupational toxicology. toxicology of environmental, Risk assessment and chemical safety evaluation, Legislation and International regulation, Toxic metals in environment, toxicity of Petroleum, Pesticide types and toxicity, Environmental consequences of pesticide toxicity.

Pesticide, ionizing radiations and gaseous pollutants. Toxicokinetics, Biotransformation and degradation of toxicants.

UNIT-II

Pre clinical toxicology: Basic Concepts, toxicants of public health hazards and toxic compounds, Epidemiology and biostatistics in Toxicology, Absorption, translocation and excretion of toxicants. Systemic toxicology (Single dose and repeat dose toxicity studies), Carcinogenicity, Mutagenicity,

Teratogenicity, Reproductive toxicity, Local toxicity, Genotoxicity, animal toxicity requirements. Exposure assessment and analytical methods in toxicology, toxicological pathology.

UNIT-III

Clinical research: Types of clinical trials, single blinding, double blinding, open access, randomized trials and their examples, interventional study, ethics committee and its members, cross over design, Institution Ethics Committee/Independent Ethics Committee. Clinical research data management. Organ, genetic and reproductive toxicology, Toxic genomics.

UNIT-IV

Biological testing and bioassays during Clinical trials: Testing drugs in vitro and in vivo, New drug discovery process- purpose, main steps involve in new drug discovery, timelines in steps, advantage and purposes of steps, clinical research ethics, unethical trials, thalidomide tragedy, Clinical trials phases, Safety monitoring in clinical trials. Regulatory requirements in clinical trials, Schedule Y, ICMR guidelines, documentation in clinical study. Indian GCP guidelines (CDCSO guidelines) ICMR Guidelines, Ethical Guidelines for Biomedical Research on Human Subjects Schedule.

UNIT-V

Bioavailability and Bioequivalence studies: Factors affecting bioavailability, types: absolute v/s relative, single v/s multiple dose studies, healthy volunteers vs patient studies, measurement of bioavailability, drug dissolution rate and Bioavailability, in vitro-in vivo correlation, methods for enhancement of bioavailability. Bases for Determining Bioequivalence, Design and Evaluation of Bioequivalence Studies Analytical Methods, Reference Standard, Extended Release Formulations, Combination Drug Products, Study Designs.

Book Suggested

1. Pharmacology and Pharmacotherapeutics, 23 rd Edition, Popular Prakasham, Bombay.
2. Modern Pharmacology with clinical correlations, 6th Edn., Charles R. Creig, and Robert E. Stitzel, Lippincott Williams & Wilkins.
3. Foye's Principles of Medicinal Chemistry, Williams, D.A. 6th Edn. Lippincott Williams & Wilkins (2008).
4. Fundamentals of Experimental Pharmacology, Ghosh, M.N. 2nd Edn, Scientific Book Agency, Kolkatta (1984).
5. Wilson and Walker's Principles and Techniques in Biochemistry and Molecular biology; 8th Edn., Andreas Hofmann and Samuel Clokie; Eds. Cambridge University Press, New Delhi.
6. Applied Biopharmaceutics and Pharmacokinetics, Shar gel, L. 2012. McGraw- Hill Medical.
7. Text Book of Receptor Pharmacology, Foreman, J.C. & Johansen, T. J. 2nd Edn., CRC Press (1996).
8. Drug discovery and Development 2nd Ed. Reymond G Hill, Humphry P Rang, Churchill Livingsten, Lange (2012).
9. Applied Biopharmaceutics & Pharmacokinetics, 5th Edn. Leon Shargel, Susanna WuPong, Andrew B.C. Yu.
10. Basic and Clinical Pharmacology, Prentice hall, International, Katzung, B.G.
11. Clinical Pharmacology, Scientific book agency, Laurence, DR and Bennet PN.
12. Remington Pharmaceutical Sciences, Lippincott, Williams and Wilkins.
13. Text Book of Therapeutics Drug and Disease Management Hardbound. Richard A Helms.
14. IPR, Biosafety and Bioethics, Deepa Goel and Shomini Pearson (2013).

COURSE OUTCOMES

- Gain detail understanding of how drug and toxicant act inside the body an after absorption from intestine in to blood it affect the body.
- Understanding of factors that affect drug absorption, Bioavailability and Bioequivalence concept.

- Understanding of process of product registration and different guidelines which control the manufacturer to follow correct strategy for manufacturing of drug and Pre clinical toxicology studies.
- Learn how to write and file the patent; how to document clinical data of the concern to clinical research.
- Understanding of process Biological testing and bioassays during Clinical trials of drug and toxicant**.**

M.Sc. BIOCHEMISTRY
Semester-IV
Discipline Elective
Paper-III
BCH-403: Food and Nutritional Biochemistry

COURSE OBJECTIVES

- To study the classification and functional properties of blood components.
- To understand the coagulation, anti-coagulation mechanism of blood and its disorders.
- To study the biochemical, clinical, pathological and diagnostic aspects of diseases.
- To study dietary types, requirements, utilization and functions of different class of diet.
- To study the nutrition deficiency disorders and balance diet.

UNIT -I

Direct and indirect calorimetry, energy value of the foods, thermal equivalent of oxygen, respiratory quotient, calorigenic action of the foods, basal metabolic rate- definition and its measurement, factors affecting BMR, energy requirements of the human beings.

UNIT-II

Nutritional aspects of the carbohydrate-Different dietary types, available and unavailable carbohydrates, requirements, utilization and functions. Special role of non-starch polysaccharides.
Nutritional aspects of the lipids- Different dietary types, requirements, utilization and functions. Essential fatty acids.

UNIT-III

Nutritional aspects of the proteins- Quality of proteins, digestibility coefficient, net protein utilization, biological value and amino acid score, protein requirements and functions. Nutritional diet support of infant. Pre-operation and post operational condition. Importance of food for existence of life. Modes of nutrition in life forms Comparable and contrasting features

UNIT -IV

Nutritional aspects of the vitamins and minerals. WHO and ICMR recommendation of Vitamins and Minerals. Disease and Minerals diagnosis.

Human Health and Disease: Nutrition (Health), definition, classification, food and non food sources.Nutraceuticals; use of nutraceuticals in traditional health sciences. Role of omega-3 fatty acids,carotenoids, dietary fiber, phytoestrogens; glucosinolates; organosulphur compounds in health and disease (prevention and control).

UNIT -V

Balanced diet- Recommended dietary allowances for different categories of human beings. Food processing and loss of nutrients during processing and cooking. Naturally occurring anti-nutrients. Disorders related to the nutrition - Protein energy malnutrition, Starvation, Obesity.

Functional foods: Definition, development of functional foods, benefits and sources of functional foods in Indian diet. Effects of processing conditions and storage.

Book Suggested

1. Vitamins, Their Role in the Human Body by Ball.
2. The Vitamins by Gerald F. Combs .
3. Human Nutrition by Geissler Powers.
4. Human Nutrition and Dietetics by Ashok Kumar Sharma.
5. Nutritional Biochemistry by Tom Brody.
6. Human Nutrition and Dietetics by Davidson & Passmore.

COURSE OUTCOMES

- Gain detail understanding of Nutraceuticals; use of nutraceuticals in traditional health sciences from intestine in to blood it affect the body.
- Understanding of factors that affect food digestion and absorption, Bioavailability and Bioequivalence concept.
- Understanding of importance of food for existence of life.
- Learn how to processing and loss of nutrients take place during processing and cooking.
- Recommended dietary allowances for different categories of human beings.

M.Sc. BIOCHEMISTRY
Semester-IV
Generic Elective
Paper-IV
BCH-404: Industrial Biochemistry

COURSE OBJECTIVES

- To study the classification and functional properties of fermentation technique and products.
- To understand the standard process and SOP for industrial setup and product development.
- To study the biochemical aspects of industrial protocols and standardization regarding product development.
- To study dietary types, requirements, utilization of fermented industrial antibiotics etc.
- To study the Commercial enzyme in beverages development and production.

UNIT-I

Techniques of fermentation systems, Role of Fermentation, Biochemistry of Fermentation: Fermentation of Carbohydrates, Protein. Lipid Metabolism, Formation of flavour. Advanced continuous fermentation for anaerobic microorganisms, Fermentation process development of carbohydrate based therapeutics. Commercial production of plant proteins in microorganisms. Benefits of fermented products.

Bioprocess development for detoxification and decolonization, Fermentation process validation. Genetic manipulation of industrially important microorganisms.

UNIT-II

Food processing and fortification: Principles, objectives and rationale, selection and basis of fortificants. Technology of fortifying cereal products. Characteristics of nutrients used in cereal fortification. Fortification methods. Fortification premixes, Design and composition of premixes and quality control. Fortification of bread, pasta, noodles, biscuits, and breakfast cereals.

UNIT-III

Development of nutraceutical and functional foods, Standards for health claims.

Development of Prebiotics and probiotics: Mechanics and usefulness of probiotics and prebiotics in gastro intestinal health and other benefits. Beneficiary microbes; prebiotic ingredients in foods; types of prebiotics and their effects on gut microbes, probiotic allergy,

Industrial production of Antibiotics: Penicillin, Streptomycin, Tetracyclines Organic acids, Citric acid, Lactic acid, Acetic acid, Enzymes: Amylases, Proteases, lipases Amino acids - Lysine, Glutamic acid.

UNIT-IV

Food additives: Definitions, functions and uses in processed food products. Chemical, technological and toxicological aspects of acid, base buffer systems, salts and chelating/sequestering agents, leavening agents, antioxidants, emulsifying and stabilizing agents,

anti-caking agents, thickeners, firming agents, flour bleaching agents and bread improvers.

Sweetening agents: Artificial sweeteners, composition, uses. Natural and synthetic colors**,** food Flavors, Spices and flavoring constituents, flavors in food industries.

UNIT-V

Beverages Technology: Beverages; importance of beverage fortification, Health benefits of fortification, Selection of nutrients for fortification, Levels to be added, Characteristics of fortificants and method of fortification, Bioavailability, Organic Vs inorganic salts. Health foods; selection of nutrients,Technology of incorporation of fortificants, bioavailability.

Commercial enzyme in beverages: fruit juices, beer, wine, and distilleries; dairy, baking, oils and fats, plantation products, animal products. Malting and germination of grains process, characteristics, nutritional benefits and uses. Domestic use products like detergents. Textiles, Denim processing, Leather industry.

Book Suggested

1. Biochemistry Ed. Donald Voet & Judith G. Voet, John Wiley & Sons, Inc.(2010).
2. Lehninger- Principles of Biochemistry; D.L.Nelson and M.M. Cox, 6th Edn. MacMillan Publications (2012).
3. Nutrition: Science and Applications, 3rd Edn. Lori A. Smolin, Mary B. Grosvenor, Wiley (2013).
4. Introduction to Human Nutrition, 2nd Edn. Michael J. Gibney, Susan A. Lanham-New, Aedin Cassidy, Hester H. Vorster, Wiley-Blackwell (2009).
5. Nutrition: Everyday Choices, 1st Edition; Mary B. Grosvenor, Lori A. Smolin Wiley (2006).
6. Bioactive Food as Dietary Interventions for Liver and Gastrointestinal Disease; Watson Elseveir (2012).
7. Food, Nutrition and Health. Tapsell L. Oxford University Press (2010).

COURSE OUTCOMES

- Gain detail understanding of Techniques of fermentation systems, Role of Fermentation, Biochemistry of Fermentation for industrial product development.
- Understanding of commercial enzyme in beverages and their associated biochemical process.

- Understanding of importance of food, Food additives, artificial food additives and their biochemistry.
- Learn how to processing are involve in prebiotics and probiotics production in industry.
- Learning in the development and production of different bioactive product for human welfare.

SEMESTER –IV
PRACTICAL
(Duration: 6hrs.)

Note- Practical examination of Inorganic Pharmaceutical Biochemistry/Biochemical Toxicology and Clinical Research, Nutrition Biochemistry /Industrial Biochemistry will be conducted at the end of each semester during examination. Students will be given two exercises in the practical examination.

Lab I: Pharmaceutical Biochemistry and Industrial Biochemistry

Experiment - 1	30
Experiment -2	30
Viva Voce	20
Record	20
Total	**100**

Pharmaceutical Biochemistry and Industrial Biochemistry

1. Qualitative analysis of lipids.
2. Pharmacokinetics studies by the linearity estimation.
3. Saponification value of fats.
4. Iodine number of oil.
5. Peroxide value of fats.
6. Artificial sweeteners stability analysis.
7. Drug stability, solubility analysis.
8. Preservative stability analysis.
9. Antibiotics sensitivity test for Amphicillin.
10. Pharmaceutical associated toxicity determination: Xenobiotics.
11. Qualitative and quantitative determination of nutritive value of food ingredients.
12. Qualitative and quantitative determination of plant proteins.
13. Qualitative and quantitative determination of fermented product.
14. Quality validation of process.
15. Neurotoxicology, Occupational toxicology testing.
16. Commercial enzyme estimation concern to beverages industries.
17. Standard Operating Procedure updating and review.

Book Suggested

1. Tietz Text book of Clinical Chemistry.
2. Clinical Chemistry by DF Calbreath.
3. Clinical Biochemistry by Varley.
4. Practical Biochemistry By S. P. Singh.
5. Practical Biochemistry by A.C. Dev.
6. Pharmacology by Rang and Dele.

COURSE OUTCOMES

- Estimate the pharmacokinetics of the pharmaceutical compounds in pure and combined form.
- Estimate and validate the Quality of process and developed product.
- Quality validation process for raw material and product.
- Quality validation for Standard operating procedure (SOPs) use for the product formulation and development.
- Students understanding the process of product registration and different guidelines which control the manufacturer to follow correct strategy for manufacturing of drug.
- Students learn how to write and file the patent; how to document clinical data of the concern drug research.

Lab II: Biochemical Toxicology & Clinical Research and Nutrition Biochemistry

Experiment - 1	30
Experiment -2	30
Viva Voce	20
Record	20
Total	**100**

Biochemical Toxicology and Clinical Research

1. Determination of LD50 /LC50
2. Determination of metal content in samples
3. Determination of Biological Oxygen Demand
4. Determination of Chemical Oxygen Demand
5. Biomarkers of neurotoxicity of organophosphate compounds.
6. Quality validation of process associated with toxicology.
7. Food processing and fortification test.
8. Enzymes related toxicity testing.
9. Metal toxicity determination in dietary dairy products.
10. Artificial additives based toxicity testing from dietary substance.
11. Microorganism base testing of dietary products.
12. Fungus base testing of dietary products.
13. Secondary metabolites base testing of dietary products.
14. Neurotoxicology, Occupational toxicology.
15. Biomarkers of neurotoxicity of organophosphate compounds.

Nutrition Biochemistry

1. Nutritional value determination for dietary products and substances.
2. Qualitative/ quantitative estimation of carbohydrate, protein, fatty acid and vitamins etc.
3. Identification of Vitamins according to source based identification.
4. Identification of Minerals according to source based identification.
5. Minerals quantitative estimation test.
6. Caloric metric measurement for dietary substances.
7. BMR calculation.

8. Electrolyte measurement.

Books Suggested

1. Tietz Text book of Clinical Chemistry.
2. Clinical Chemistry by DF Calbreath.
3. Clinical Biochemistry by Varley.
4. Practical Biochemistry By S. P. Singh.
5. Practical Biochemistry by A.C. Dev.
6. Pharmacology by Rang and Dele.
7. Biochemistry and Molecular Biology of Antimicrobial Drug Action by Franklin, T. & Snow J. A.
8. Pharmacology by S. D. Seth.
9. Pharmacology by Tara V Shahbhag.
10. Pathology by Edward.
11. Pharmacology by M C Prabhakar.
12. Pharmacology by Arvind Arora.

COURSE OUTCOMES

1. The students will be able to learn about the classification and functional properties of blood components.
2. Students understand the coagulation, anti-coagulation mechanism of blood and its disorders.
3. Students understand the biochemical, clinical, pathological and diagnostic aspects of diseases.
4. Students understand about the dietary types, requirements, utilization and functions of different class of diet.
5. Students getting the knowledge about the nutrition deficiency related disorders and balance diet.

COURSE STRUCTURE

for

B.Sc. (Biochemistry)
(Ist & IInd Semester 2020-21)

Programme

Based on

UGC-CBCS System
(As per Ordinance-14A)

STUDY CENTRE FOR BIOCHEMISTRY

AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

Subject I
Major
Semester-I
Core
Biomolecules

Course Objective

- Exposure with the nature of various biomolecules present in living cells.
- Get exposed to key contributions of scientists such as Hans Kreb, G. N. Ramachandran, Melvin Calvin, Louis Pasteur, HarGobind Khorana, Watson and Crick and Venky Ramakrishnan, etc.in order to create scientific interest amongst students in life processes.
- To understand the properties of carbohydrates, proteins, lipids, cholesterol, DNA, RNA, glycoproteins and glycolipids and their importance in biological systems.
- To understand the process of fermentation and manufacture of Biodiesel.
- To develop skills to determine amino acid and nucleotide sequences of proteins and DNA respectively.

Unit-1: Carbohydrates

Definition, empirical formulae, classification, biological importance. Monosaccharide: Configuration relationship of D-aldoses, D-ketoses. General properties of aldoses and ketoses. Oxidation, reduction, reducing property, formation of glycosides, acylation, methylation, phenyl hydrazine reaction. Inter-conversion of aldoses and ketoses. Isomerism in monosaccharides, (+) and (-), D and L, epimers, anomers, and stereoisomers. Structure and biological importance of amino sugars, deoxy sugars, sugar acids, neuraminic and muramic acid.

Disaccharides: Establishment of structures of sucrose and lactose, biological importance and structure of isomaltose, trehalose and maltose.

Polysaccharides: Partial structure, occurrence and importance of starch, glycogen, inulin, cellulose, chitin, and pectin.

Glycosaminoglycans: Occurrence, importance and the structure, Bacterial cell wall polysaccharide, peptidoglycans.

Unit-2: Amino acids

Structure and classification of amino acids based on polarity. Reactions of the amino groups due to amino and carboxylic group, Zwitterionic properties. Peptides: Peptide bond, biologically active peptides.

Proteins: Classification of proteins based on solubility, structure and functions with examples. Primary Structure of proteins, methods of determining N- and C- terminal aminoacids, amino acid composition. Sequencing by Edman's degradation method. Secondary Structure-α Helix. β-sheet, β-bend. Tertiary of myoglobin and quaternary structure of hemoglobin, denaturation and renaturation of proteins.

Unit-3: Lipids

Classification and biological role. Fatty acids- Nomenclature of saturated and unsaturated fatty acids. Physiological properties of fatty acids.

Acylglycerols: Mono, di and triglycerols. Saponification, saponification value, iodine value, acid value and significance.

Phosphoglycerides: Structure of lecithin, cephalins, phosphotidylinosital, plasmalogens, and cardiolipin. Biological role of phosphoglycerides.

Sphingolipids: Structure and importance of sphingomyelin. Glycosphingolipids: Structure and importance of gangliosides and cerebrosides.

Unit-4: Nucleic acids

DNA: Composition of DNA. Nucleosides and nucleotides. Chargaff's rule. Watson and Crick model of DNA. Types of DNA.

RNA: Composition, types (mRNA, tRNA and rRNA), secondary structures of tRNA-clover leaf model. Chemical reactions of RNA and DNA with acid and alkali, colour reactions of DNA and RNA.

Unit-5: Vitamins

Introduction and biological significance of vitamins, Water soluble vitamins, their occurrence, functions, structure, diseases, Fat soluble vitamins, their occurrence, functions, structure, diseases.

Recommended Books/References:

1. A.L., Lehninger, principles of biochemistry (1982), Worth Publishers, Inc. New York.
2. E.E. Conn and P.K. Stumpf. Outlines of Biochemistry (1976) Wiley Eastern, New Delhi.
3. Biochemistry by L. Stryer (1995) W.H. Freeman Press, San Francisco, USA.
4. Biochemistry, by Voet, D. and Voet, J.G. (2004). 3rd Edition, John Wiley & Sons, Inc. USA.

Course outcomes

- Students will be exposed to the history of Biochemistry and key contributions of scientists such as Hans Kreb, G. N. Ramachandran, Melvin Calvin, Louis Pasteur, Hargobind Khorana, Watson and Crick and Venky Ramakrishnan.
- They will study the properties of carbohydrates, proteins, lipids, cholesterol, DNA, RNA, glycoproteins and glycolysis and their importance in biological systems.
- They will understand the process of fermentation and manufacture of Biodiesel.
- They will understand the methods of determination of amino acid and nucleotide sequence of proteins and DNA respectively.

Semester - I
Subject I
Practical

Course Objective

- Exposure to basic reactions of biomolecules.
- Determine presence of biomolecules like carbohydrates, proteins, lipids, etc. in known and unknown samples.
- Determine the extent of adulteration in samples containing biomolecules.

Practical content

1. Qualitative analysis of biomolecules
2. Carbohydrates-Molisch, Benedict's, Fehling's, picric acid, Barfoed's, Bial's, Seliwanoff's, osazone tests.
3. Glucose, fructose, lactose, maltose and sucrose.
4. Proteins- Precipitation reactions of proteins, colour reactions of proteins, colour reactions of amino acids like tryptophan, tyrosine, cysteine, methionine, arginine, proline and histidine.
5. Colour reactions of proteins- Biuret, xanthoproteic, Millon's.
6. Lipids-solubility, acrolein test, Salkowski test, Lieberman-Burchard test.
7. Qualitative tests for nucleic acid.

Course outcomes

- The student will gain awareness about basic reactions of biomolecules and their utility in identification of adulterants.
- The student will known Glucose, fructose, lactose, maltose and sucrose.
- Student will gain the skill of qualitative tests for nucleic acid and other biomolecules

Subject II
Minor
Semester I
Inorganic Chemistry-I

COURSE OBJECTIVES

On completion of this course, the students will be able to understand:

- Atomic theory and its evolution.
- Elements in periodic table; physical and chemical characteristics, periodicity.
- Identity of given element, relative size, charges of proton, neutron and electrons and their assembly to form different atoms.
- Physical and chemical characteristics of elements in various groups and periods according to ionic size, charge, etc. and position in periodic table.
- Characterize bonding between atoms, molecules, interaction and energetic, hybridization and shapes of atomic, molecular orbitals, bond parameters, bond-distances and energies.
- Valence bond theory incorporating concepts of hybridization predicting geometry of molecules.
- Importance of hydrogen bonding, metallic bonding.

Unit-1: Atomic Structure

Bohr's theory, its limitations and atomic spectrum of hydrogen atom. Wave mechanics: de' Broglie equation, Heisenberg's Uncertainty Principle and its significance, Schrödinger's wave equation, significance of ψ and $\psi 2$. Quantum numbers and their significance. Normalized and orthogonal wave functions. Sign of wave functions. Radial and angular wave functions for hydrogen atom. Radial and angular distribution curves. Shapes of *s*, *p*, *d* and *f* orbitals. Contour boundary and probability diagrams. Pauli's Exclusion Principle, Hund's rule of maximum multiplicity, Aufbau's principle and its limitations, Variation of orbital energy with atomic number.

Unit-2: Periodicity of Elements

s, *p*, *d*, *f* block elements, the long form of periodic table. Detailed discussion of the following properties of the elements, with reference to *s* and *p*-block.

Effective nuclear charge, shielding or screening effect, Slater rules, variation of effective nuclear charge in periodic table. Atomic radii (van'der Waals), Ionic and crystal radii. Covalent radii (octahedral and tetrahedral), Ionization enthalpy, Successive ionization enthalpies and factors affecting ionization energy. Applications of ionization enthalpy. Electron gain enthalpy, trends of electron gain enthalpy. Electronegativity, Pauling,

Mullikan, electronegativity and bond order, partial charge, hybridization, group electronegativity.

Unit-3: Ionic Bonding

General characteristics, definition of ionic bonds, examples, formation of ionic bond, strength of ionic bonds, types of ions, size effects, radius ratio rule and its limitations. Packing of ions in crystals. Born-Landé equation with derivation, expression for lattice energy. Madelung constant, Born-Haber cycle and its application, Solvation energy.

Unit-4: Covalent bond

Lewis structure, Valence Shell Electron Pair Repulsion Theory (VSEPR), Shapes of simple molecules and ions containing lone-and bond-pairs of electrons multiple bonding, sigma and pi-bond approach, Valence Bond theory, (Heitler-London approach). Hybridization containing s, p and s, p, d atomic orbitals, shapes of hybrid orbitals, Bents rule, Resonance and resonance energy, Molecular orbital theory. Molecular orbital diagrams of simple homonuclear and heteronuclear diatomic molecules, MO diagrams of simple tri and tetra-atomic molecules, e.g., N_2, O_2, CO, NO, and their ions; HCl, BeF_2, CO_2, Covalent character in ionic compounds, polarizing power and polarizability. Fajan rules, polarization. Ionic character in covalent compounds: Bond moment and dipole moment.

Unit-5: Metallic bonding and Weak chemical forces

Metallic Bond: Definition of metallic bond, properties and examples of metallic bonds, qualitative idea of free electron model, Semiconductors, Insulators.

Weak Chemical Forces: van'der Waals, ion-dipole, dipole-dipole, induced dipole dipole-induced dipole interactions, Lenard-Jones 6-12 formula, hydrogen bond, effects of hydrogen bonding on melting and boiling points, solubility, dissolution, intermolecular and intramolecular hydrogen bonding.

Recommended Books/References:

1. J. D. Lee, *Concise Inorganic Chemistry,* Wiley, 5th Edn.
2. B. E. Douglas, D. H. McDaniel, J. J. Alexander, *Concepts & Models of Inorganic Chemistry, (Third Edition)* John Wiley & Sons,1999.
3. P. W. Atkins, J. DePaula, *Physical Chemistry*, Tenth Edition, Oxford University Press, 2014.
4. G. E. Rodger, *Inorganic and Solid State Chemistry*, Cengage Learning, 2002.
5. Advanced Inorganic Chemistry, F.A. Cotton and Wilkinson, John Wiley.

COURSE OUTCOMES

The students will be able to

- know the concept of wave function and wave mechanics.
- know the physical and chemical properties of elements in various groups and periods in the Periodic Table.
- Demonstrate and understanding of VSEPR theory

- To predict the atomic structure, chemical bonding and molecular geometry based on accepted models.
- To understand atomic theory of matter, composition of atom.
- Get knowledge about importance of metallic bonding and weak chemical forces.

Subject II
Semester I
Practical

COURSE OBJECTIVES

- The students will learn
- The basics of estimation of carbonate and free alkali
- Oxidation-reduction titrimetry

Acid-Base Titrations

(i) Estimation of carbonate and hydroxide present together in mixture.
(ii) Estimation of carbonate and bicarbonate present together in a mixture.
(iii) Estimation of free alkali present in different soaps/detergents

Oxidation-Reduction Titrimetry

(i) Estimation of Fe(II) and oxalic acid using standardized KMnO4 solution.
(ii) Estimation of oxalic acid and sodium oxalate in a given mixture.
(iii) Estimation of Fe(II) with $K_2Cr_2O_7$ using internal (diphenylamine, anthranilic acid) and external indicator.

Recommended Books/References:

1. J. Mendham, A. I. Vogel's *Quantitative Chemical Analysis* Sixth Edition, Pearson, 2009.
2. G. Svehala, I. B. Sivasankar, Vogel's Qualitative Inorganic Analysis, Pearson, India, 2012.

COURSE OUTCOMES

The students will be able to

- Estimate cations and free alkali
- Estimate the Fe(II) and oxalic acids

Subject III
Generic Elective Course
Semester - I
Biochemical Techniques

Course Objective

- Develop competence in handing various chromatographic techniques and apply them in isolating and characterizing different biological molecules.
- Understanding the applications of centrifugation and chromatography in biological investigations.
- Purify proteins by affinity chromatography using epitope tags such as histidine tag, GST tag, Flag tag etc.
- Understanding the principles of Electrophoresis, Spectrophotometry and ELISA and their applications in biological investigations/experiments.

Unit-1: Physical properties of water

Physical properties and structure of water, hydrogen bonding, ionization of water, pH scale, cocept of acid-bases and buffers, behavior of amino acids and proteins, Handerson-Haselbalch equation, Biological buffering system, Principle of osmosis, Electroendosmosis, Donan-membrane equilibrium & its biological applications.

Unit-2: Chromatography

Principles of partition chromatography; paper, thin layer, ion exchange and affinity chromatography, gel permeation chromatography.

Unit-3: Centrifugation

Principles of centrifugation, concepts of RCF, preparative, differential and density gradient centrifugation, ultra-centrifugation, subcellular fractionation.

Unit-4: Electrophoretic techniques

Principles of electrophoretic separation. Different types of electrophoresis including paper, cellulose acetate/nitrate and gel. PAGE and SDS-PAGE.

Unit-5: Spectroscopy

Concepts of spectroscopy, Visible and UV spectroscopy, Beer- Lambert's law, Principles and applications of colorimetry.

Electron microscopy-Transmission and scanning, freeze fracture techniques, specific staining of biological materials.

Recommended Books/References:

1. Wilson K. and Walker J., Principles and Techniques ofBiochemistry and Molecular Biology, 7thed., Cambridge University Press, 2010.
2. Boyer, R.F., Biochemistry Laboratory: Modern Theory and Techniques, 6thed., Boston, Mass: Prentice Hall, 2012.
3. Plummer D. T., An Introduction to Practical Biochemistry 3rd ed., Tata McGraw Hill Education Pvt. Ltd. (New Delhi), 1998.

Course outcomes

- Students will learn about the principle and applications of spectrophotometry, different chromatographic techniques like gel filtration, Ion exchange, thin layer, etc.
- Students will also learn about various electrophoresis techniques such as cellulose acetate, gel, PAGE, etc. and their applications in analyzing proteins and nucleic acids.
- Students will learn the basic principles of centrifugation, various types of centrifuges, rotors and methods for sub cellular fractionation.
- They will also learn the principles of electron microscopy more especially of SEM and TEM and their applications in characterizing biological samples.

Semester - I
Practical
Biochemical Techniques

Course Objective

- The students will obtain hands-on training in basic separation techniques in biochemistry like electrophoresis, chromatography, etc.
- Gain expertise in the isolation of various biomolecules and organelles.

Course content

1. Verification of Beer's Law
2. Determination of absorption maxima (λmax) of proteins and nucleic acids
3. Determination of protein concentration using UV-Vis spectrophotometer
4. Fractionation of sub cellular organelles from leaves using differential centrifugation
5. Separation of amino acid acids/sugars by thin layer/paper chromatography
6. Separation of proteins by gel filtration chromatography
7. Separation of nucleic acids using agarose gel electrophoresis
8. Separation of proteins by PAGE and SDS-PAGE.

Course outcomes

Students will acquire practical training to handle the instruments like colorimeter, spectrophotometer and to use them for biochemical determinations.

Using the techniques of paper/thin layer chromatography, students will be able to separate amino acids, sugars.

They will acquire practical skill to separate proteins by gel filtration and PAGE.

Subject I
Major
Semester - II
Cell Biology
Core

Course Objective

- Students will learn about cell theory and techniques for fractionation of sub-cellular organelles.
- They will be acquainted to various microscopic techniques to visualize subcellular organelles.
- Students will have an understanding of the composition of cytoskeleton and extracellular matrix.
- Students will acquire knowledge of cell cycle, cell division and cell death mechanisms.

Unit-1: Introduction of Cell
Origin of life, Cell theory, Structure of prokaryotic and eukaryotic cell. Differences in Animal and Plant cell. Mycoplasma, viruses, viroids, prions.

Unit-2: Structure and function of subcellular organelles
Composition ofbiological membranes. Nucleus: Structure of nuclear envelope, nuclear pore complex nucleolus and chromatin. Endoplasmic Reticulum: RER - Brief overview of co-translational and post-translational transport of proteins; SER – Lipid synthesis, brief overview of export of proteins from ER; Golgi apparatus: organization, brief overview of glycosylation of proteins within Golgi, lipid and polysaccharide metabolism in Golgi apparatus.

Unit-3: Cell Fractionation techniques
Centrifugation, Sedimentation Coefficient, Differential and Density Gradient (isopycnic and rate zonal) centrifugation. Cell Visualization techniques: Principle of Light microscope, Phase Contrast microscope, Fluorescence microscope, Confocal microscope and Electron microscope; Staining techniques for microscopy studies. Principles of identification of sub cellular organelles.

Unit-4: Lysosomes
Different forms of lysosomes, role in cellular digestion, lysosomal storage diseases.

Peroxisomes: assembly, functions, glyoxysomes.

Mitochondria: structure, endosymbiont theory, genome,

Chloroplast: Structure, function, organization

Cell Wall: Structure of prokaryotic and eukaryotic cell wall; ECM components– proteins, polysaccharides and adhesion proteins; concept of anchoring junctions, tight junctions and communication junctions (gap junctions and plasmodesmata).

Cytoskeleton. Microtubules: Axonemal and cytoplasmic microtubules (cilia, flagella, centrioles, basal bodies). Microfilaments: Actin and Myosin Filaments. Role of cytoskeletal elements in the entry of infectious agents

Unit-5: Cell Cycle and Cell Division
(mitosis and meiosis); Apoptosis and necrosis; Types and potency of Stem Cells, Cancer-types, salient features of a transformed cell, causes of cancer. Apoptotic death in relation to cell cycle.

Recommended Books/References:

1. The Cell: A Molecular Approach (2013) 6th ed., Cooper, G.M. and Hausman, R.E., ASM Press & Sunderland (Washington DC), Sinauer Associates, MA, ISBN:978-0- 87893-300- 6.
2. Cell and Molecular Biology: Concepts and Experiments. (2010). Karp, G., 6th ed. John Wiley and Sons. Inc. ISBN: 978-1-118-65322-7
3. Principles and Techniques of Biochemistry and Molecular Biology: - Ed. K. Wilson and J. Walker, Cambridge University Press.
4. Physical Biochemistry- Application to Biochemistry and Molecular Biology: Friefelder D. WH Freeman and Company.
5. Lehninger: Principles of Biochemistry (2017) 7th ed., Nelson, D.L. and Cox, M.M.
6. W.H. Freeman & Company (New York), ISBN:13: 9781464126116 / ISBN:10- 1464126119.
7. Molecular Biology of the Gene (2008) 6th ed., Watson, J.D., Baker, T.A., Bell, S.P., Gann, A., Levine, M. and Losick, R., Cold Spring Harbor Laboratory Press, Cold Spring Harbor (New York), ISBN:0-321-50781 / ISBN: 978-0-321-50781-5.

Course Outcomes

- This course will provide an understanding of the structure of cell and function of various sub cellular organelles.
- Students will learn about cell theory, basic cell structure, cell fractionation and cell visualization techniques. Besides, students will have an understanding of the composition of cytoskeleton and extracellular matrix.
- Students will acquire knowledge of cell cycle, cell division and cell death mechanisms.

Semester-II
Practical
Cell Biology

Course objectives

- Students will learn the handling of microscope.
- Obtain hands-on training in basic separation techniques in biochemistry
- Gain expertise in the isolation of various cell organelles and staining of cellular biomolecules.

Course Content:

1. To study different parts of microscope
2. Cytochemical staining of proteins by Methylene blue
3. Cytochemical staining of polysaccharides by PAS
4. Cytochemical staining of RNA by Methyl Green
5. Study of stages of Mitosis
6. Study of stages of Meiosis
7. To study cell organelles
8. To study the effect of isotonic, hypotonic and hypertonic solutions on cells

Course outcomes:

- Students will learn the handling of microscope.
- They will gain knowledge about the structure and function of various cell organelles.
- The students will obtain hands-on training in basic separation techniques in biochemistry and gain expertise in the isolation of various cell organelles and staining of cellular biomolecules.

Subject II
Minor
Semester II
Bioorganic Chemistry

Course objectives

- Understand the significance of organic reactions with reference to biological systems.
- Apply the principles of electrochemistry to conductance, voltaic, and electrolytic systems.
- Understanding chemical bonding, strong and weak interactions, hydrogen bondingand to apply these principles in various biomolecules and biological reactions.
- To develop understanding of aliphatic and aromatic compounds, IUPAC nomenclature, reactivity of functional groups and the importance of stereoisomersin biological systems.
- Understanding the formation of polymers and their importance; difference between biodegradable and non-biodegradable polymers and biohazards of polymers.
- Apply concept of stereochemistry in determining conformations of biomolecules.

UNIT I: Introduction to organic chemistry

Classification of organic compounds, unique characteristics, IUPAC nomenclature of organic compounds (including bi-functional) and
biomolecules.

Reaction mechanisms: Concept of inductive effect, resonance and hyperconjugation. Classification of organic reactions (substitution, addition, elimination and rearrangement), with two examples for each. Concepts of the following-carbanions, carbocations, free radicals, carbenes, nucleophiles and electrophiles (Formation and Stability).

UNIT II: Aliphatic hydrocarbons

Mechanism of Markownikoff and anti-Markownikoff addition. Addition of HBr to propene. Dienes-types with examples, 1,3 butadiene-Preparation, stability and mechanism of addition of HBr. Diels-Alder reaction. Conformational analysis of ethane.

Cycloalkanes: Reactivity and relative stability. Bayer's strain theory. Sachse-Mohr theory. Boat and chair forms of cyclohexanes. Axial and equatorial bonds and their relation with biological activities of carbohydrates.

Arenes: Structure of benzene by resonance and molecular orbital theories. Aromaticity.

Mechanism of Nitration and Friedel craft reaction. Electronic interpretation of the orientating influence of substituents in the electrophilic substitution of toluene, chlorobenzene, nitrobenzene and phenol. Resonance structures of naphthalene and anthracene.

UNIT III: Alkyl halides and organomatellic compounds

SN1 and SN2 reaction, their mechanism with one example for each. Concept of elimination reactions, Applications of organometallic compounds-organo lead, organo lithium, cis-platin.

Alcohols: Definition, classification, monohydric alcohols-distinguishing reactions for primary, secondary and tertiary alcohols. Dihydric alcohols: Glycol, preparation (any 2 methods) and uses. Trihydric alcohols: Glycerol, synthesis from propene, properties, (reaction with conc. H_2SO_4, HNO_3, Oxalic acid and HI). Phenols: Acidity of phenols, effect of substituent on acidity.

Hydroxy acids and dicarboxylic acids: Structure & properties ofhydroxy acids: Lactic acid, citric acid and isocitric acid. Dicarboxylic acid: Maleic and fumaric acid. Ketoacids: Pyruvic, α-ketoglutaric, oxalo acetic acids.

UNIT IV: Amines

Classification, properties, functional amino group-Basicity of amines, acylation. React with HNO_2& Schiff's base formation. Distinguishing reactions of primary, secondary and tertiary amines.

Heterocyclic compounds: Definition, classification with examples, structure and biological importance of furan, pyrrole, thiophene, pyridine, pyran, thiazole, pyrimidine, purine, indole, imidazole, quinoline and isoquinoline. Basicity of pyrrole and pyridine.

Terpenes: Definition, isoprene rule, classification, isolation, structure and biological importance of menthol, camphor, farnesol, phytol, lanosterol, lycopene and dolichols.

Steroids: Basic ring structure in steroids. Structure and biological importance of cholesterol, phytosterols and ergosterol. Bile acids (Mono, Di & Tri cholic acids).

Alkaloids: Definition, classification based on their structure and biological functions, isolation, structure and biological action of morphine, nicotine & atropine. Chemical synthesis of nicotine and atropine.

UNIT V: Stereochemistry

Stereoisomerism, types, Fischer-projection formulae, chiral carbon atom, asymmetry and dissymmetry, chirality, conditions for optical isomerism ex: glyceraldehyde, lactic acid, tartaric acid, Nomenclature of enantiomers, diastereomers. D and L notation, R and S system, racemisation and resolution (Biochemical, chemical and physical methods). Geometrical isomerism.

Recommended Books/References:

1. ArunbBahl and B. S. Bahl: *Advanced Organic Chemistry,* S. Chand. (2019)
2. L. Finar:*Organic Chemistry* (Vol. I & II), E. L. B. S. (2002)
3. R. T. Morrison & R. N. Boyd: *Organic Chemistry*, Prentice Hall. (2011)

Course outcomes

- On completion of this course, students will understand the significance of organic reactions with reference to biological systems, chemical bonding in various biomolecules, strong and weak interactions.
- They will gain a good understanding of aliphatic and aromatic compounds, IUPAC nomenclature, reactivity of functional groups and the importance of stereoisomers in biological systems.
- Students will understand the formation of polymers and their importance; difference between biodegradable and non-biodegradable polymers and biohazards of polymers

Subject II
Minor
Practical
Bioorganic Chemistry

Course objective

- Analyse common organic reagents and compounds based on their properties.
- Analyse organic compounds from unknown mixture/origin.
- Apply the properties of functional groups of organic compounds to carry out selective organic reactions.
- Verify reactivity of organic functional groups.
- Develop skills to prepare useful organic compounds in the laboratory.

Practical content:

Systematic qualitative analysis of the organic compounds:
Urea, benzamide, benzaldehyde, aniline, acetophenone, m-cresol, nitrobenzene, chlorobenzene, naphthalene, *p*-toluidine, benzoic acid, salicylic acid, resorcinol, benzyl alcohol and *p*-dichoro benzene.

Organic preparations: Aspirin from salicylic acid, benzoic acid from benzaldehyde, *p*-bromo acetanilide from acetanilide and meta-dinitrobezene from nitrobenzene.

Course outcomes:

- Students will analyze the properties of common organic reagents and compounds, carry out
- Selective reactions of organic functional groups and verify reactivity of organic functional groups.

Subject III
Generic Elective Course
Semester - II
Biochemical basis of Diseases

Course objectives

- To know the Students will get acquainted with various types of human diseases and their biochemical basis.
- Student knows about disorders due to improper dietary constituents. Therefore students will get curiosity to have balanced diets to prevent many nutritional disorders/diseases.
- They will acquire a good understanding of biochemical basis of diseases related to inherited metabolic disorders, digestive and infectious diseases.
- They will learn microbial diseases and pathogencity along with protection.

Unit-1: Inborn Errors of Metabolism

Phenylketonuria, alkaptonuria, albinism, tyrosinosis, maple syrup urine disease, Lesch-Nyhan syndrome, sickle cell anemia, Histidinemia.

Unit-2: Disorders of Carbohydrate Metabolism

Diabetes mellitus, glycogen storage diseases, pentosuria, galactosemia.

Unit-3: Disorders of Lipids

Hyperlipidemia, hyperlipoproteinemia, Gaucher's disease, Tay-Sach's and Niemann-Pick disease, ketone bodies, Abetalipoproteinemia.

Digestive diseases: Maldigestion, malabsorption, creatorrhoea, diarrhoea and steatorrhoea.

Unit-4: Disorders of liver and kidney

Jaundice, fatty liver, hepatitis

Haemorrhagic disorders: Haemophilia, Anaemias, thrombotic thrombocytopenic purpura (TTP).

Unit-5: Infectious diseases

Bacterial infections: Tetanus, Diphtheria, Tuberculosis, Typhoid, Cholera. Viral infection: Polio, Measles, Mumps, influenza, HIV. Protozoan: Malaria and Trypanosomiasis. Parasitic infection: Leishmaniasis.

Recommended Books/References:

1. Biochemistry (2013) 4th edn., Voet, D., Voet, J. & Pratt, C. Wiley & Sons, Inc. (New Jersey), ISBN:978-1-11809244-6.
2. Biochemistry (2012) 7th edn., Berg, J.M., Tymoczko, J. L. and Stryer, L., W.H Freeman and Company (New York)
3. Textbook of Biochemistry with Clinical Correlations (2011) Devlin, T.M. John Wiley & Sons, Inc. (New York)
4. Klein's Microbiology, (2008) 7 ed., Prescott, Harley, Wiley, J.M. Sherwood,
5. L.M. Woolverton, C.J. McGraw Hill International Edition (New York) ISBN: 978-007- 126727.

Course outcomes

- Students will get acquainted with various types of human diseases and their biochemical basis.
- They will know about disorders due to improper dietary constituents. Therefore students will get curiosity to have balanced diets to prevent many nutritional disorders/diseases.
- Students will acquire a good understanding of biochemical basis of diseases related to inherited metabolic disorders, digestive and infectious diseases.
- They will learn pathogenicity and prevention measures for microbial diseases.

Generic Elective Course
Practical
Biochemical Basis of Diseases
Semester-II

Course Objectives

- Students will acquire practical training for estimation of clinically important compounds.
- The students to perform diagnostic tests for the various diseases related to varying levels of these compounds/chemicals/ biomolecules
- They will be updated with routine checkup parameters such as blood pressure, BMI, Waist/Hip Ratio, Mid Arm Area (MAA) for a normal or diseased person.

Practical content:

1. Estimation of blood glucose
2. Estimation of serum cholesterol
3. Measurement of blood pressure, BMI, Waist/Hip Ratio, Mid Arm Area (MAA).
4. Estimation of Haemoglobin
5. Estimation of calcium
6. Gram staining of bacteria and identification of bacteria

Course outcomes:

- Students will acquire practical training for estimation of clinically important compounds like blood glucose, serum cholesterol, hemoglobin, calcium, etc.
- This will enable the students to perform diagnostic tests for the diseases related to varying levels of these compounds/chemicals.
- They will also get acquainted with routine checkup parameters such as blood pressure, BMI, Waist/Hip Ratio, Mid Arm Area (MAA) for a normal or diseased person.

Note

The course content of Ability Enhancement Courses (AEC) will be provided by the respective subject faculties

COURSE STRUCTURE

for

B.Sc. (Chemistry)
(Ist & IInd Semester 2020-21)

Programme

Based on

UGC-CBCS System
(As per Ordinance-14A)

DEPARTMENT OF CHEMISTRY

AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

Subject I
Major
Semester I
(Core)
Inorganic Chemistry-I

COURSE OBJECTIVES

On completion of this course, the students will be able to understand:

- Atomic theory and its evolution.
- Elements in periodic table; physical and chemical characteristics, periodicity.
- Identity of given element, relative size, charges of proton, neutron and electrons and their assembly to form different atoms.
- Physical and chemical characteristics of elements in various groups and periods according to ionic size, charge, etc. and position in periodic table.
- Characterize bonding between atoms, molecules, interaction and energetic, hybridization and shapes of atomic, molecular orbitals, bond parameters, bond- distances and energies.
- Valence bond theory incorporating concepts of hybridization predicting geometry of molecules.
- Importance of hydrogen bonding, metallic bonding.

Unit-I: Atomic Structure

Bohr's theory, its limitations and atomic spectrum of hydrogen atom. Wave mechanics: de' Broglie equation, Heisenberg's Uncertainty Principle and its significance, Schrödinger's wave equation, significance of ψ and $\psi 2$. Quantum numbers and their significance. Normalized and orthogonal wave functions. Sign of wave functions. Radial and angular wave functions for hydrogen atom. Radial and angular distribution curves. Shapes of *s*, *p*, *d* and *f* orbitals. Contour boundary and probability diagrams. Pauli's Exclusion Principle, Hund's rule of maximum multiplicity, Aufbau's principle and its limitations, Variation of orbital energy with atomic number.

Unit-II: Periodicity of Elements

s, *p*, *d*, *f* block elements, the long form of periodic table. Detailed discussion of the following properties of the elements, with reference to *s* and *p*-block. Effective nuclear charge, shielding or screening effect, Slater rules, variation of effective nuclear charge in periodic table. Atomic radii (van'der Waals), Ionic and crystal radii. Covalent radii (octahedral and tetrahedral), Ionization enthalpy, Successive ionization enthalpies and factors affecting ionization energy. Applications of ionization enthalpy. Electron gain enthalpy, trends of electron gain enthalpy. Electronegativity, Pauling, Mullikan, electronegativity and bond order, partial charge, hybridization, group electronegativity.

Unit-III: Ionic Bonding

General characteristics, definition of ionic bonds, examples, formation of ionic bond, strength of ionic bonds, types of ions, size effects, radius ratio rule and its limitations. Packing of ions in

crystals. Born-Landé equation with derivation, expression for lattice energy. Madelung constant, Born-Haber cycle and its application, Solvation energy.

Unit-IV: Covalent bond

Lewis structure, Valence Shell Electron Pair Repulsion Theory (VSEPR), Shapes of simple molecules and ions containing lone-and bond-pairs of electrons multiple bonding, sigma and pi-bond approach, Valence Bond theory, (Heitler-London approach). Hybridization containing s, p and s, p, d atomic orbitals, shapes of hybrid orbitals, Bents rule, Resonance and resonance energy, Molecular orbital theory. Molecular orbital diagrams of simple homonuclear and heteronuclear diatomic molecules, MO diagrams of simple tri and tetra-atomic molecules, e.g., N_2, O_2, CO, NO, and their ions; HCl, BeF_2, CO_2, Covalent character in ionic compounds, polarizing power and polarizability. Fajan rules, polarization. Ionic character in covalent compounds: Bond moment and dipole moment.

Unit-V: Metallic bonding and Weak chemical forces

Metallic Bond: Definition of metallic bond, properties and examples of metallic bonds, qualitative idea of free electron model, Semiconductors, Insulators.

Weak Chemical Forces: van'der Waals, ion-dipole, dipole-dipole, induced dipole dipole-induced dipole interactions, Lenard-Jones 6-12 formula, hydrogen bond, effects of hydrogen bonding on melting and boiling points, solubility, dissolution, intermolecular and intramolecular hydrogen bonding.

Recommended Books/References:

1. J. D. Lee, *Concise Inorganic Chemistry,* Wiley, 5th Edn.
2. B. E. Douglas, D. H. McDaniel, J. J. Alexander, *Concepts & Models of Inorganic Chemistry, (Third Edition)* John Wiley & Sons,1999.
3. P. W. Atkins, J. DePaula, *Physical Chemistry*, Tenth Edition, Oxford University Press, 2014.
4. G. E. Rodger, *Inorganic and Solid State Chemistry*, Cengage Learning, 2002.
5. Advanced Inorganic Chemistry, F.A. Cotton and Wilkinson, John Wiley.

COURSE OUTCOMES

The students will be able to

- know the concept of wave function and wave mechanics.
- know the physical and chemical properties of elements in various groups and periods in the Periodic Table.
- Demonstrate and understanding of VSEPR theory
- To predict the atomic structure, chemical bonding and molecular geometry based on accepted models.
- To understand atomic theory of matter, composition of atom.
- Get knowledge about importance of metallic bonding and weak chemical forces.

Semester I
Practical
Inorganic Chemistry

COURSE OBJECTIVES

The students will learn

- The basics of estimation of carbonate and free alkali
- Oxidation-reduction titrimetry

Acid-Base Titrations

(i) Estimation of carbonate and hydroxide present together in mixture.
(ii) Estimation of carbonate and bicarbonate present together in a mixture.
(iii) Estimation of free alkali present in different soaps/detergents

Oxidation-Reduction Titrimetry

(i) Estimation of Fe(II) and oxalic acid using standardized KMnO4 solution.
(ii) Estimation of oxalic acid and sodium oxalate in a given mixture.
(iii) Estimation of Fe(II) with $K_2Cr_2O_7$ using internal (diphenylamine, anthranilic acid) and external indicator.

Recommended Books/References:

1. J. Mendham, A. I. Vogel's *Quantitative Chemical Analysis* Sixth Edition, Pearson, 2009.
2. G. Svehala, I. B. Sivasankar, Vogel's Qualitative Inorganic Analysis, Pearson, India, 2012.

COURSE OUTCOMES

The students will be able to

- Estimate cations and free alkali
- Estimate the Fe(II) and oxalic acids

Subject II
Minor
Semester I
Calculus

Course Learning Outcomes

This course will enable the students to:

- Assimilate the notions of limit of a sequence and convergence of a series of real numbers.
- Calculate the limit and examine the continuity of a function at a point.
- Understand the consequences of various mean value theorems for differentiable functions.
- Sketch curves in Cartesian and polar coordinate systems.
- Apply derivative tests in optimization problems appearing in social sciences, physical sciences, life sciences and a host of other disciplines.

Unit-I: Sequences and Integration

Real numbers, Sequences of real numbers, Convergence of sequences and series, Bounded and monotonic sequences; Definite integral as a limit of sum, Integration of irrational algebraic functions and transcendental functions, Reduction formulae, Definite integrals.

Unit-II: Limit and Continuity

$\varepsilon - \delta$ definition of limit of a real valued function, Limit at infinity and infinite limits; Continuity of a real valued function, Properties of continuous functions, Intermediate value theorem, Geometrical interpretation of continuity, Types of discontinuity; Uniform continuity.

Unit-III: Differentiability

Differentiability of a real valued function, Geometrical interpretation of differentiability, Relation between differentiability and continuity, Differentiability and monotonicity, Chain rule of differentiation; Darboux's theorem, Rolle's theorem, Lagrange's mean value theorem, Cauchy's mean value theorem, Geometrical interpretation of mean value theorems; Successive differentiation, Leibnitz's theorem.

Unit-IV: Expansions of Functions

Maclaurin's and Taylor's theorems for expansion of a function in an infinite series, Taylor's theorem in finite form with Lagrange, Cauchy and Roche–Schlomilch forms of remainder; Maxima and minima.

Unit-V: Curvature, Asymptotes and Curve Tracing

Curvature; Asymptotes of general algebraic curves, Parallel asymptotes, Asymptotes parallel to axes; Symmetry, Concavity and convexity, Points of inflection, Tangents at origin, Multiple points, Position and nature of double points; Tracing of Cartesian, polar and parametric curves.

References:

1. Howard Anton, I. Bivens & Stephan Davis (2016). *Calculus* (10th edition). Wiley India.

2. Gabriel Klambauer (1986). *Aspects of Calculus*. Springer-Verlag.
3. Wieslaw Krawcewicz & Bindhyachal Rai (2003). *Calculus with Maple Labs*. Narosa.
4. Gorakh Prasad (2016). *Differential Calculus* (19th edition). Pothishala Pvt. Ltd.
5. George B. Thomas Jr., Joel Hass, Christopher Heil & Maurice D. Weir (2018). *Thomas*' *Calculus* (14th edition). Pearson Education.

COURSE OUTCOMES

- The students will be able to know the different aspect of calculus as per given content.

Subject II
Minor
Semester I
Biomolecules

Course Objective

- Exposure with the nature of various biomolecules present in living cells.
- Get exposed to key contributions of scientists such as Hans Kreb, G. N. Ramachandran, Melvin Calvin, Louis Pasteur, HarGobind Khorana, Watson and Crick and Venky Ramakrishnan, etc.in order to create scientific interest amongst students in life processes.
- To understand the properties of carbohydrates, proteins, lipids, cholesterol, DNA, RNA, glycoproteins and glycolipids and their importance in biological systems.
- To understand the process of fermentation and manufacture of Biodiesel.
- To develop skills to determine amino acid and nucleotide sequences of proteins and DNA respectively.

Unit-I: Carbohydrates

Definition, empirical formulae, classification, biological importance. Monosaccharide: Configuration relationship of D-aldoses, D-ketoses. General properties of aldoses and ketoses. Oxidation, reduction, reducing property, formation of glycosides, acylation, methylation, phenyl hydrazine reaction. Inter-conversion of aldoses and ketoses. Isomerism in monosaccharides, (+) and (-), D and L, epimers, anomers, and stereoisomers. Structure and biological importance of amino sugars, deoxy sugars, sugar acids, neuraminic and muramic acid.

Disaccharides: Establishment of structures of sucrose and lactose, biological importance and structure of isomaltose, trehalose and maltose.

Polysaccharides: Partial structure, occurrence and importance of starch, glycogen, inulin, cellulose, chitin, and pectin.

Glycosaminoglycans: Occurrence, importance and the structure, Bacterial cell wall polysaccharide, peptidoglycans.

Unit-II: Amino acids

Structure and classification of amino acids based on polarity. Reactions of the amino groups due to amino and carboxylic group, Zwitterionic properties. Peptides: Peptide bond, biologically active peptides.

Proteins: Classification of proteins based on solubility, structure and functions with examples. Primary Structure of proteins, methods of determining N- and C- terminal aminoacids, amino acid composition. Sequencing by Edman's degradation method. Secondary Structure-α Helix. β-sheet, β-bend. Tertiary of myoglobin and quaternary structure of hemoglobin, denaturation and renaturation of proteins.

Unit-III: Lipids:
Classification and biological role. Fatty acids- Nomenclature of saturated and unsaturated fatty acids. Physiological properties of fatty acids.
Acylglycerols: Mono, di and triglycerols. Saponification, saponification value, iodine value, acid value and significance.
Phosphoglycerides: Structure of lecithin, cephalins, phosphotidylinosital, plasmalogens, and cardiolipin. Biological role of phosphoglycerides.
Sphingolipids: Structure and importance of sphingomyelin. Glycosphingolipids: Structure and importance of gangliosides and cerebrosides.

Unit-IV: Nucleic acids:
DNA: Composition of DNA. Nucleosides and nucleotides. Chargaff's rule. Watson and Crick model of DNA. Types of DNA.
RNA: Composition, types (mRNA, tRNA and rRNA), secondary structures of tRNA-clover leaf model. Chemical reactions of RNA and DNA with acid and alkali, colour reactions of DNA and RNA.

Unit-V: Vitamins
Introduction and biological significance of vitamins, Water soluble vitamins, their occurrence, functions, structure, diseases, Fat soluble vitamins, their occurrence, functions, structure, diseases.

Recommended Books/References:

1. A.L., Lehninger, principles of biochemistry (1982), Worth Publishers, Inc. New York.
2. E.E. Conn and P.K. Stumpf. Outlines of Biochemistry (1976) Wiley Eastern, New Delhi.
3. Biochemistry by L. Stryer (1995) W.H. Freeman Press, San Francisco, USA.
4. Biochemistry, by Voet, D. and Voet, J.G. (2004). 3rd Edition, John Wiley & Sons, Inc. USA.

Course outcomes:

- Students will be exposed to the history of Biochemistry and key contributions of scientists such as Hans Kreb, G. N. Ramachandran, Melvin Calvin, Louis Pasteur, Hargobind Khorana, Watson and Crick and Venky Ramakrishnan.
- They will study the properties of carbohydrates, proteins, lipids, cholesterol, DNA, RNA, glycoproteins and glycolysis and their importance in biological systems.
- They will understand the process of fermentation and manufacture of Biodiesel.
- They will understand the methods of determination of amino acid and nucleotide sequence of proteins and DNA respectively.

Semester - I
Subject I
Biomolecules
Practical

Course Objective

- Exposure to basic reactions of biomolecules.
- Determine presence of biomolecules like carbohydrates, proteins, lipids, etc. in known and unknown samples.
- Determine the extent of adulteration in samples containing biomolecules.

Practical content:

1. Qualitative analysis of biomolecules
2. Carbohydrates-Molisch, Benedict's, Fehling's, picric acid, Barfoed's, Bial's, Seliwanoff's, osazone tests.
3. Glucose, fructose, lactose, maltose and sucrose.
4. Proteins- Precipitation reactions of proteins, colour reactions of proteins, colour reactions of amino acids like tryptophan, tyrosine, cysteine, methionine, arginine, proline and histidine.
5. Colour reactions of proteins- Biuret, xanthoproteic, Millon's.
6. Lipids-solubility, acrolein test, Salkowski test, Lieberman-Burchard test.
7. Qualitative tests for nucleic acid.

Course outcomes:

- The student will gain awareness about basic reactions of biomolecules and their utility in identification of adulterants.
- The student will known Glucose, fructose, lactose, maltose and sucrose.

Student will gain the skill of qualitative tests for nucleic acid and other biomolecules

Subject III
GEC
Semester – I
Mathematical Methods in Chemistry

COURSE OBJECTIVES

The objective of the course is to know the basics of the mathematics which are generally applied in chemistry viz., vectors and matrix algebra, differential and integral calculus, permutation and probability

Unit-I: Fundamentals of mathematics

Mathematical functions, polynomial expressions, logarithms, exponential function, units of a measurement, inter-conversion of units, constants and variables, equation of a straight line, plotting graphs, data representation, pi-charts, histogram. Uncertainty in experimental techniques: Displaying uncertainties and measurements in chemistry, decimal places, significant figures, combining quantities.

Unit-II: Uncertainties in measurement

types of uncertainties, combining uncertainties. Use of statistical tools, Data reduction and the propagation of errors, binomial, Poisson and Gaussian distributions, Graphical and numerical data reduction. Numerical curve fitting: the method of least squares (regression). Algebraic operations on real scalar variables, Roots of quadratic equations analytically and iteratively, Numerical methods of finding roots (Newton-Raphson, binary –bisection).

Unit-III: Mathematical series

Power series, Maclaurin, Taylor series, convergence (e.g. pressure virial equation of state, colligative properties). Pythagoras theorem in three dimensions. Trigonometric functions, identities.

Unit-IV: Differential calculus

The tangent line and the derivative of a function, numerical differentiation, differentials of higher order derivatives, discontinuities, stationary points, maximum-minimum problems, inflexion points, limiting values of functions: L'Hopital's rule, combining limits. Calculus of several variables*:* Functions, change of variables, total differential, chain rule, partial differentiation, Euler's theorem, exact and inexact differentials (applications tin the domains of thermodynamics, surface chemistry), line/surface-integrals.

Unit-V: Integral calculus

Integration, odd-even functions, indefinite integrals, standard integrals, methods of integration (by parts, substitution, partial fractions and others. Examples from kinetics, thermodynamics, nuclear chemistry and surface chemistry, numerical integration (Trapezoidal and Simpson rules,

e.g. entropy/enthalpy change from heat capacity data), probability distributions and mean values. Tri-gonometric functions (applications in chemistry need to be emphasized throughout)

Recommended Books/References:

1. Chemical Maths Book, E. Steriner, Oxford University Press (1996).
2. Maths for Chemists, Vols 1 and 2 M. C. R. Cockett and G. Dogget, Royal Society of Chemistry, Cambridge (2003).

COURSE OUTCOMES

Basic mathematics is the back bone of modern chemistry. Students from biology background are also taking admission in the Program. Hence, the course is useful in understanding topics where mathematics is involved.

Subject I
Major
Semester II
(Core)
Organic Chemistry-I

COURSE OBJECTIVES

On completion of this course, the students will be able to understand:

- Basics of organic chemistry.
- Stereochemistry of organic molecules – conformation and configuration, asymmetric molecules and nomenclature.
- Understanding hybridization and geometry of atoms, 3-D structure of organic molecules, identifying chiral centers.
- Reactivity, stability of organic molecules, structure, stereochemistry.
- Aromatic compounds and aromaticity, mechanism of aromatic reactions, carbon-carbon sigma and pi-bonds.
- Mechanism of organic reactions (effect of nucleophile/leaving group, solvent), substitution *vs*. elimination.

Unit-I: Basics of Organic Chemistry

Organic Compounds: Classification, and Nomenclature, Hybridization, Shapes of molecules, Influence of hybridization on bond properties. Electronic Displacements: Inductive, electromeric, resonance and mesomeric effects, hyperconjugation and their applications; Dipole moment; Organic acids and bases; their relative strength. Homolytic and Heterolytic fission with suitable examples. Curly arrow rules, formal charges; Electrophiles and Nucleophiles; Nucleophlicity and basicity; Types, shape and relative stabilities of reaction intermediates (Carbocations, Carbanions, Free radicals and Carbenes).

Organic reactions and their mechanism: Addition, Elimination and Substitution reactions.

Unit-II: Stereochemistry

Concept of asymmetry, Fischer Projection, Newmann and Sawhorse projection formulae and their interconversions; Geometrical isomerism: cis–trans and, syn-anti isomerism E/Z notations with C.I.P rules. Optical Isomerism: Optical Activity, Specific Rotation, Chirality/Asymmetry, Enantiomers, Molecules with two or more chiral-centres, Distereoisomers, meso structures, Racemic mixtures, Relative and absolute configuration: D/L and R/S designations.

Unit-III: Carbon-Carbon sigma bonds

Chemistry of alkanes: Formation of alkanes, Wurtz Reaction, Wurtz- Fittig Reactions, Free radical substitutions: Halogenation - relative reactivity and selectivity.

Unit-IV: Carbon-Carbon pi-bonds

Formation of alkenes and alkynes by elimination reactions, Mechanism of E1, E2, E1cb reactions. Saytzeff and Hofmann eliminations. Reactions of alkenes: Electrophilic additions their mechanisms (Markownikoff/ Anti Markownikoff addition), mechanism of oxymercuration-demercuration, hydroboration- oxidation, ozonolysis, reduction (catalytic and chemical), syn and anti-hydroxylation (oxidation). 1, 2- and 1, 4- addition reactions in conjugated dienes and, Diels-Alder reaction; Allylic and benzylic bromination and mechanism, e.g. propene, 1-butene, toluene, ethyl benzene. Reactions of alkynes: Acidity, Electrophilic and Nucleophilic additions.

Unit-V (Cycloalkanes and Conformational Analysis)

Cycloalkanes and stability, Baeyer strain theory, Conformation analysis, Energy diagrams of cyclohexane: Chair, Boat and Twist boat forms.

Aromatic Hydrocarbons: Aromaticity: Huckel's rule, aromatic character of arenes, cyclic carbocations/carbanions and heterocyclic compounds with suitable examples. Electrophilic aromatic substitution: halogenation, nitration, sulphonation and Friedel-Craft's alkylation/acylation with their mechanism. Directing effects of substituent groups.

Recommended Books/References:

1. Morrison, R. N. & Boyd, R. N. *Organic Chemistry*, 6th Edn., Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
2. Pine S. H. Organic Chemistry, Fifth Edition, McGraw Hill, (2007)
3. F. A. Carey, Organic Chemistry, Seventh Edition, Tata McGraw Hill (2008).
4. J. Clayden, N. Greeves, S. Warren, Organic Chemistry, 2nd Ed., (2012), Oxford Universitiy Press.
5. F. A. Carey, R. J. Sundberg, Advanced Organic Chemistry, Part A: Structure and mechanism, Kluwer Academic Publisher, (2000).

COURSE OUTCOMES

The students will be able to

- Acquire the skills for correct stereo-chemical assignment and interpretation in rather simple organic molecules.
- Understanding of Organic reaction, rearrangement and cross-coupling reaction with their mechanism and application.

Semester II
Practical
Organic Chemistry Practical

COURSE OBJECTIVES

To introduce organic synthesis, purification and identification of organic compounds using physiochemical techniques.

1. Checking the calibration of the thermometer.
2. Purification of organic compounds by crystallization using the following solvents:
    a. Water
    b. Alcohol
    c. Alcohol-Water
3. Determination of the melting points of given organic compounds and unknown organic compounds (using Kjeldahl method and electrically heated melting point apparatus).
4. Effect of impurities on the melting point – mixed melting point of two unknown organic compounds.
5. Determination of boiling point of liquid compounds. (boiling point lower than and more than 100 °C by distillation and capillary method)
6. Separation of a mixture of two amino acids by ascending and horizontal paper chromatography

Recommended Books/Reference:

1. F. G. Mann, B. C. Saunders, *Practical Organic Chemistry,* Pearson Education (2009)
2. B. S. Furniss, A. J. Hannaford, P. W. G. Smith, A. R. Tatchell, *Practical Organic Chemistry, 5th Ed.,* Pearson (2012)

COURSE OUTCOMES

- Ensures the students to understand acquire knowledge and analysis by using physiochemical techniques.
- Purification of organic compounds.
- Separation of a mixture of two amino acids using paper-chromatograhy.

Subject II
Minor
Semester – II
Algebra and Geometry

Course Learning Outcomes
This course will enable the students to:

- Understand the importance of roots of real and complex polynomials and learn various methods of obtaining roots.
- Familiarize with relations, equivalence relations and partitions.
- Employ De Moivre's theorem in a number of applications to solve numerical problems.
- Recognize consistent and inconsistent systems of linear equations by the row echelon form of the augmented matrix, using rank.
- Find eigenvalues and corresponding eigenvectors for a square matrix.
- Explain the properties of three dimensional shapes.

Unit-I: Theory of Equations and Complex Numbers
Elementary theorems on the roots of an equations including Cardan's method, The remainder and factor theorems, Synthetic division, Factored form of a polynomial, The Fundamental theorem of algebra, Relations between the roots and the coefficients of polynomial equations, Imaginary roots, Integral and rational roots; Polar representation of complex numbers, The *n*th roots of unity, De Moivre's theorem for integer and rational indices and its applications.

Unit-II: Relations and Basic Number Theory
Relations, Equivalence relations, Equivalence classes; Functions, Composition of functions, Inverse of a function; Finite, countable and uncountable sets; The division algorithm, Divisibility and the Euclidean algorithm, The fundamental theorem of arithmetic, Modular arithmetic and basic properties of congruences; Principles of mathematical induction and well ordering.

Unit-III: Row Echelon Form of Matrices and Applications
Systems of linear equations, Row reduction and echelon forms, Linear independence, The rank of a matrix and applications; Introduction to linear transformations, The matrix of a linear transformation, Matrix operations, Determinants, The inverse of a matrix, Characterizations of invertible matrices; Applications to Computer Graphics; Eigenvalues and eigenvectors, The characteristic equation and the Cayley Hamilton theorem.

Unit-IV: Planes, Straight Lines and Spheres
Planes: Distance of a point from a plane, Angle between two planes, pair of planes, Bisectors of angles between two planes; Straight lines: Equations of straight lines, Distance of a point from a straight line, Distance between two straight lines, Distance between a straight line and a plane; Spheres: Different forms, Intersection of two spheres, Orthogonal intersection, Tangents and normal, Radical plane, Radical line, Coaxial system of spheres, Pole, Polar and Conjugacy.

Unit-V: Locus, Surfaces, Curves and Conicoids

Space curves, Algebraic curves, Ruled surfaces, Some standard surfaces, Classification of quadric surfaces, Cone, Cylinder, Central conicoids, Tangent plane, Normal, Polar planes, and Polar lines.

References

1. Titu Andreescu, & Dorin Andrica (2014). *Complex Numbers from A to...Z*. (2nd edition). Birkhäuser.
2. Robert J. T. Bell (1994). *An Elementary Treatise on Coordinate Geometry of Three Dimensions*. Macmillan India Ltd.
3. D. Chatterjee (2009). *Analytical Geometry: Two and Three Dimensions*. Narosa Publishing House.
4. Leonard Eugene Dickson (2009). *First Course in the Theory of Equations*. The Project Gutenberg EBook (http://www.gutenberg.org/ebooks/29785)
5. Edgar G. Goodaire & Michael M. Parmenter (2015). *Discrete Mathematics with Graph Theory* (3rd edition). Pearson Education Pvt. Ltd. India.
6. Bernard Kolman & David R. Hill (2003). *Introductory Linear Algebra with Applications* (7th edition). Pearson Education Pvt. Ltd. India.
7. David C. Lay, Steven R. Lay & Judi J. McDonald (2016). *Linear Algebra and its Applications* (5th edition). Pearson Education Pvt. Ltd. India.

COURSE OUTCOMES

The students will be able to

- Know the complex members to understanding the basic number theory.
- To get knowledge about matrices, planes, straight line etc.
- To understand locus, surfaces, curves and conicoids.

Subject II
Minor
Semester – II
Cell Biology

Course Objective

- Students will learn about cell theory and techniques for fractionation of sub-cellular organelles.
- They will be acquainted to various microscopic techniques to visualize subcellular organelles.
- Students will have an understanding of the composition of cytoskeleton and extracellular matrix.
- Students will acquire knowledge of cell cycle, cell division and cell death mechanisms.

Course Content:

Unit-I: Introduction of Cell
Origin of life, Cell theory, Structure of prokaryotic and eukaryotic cell. Differences in Animal and Plant cell. Mycoplasma, viruses, viroids, prions.

Unit-II: Structure and function of subcellular organelles
Composition ofbiological membranes. Nucleus: Structure of nuclear envelope, nuclear pore complex nucleolus and chromatin. Endoplasmic Reticulum: RER - Brief overview of co-translational and post-translational transport of proteins; SER – Lipid synthesis, brief overview of export of proteins from ER; Golgi apparatus: organization, brief overview of glycosylation of proteins within Golgi, lipid and polysaccharide metabolism in Golgi apparatus.

Unit-III: Cell Fractionation techniques
Centrifugation, Sedimentation Coefficient, Differential and Density Gradient (isopycnic and rate zonal) centrifugation. Cell Visualization techniques: Principle of Light microscope, Phase Contrast microscope, Fluorescence microscope, Confocal microscope and Electron microscope; Staining techniques for microscopy studies. Principles of identification of sub cellular organelles.

Unit-IV: Lysosomes
Different forms of lysosomes, role in cellular digestion, lysosomal storage diseases.
Peroxisomes: assembly, functions, glyoxysomes.
Mitochondria: structure, endosymbiont theory, genome,
Chloroplast: Structure, function, organization

Cell Wall: Structure of prokaryotic and eukaryotic cell wall; ECM components– proteins, polysaccharides and adhesion proteins; concept of anchoring junctions, tight junctions and communication junctions (gap junctions and plasmodesmata).

Cytoskeleton. Microtubules: Axonemal and cytoplasmic microtubules (cilia, flagella, centrioles, basal bodies). Microfilaments: Actin and Myosin Filaments. Role of cytoskeletal elements in the entry of infectious agents

Unit-V: Cell Cycle and Cell Division
(mitosis and meiosis); Apoptosis and necrosis; Types and potency of Stem Cells, Cancer-types, salient features of a transformed cell, causes of cancer. Apoptotic death in relation to cell cycle.

Recommended Books/References:

1. The Cell: A Molecular Approach (2013) 6th ed., Cooper, G.M. and Hausman, R.E., ASM Press & Sunderland (Washington DC), Sinauer Associates, MA, ISBN:978-0- 87893-300- 6.
2. Cell and Molecular Biology: Concepts and Experiments. (2010). Karp, G., 6th ed. John Wiley and Sons. Inc. ISBN: 978-1-118-65322-7
3. Principles and Techniques of Biochemistry and Molecular Biology: - Ed. K. Wilson and J. Walker, Cambridge University Press.
4. Physical Biochemistry- Application to Biochemistry and Molecular Biology: Friefelder D. WH Freeman and Company.
5. Lehninger: Principles of Biochemistry (2017) 7th ed., Nelson, D.L. and Cox, M.M.
6. W.H. Freeman & Company (New York), ISBN:13: 9781464126116 / ISBN:10- 1464126119.
7. Molecular Biology of the Gene (2008) 6th ed., Watson, J.D., Baker, T.A., Bell, S.P., Gann, A., Levine, M. and Losick, R., Cold Spring Harbor Laboratory Press, Cold Spring Harbor (New York), ISBN:0-321-50781 / ISBN: 978-0-321-50781-5.

Course Outcomes

- This course will provide an understanding of the structure of cell and function of various sub cellular organelles.
- Students will learn about cell theory, basic cell structure, cell fractionation and cell visualization techniques. Besides, students will have an understanding of the composition of cytoskeleton and extracellular matrix.
- Students will acquire knowledge of cell cycle, cell division and cell death mechanisms.

Semester-II
Practical
Cell Biology

Course objectives

- Students will learn the handling of microscope.
- Obtain hands-on training in basic separation techniques in biochemistry
- Gain expertise in the isolation of various cell organelles and staining of cellular biomolecules.

Course Content:

1. To study different parts of microscope
2. Cytochemical staining of proteins by Methylene blue
3. Cytochemical staining of polysaccharides by PAS
4. Cytochemical staining of RNA by Methyl Green
5. Study of stages of Mitosis
6. Study of stages of Meiosis
7. To study cell organelles
8. To study the effect of isotonic, hypotonic and hypertonic solutions on cells

Course outcomes:

- Students will learn the handling of microscope.
- They will gain knowledge about the structure and function of various cell organelles.
- The students will obtain hands-on training in basic separation techniques in biochemistry and gain expertise in the isolation of various cell organelles and staining of cellular biomolecules.

Subject III
GEC
Semester – II
Life Science/Biology-I

COURSE OBJECTIVES

The Chemistry involved in biological processes is need of the time. Therefore, the main objective of the course is to know the basics of the biology which are generally applied in chemistry. The students will be able to understand the biological process through the course.

Unit-I: Cell and Cellular Processes

The Cell Theory; Prokaryotic and eukaryotic cells; Cell size and shape; Eukaryotic Cell components

Unit-II: Cell Organelles

Mitochondria: Structure, marker enzymes, composition; mitochondrial biogenesis; Semiautonomous organelle; Symbiont hypothesis; Proteins synthesized within mitochondria; mitochondrial DNA

Chloroplast: Structure, marker enzymes, composition; semiautonomous nature, chloroplast DNA

ER, Golgi body & Lysosomes: Structures and roles. Signal peptide hypothesis, N-linked glycosylation, Role of golgi in O-linked glycosylation. Cell secretion, Lysosome formation.

Peroxisomes and Glyoxisomes: Structures, composition, functions in animals and plants and biogenesis.

Unit-III: Nucleus

Nuclear Envelope- structure of nuclear pore complex; chromatin; molecular organization, DNA packaging in eukaryotes, euchromatin and heterochromatin, nucleolus and ribosome The functions of membranes; Models of membrane structure; The fluidity of membranes; Membrane proteins and their functions; Carbohydrates in the membrane; Faces of the membranes; Selective permeability of the membranes; Cell wall

Unit-IV: Cell Cycle

Role of Cell division; Overview of Cell cycle; Molecular controls; Meiosis Interphase, Mitosis and Meiosis.

Unit-V: Instrumentation techniques

Principles of microscopy; Light Microscope; Phase contrast microscopy; Fluorescence microscopy; Confocal microscopy; Sample Preparation for light microscopy; Introduction to Electron microscopy (EM)- Scanning EM and sample analysis with examples.

Recommended books/References

1. Campbell, N.A. and Reece, J. B. Biology (Eighth edition) Pearson Benjamin Cummings, San Francisco, (2008).
2. Raven, P.H *et al* Biology, Seventh edition Tata McGraw Hill, New Delhi (2006).
3. Sheeler, P and Bianchi, D.E. Cell and Molecular Biology (Third edition) John Wiley (2006)

COURSE OUTCOMES

Basic knowledge of biology is also involved in chemistry related to real life problems which chemistry students must know. The students coming from Mathematics background are made aware o the basic knowledge required. Hence, the course is useful in understanding topics covered in this course.

Semester – II
Practical for Biology

1. Study of prokaryotic cells (bacteria), viruses, eukaryotic cells using microscope.
2. Study of the photomicrographs of cell organelles
3. To study the structure of plant cell through temporary mounts.
4. To study the structure of animal cells by temporary mounts-squamous epithelial cell and nerve cell.
5. Preparation of temporary mounts of striated muscle fiber
6. To prepare temporary stained preparation of mitochondria from striated muscle cells/ cheek epithelial cells using vital stain Janus green.
7. To prepare temporary stained squash from root tips of *Allium cepa* and to study the various stages of mitosis.
8. Study the effect of temperature, organic solvent on semi permeable membrane.
9. Demonstration of dialysis of starch and simple sugar.
10. Study of plasmolysis and deplasmolysis on *Rhoeo* leaf.
11. Measure the cell size (either length or breadth/diameter) by micrometry.
12. Study the structure of nuclear pore complex by photograph (from Gerald Karp)

COURSE OUTCOMES
The students will be able to

- Estimate the qualitative physiological functional measurement according to their structure.
- Separate and isolated by the fraction preparation of cellular components from any cellular /organ based samples.
- Student know the knowledge and handling with standard protocols and modern instrumentation related to cell and organelles etc.

Note

The course content of Ability Enhancement Courses (AEC) will be provided by the respective subject faculties

AWADHESH PRATAP SINGH UNIVERSITY, REWA

Structure of Syllabus for Ph.D. Course Work (Chemistry) 2018-19 Onwards
(As per Ordinance No. 11 Doctor of Philosophy)

Paper Code	Name of Theory Papers	Credits	Maximum Marks (Theory+ Internal Assessment)	Minimum Passing Marks
Ph.D. 101	RESEARCH METHODOLOGY	4	100 (80+20)	55
Ph.D. 102	REVIEW OF PUBLISHED RESEARCH IN THE RELEVANT FIELD	3	100	55
Ph.D. 103	COMPUTER APPLICATIONS	3	100 (80+20)	55
Ph.D. 104	SPECIALIZATION SUBJECTS Techniques and Theoretical approach	3	100 (80+20)	55
Ph.D. 105	COMPREHENSIVE VIVA-VOCE	3	100	55
TOTAL		16 Credits		

Ph. D. (Chemistry)

Paper- Ph.D. 101 Research Methodology

Time: 03 Hours

Theory Paper : Max. Marks-80
Internal Assessment : Max. Marks-20
Minimum Pass Marks-55

The paper setter is required to set in all **Eight questions**, out of which only **four** questions are to be attempted by the students. All questions will be of equal marks. Two questions are to be set from each unit. The students are required to attempt at least one question from each unit.

Unit-I: Introduction

A. Basic steps for doing research

Literature survey, Investigation, Analysis of data, Preparation of manuscript, Publication of research work, Example of a research paper

B. Error Analysis

Random and systematic errors, Significant figures, Approximate numbers, Rounding off numbers, Presentation of errors, Index of accuracy, Error formulas

Unit-II: Arrangement of Data

Sampling, Arrangement of data, Arithmetic mean, Median, Variance, Standard deviation, Probability distribution, Correlation, Regression

Unit-III: Chi-square Tests and Analysis of Variance

Chi-square distribution, Chi-square test for comparing variance, Chi-square test ANOVA technique, One-way ANOVA technique, Two-way ANOVA technique, ANOVA in a Latin square design

***Unit-IV:* Separation Techniques**

Introduction, Oxidation-Reduction Processes, Complexation, Solvent Extraction, Volatilization and Distillation, Electrodeposition, Chromatography, Precipitation and Coprecipitation

Books:

1. Research Methodology, S. Chandra and M. K. Sharma, Narosa Publishing House.
2. Computers and Common Sence, R. Hunt and J. Shelley, Prentice Hall.

Ph. D. (Chemistry)

Paper- Ph.D. 103 Computer Applications

Time: 03 Hours

Theory Paper : Max. Marks 80
Internal Assessment : Max. Marks 20
Minimum Pass Marks 35

The paper setter is required to set in all Eight questions, out of which only four questions are to be attempted by the students. All questions will be of equal marks. Two questions are to be set from each unit. The students are required to attempt at least one question from each unit.

Unit-I: Networking and search Internet

Historical background, Need & Advantage of computer network, anatomy of computers and their classification, Type of computer network, LAN, MAN, WAN Basic HW & SW requirement for networking. Preliminary introduce of modem, can card, various communication media, HUB, Swilches rooters and gateway, Wirgless network. The internet its application, WWW creation of web sites, searching and auessing information from web, using ftp & telnet.

Unit-II: Computers applications in Inorganic Chemistry

Shapes of ions and molecules using VSEPR theory
Doppler shift and recoil velocity from Mossbauer data
Concentration of complexes using Beer's Lamberts law
Bonding energy of a nucleus
d-orbital splitting in octahedral field
Solubility of sparingly soluble salt

Unit-III: Computers applications in Organic Chemistry

Synthesis of Organic compounds
Dipole moments of disubstituted benzene
Resonance energy for organic conjugated systems (Heat of combustion)
Isoelectric point of amino acids
13C chemical shift in organic compounds
Woodword Hoffman rules in pericyclic reaction

Unit-IV: Computers applications in Physical Chemistry

Determination of constants, a, b, g and axial ratio a': b': c'for crystals
Delocalization energy for butadiene using Group theory
Symmetry numbers for molecules using data on symmetry operations
Character table for C3v point group
Wave numbers of stokes and anti-stokes lines
Parameters from NMR and ESR data

Books:

3. Computers in Chemistry, K V Raman; Tata McGraw-Hill Publishing.
4. Computers and Common Sence, R. Hunt and J. Shelley, Prentice Hall.
5. Computational Chemistry, A. C. Norris.
6. Internet Technology, V. K. Jain, DOEACC.
7. Computer Programming in FORTRAN IV, V. Rajaram, Prentice Hall.

Ph. D. (Chemistry)

Paper- Ph.D. 104 Specialization : Techniques and Theoretical approach

Time: 03 Hours

Theory Paper : Max. Marks-80
Internal Assessment : Max. Marks-20
Minimum Pass Marks-55

The paper setter is required to set in all **Eight questions**, out of which only **four** questions are to be attempted by the students. All questions will be of equal marks. Two questions are to be set from each unit. The students are required to attempt at least one question from each unit.

Unit-I: Voltammetry and Polarography

Fundamental of Voltammetry, Conventional or d.c. voltammetry, Conventional or d.c. polarography, Theoretical principal, Complex ion, Quantitative techniques, The effect of oxygen, Simple polarography and classical d. c. polarography, The three electrode polarograph: potentistatic control, Modified voltametry. Principal and instrumentation, Brief description of polarographic measurement, Current voltage relationship, Polarograms interpretation of polarographic waves. Equation for the polarographic waves, Half wave potential and its importance, The kinetic and catalytic currents, Polarographic cell, the dropping mercury electrode, Advantages of DME, Limitations of DME, The capillary and its care, Condition for performing polarograhpic determinations, Advantages of polarography, Application of polarography, Quantitative analysis, Qualitative analysis, Inorganic polarographic analysis, Organic polarographic analysis, Stationary electride (slow linear scan) polarography, Cathode ray (rapid leaner scan) polarography. Anodic stripping (inverse polarography), Alternating current polarography, Chronopotentiometry, Instrumentation and procedure, Application.

Unit-II: Molecular structure determination using NMR, ESR and NQR.

NMR- Introduction, Theory, The chemical shift, Coupling of magnetic nuclei, Instrumentation, Sample preparation, Experimental determination (Ethanol content of an alcoholic liquor & Ethanol content of a beer by standard addition). ESR- The technique, epr parameters, epr spectral analysis of some organic and inorganic compounds especially transition metal complexes. The g-value, Hyperfine structure. NQR- Theory, Principle, Instrumentation and application.

Unit-III: Molecular structure determination

A. **Using diffraction techniques (X-ray, neutron & electron)**
Introduction, Particles and waves Crystal lattice (Crystal morphology, Lattice and unit cells), X-ray diffraction (The powder method, Symmetric absence, Fourier synthesis) Information from X-ray analysis, Neutron diffraction & electron diffraction- Basic principle, Instrumentation and application in chemistry

B. **Using Photoelectron spectroscopy**
The techniques, UPS, XPS and Basic principal and instrumentation of ESCA(electron spectroscopy for chemical analysis) & analysis of different photoelectron spectra (HBr, NaN_3 & Moon dust).

Unit-IV: Topological parameters

Topology

What are topological parameters?, Distance matrices of chain and classic graphs, Calculation of Wiener index , S_z index, Path number, PI index, Balaban index, in case of benzene, quinolline, acridine , pyridine and their derivates

QSAR

AWADHESH PRATAP SINGH UNIVERSITY
REWA (M.P.) 486003

CBCS

CURRICULAM & SYLLABUS

POST GRADUCATE DIPLOMA IN COMPUTER SCIENCE & APPLICATION (PGDCA)

(ONE YEAR TWO SEMESTERS)

(UGC Approved)

Course Code: 05

www.apsurewa.ac.in

Approved by Board of studies dated 21-09-2020

A.P.S. UNIVERSITY, REWA (MP)
POST GRADUCATE DIPLOMA IN COMPUTER SCIENCE & APPLICATION (PGDCA)
SCHEME OF EXAMINATION (w.e.f. session 2020-21)

PGDCA Semester -I

Paper Code	Course Code	Paper Name	Course Type	Credits	Theory Paper	Internal Assessment	Maximum Marks
1051	PGDCA -101	Computer Fundamentals	CC	04	60	40	100
10521 10522	PGDCA -102	**Elective I:: (Any one of the following considering departmental constraints)** (A) Programming in C (B) Multimedia Application	DCE	04	60	40	100
10531 10532	PGDCA -103	**Elective II:: (Any one of the following considering departmental constraints)** (A) Analysis and Design of Information System (B) E-Commerce and E-Governance	DCE	04	60	40	100
1054	PGDCA -104	Office Automation S/W Tools*	GE	04	60	40	100
1055	PGDCA-105	Software Lab I (Problem based on Paper 102)	Lab	02	60	40	100
1056	PGDCA-106	Software Lab II (Problem based on Paper 101 & 104)	Lab	02	60	40	100
1057	PGDCA-107	Comprehensive Viva/ Project	Viva	04			100
		Semester Total		**24**			**700**

PGDCA Semester – II

Paper Code	Course Code	Paper Name	Course Type	Credits	Theory Paper	Internal Assessment	Maximum Marks
20511 20512	PGDCA-201	**Elective III:: (Any one of the following considering departmental constraints)** (A) JAVA Programming (B) Web Technology	DEC	04	60	40	100
20521 20522	PGDCA-202	**Elective IV:: (Any one of the following considering departmental constraints)** (A) Computer Networks (B) Big Data Analysis	DCE	04	60	40	100
2053	PGDCA-203	DBMS*	GE	04	60	40	100
2054	PGDCA-204	Software Lab I (Problem based on 201)	Lab	02	60	40	100
2055	PGDCA-205	Software Lab II (Problem based on 203)	Lab	02	60	40	100
2056	PGDCA-206	Application Project	Project	04			100
2057	PGDCA-207	Comprehensive Viva	Viva	04			100
		Semester Total		**24**			**700**

CC: Core Course GE: Generic Elective DCE: Discipline Centric Elective

* Student may choose this course as a Generic Elective or may choose a Generic Elective Course Offered in other UTDs at the same level or may choose a course offered by MOOCs through SWAYAM

Approved by Board of studies dated 21-09-2020

OBJECTIVES:

Post Graduate Diploma in Computer Applications (PGDCA) is designed for graduate students who are seeking professional knowledge in computer applications and are keen to equip the students with requisite knowledge, skills and right attitude necessary for becoming efficient Computer / IT Professionals. This course is useful for students who want to learn computer applications in different fields like banking, insurance, government sectors and accounting. This programme covers a blend of computer subjects like programming languages, data base management, systems analysis, Operating system, PC packages and computer software development in specific applications.

The main objectives of the programme are:

- To gain practical, hands-on experience in computer applications and tools playing a significant role in business, banking and government sectors.
- Tomakesustainedeffortsforholisticdevelopmentofthestudentsandempower them to analyze, develop, configure IT solutions keeping in view the challenges posed by changing IT requirements.
- To develop competent computer management professionals with strong ethical values

ELIGIBILITY:

Every candidate seeking admission to the program shall have Bachelors Degree or a Post-Graduate Degree with at least 45% marks from any statutory University.

OR

Candidates who do not posses requisite eligibility at the time of application but plan to appear in the final year of a degree examination may also apply. However, such candidates can be provisionally considered only upto a specified date notified by the University.

Age Limit: No Upper Age Limit. As per State Government norms.

Admission Procedure:

The admissions will be done as per merit in the entrance test conducted by the university

Seats: 60 (reservation as per state Govt. rules).

About the Department of Computer Science & Applications:

The Department of Computer Science and Applications was established in the year 1990 with the aim of developing professionals in main stream of Computer Science and Applications. The Department offers PhD and Postgraduate degree courses through UTD. The Department studies market trends and new developments in the area, conducts massive brainstorming with leading academia and industry professionals to develop the curricula.

The Department is committed to provide excellence in teaching. It has a rich knowledge

pool of well-trained faculty and a modern computer lab enabled to impart all required knowledge, along with its own library with latest books on various advanced areas in computers. Regular hands-on workshops are conducted to update students with the latest technology.

Between 2005 to 2010 Department had also run M.Sc. Bioinformatics/ APGDBI Course with partial financial support from UGC Innovative Program & DBT BIF scheme, which in subsequent years were suspended due to financial crunch/ decline in no. of students.

Many of the alumni are working in top companies including IBM, MicroSoft, American Express Bank, Wipro, Infosys, Samsung, Microsoft, WorldPay, CISCO, HCL, Jindal, Web Dunia and more in India as well as abroad, apart from few also being entrepreneurs and some other, in academics with prestigious institutions.

Program Objectives:

- To empower students with basic skills of various technologies.
- To develop the ability to identify, analyze, formulate and develop computerapplications.
- To enable the students to select modern computing tools and techniques and use them with dexterity.
- If you are looking for challenging roles in the IT industry, computer science research, web and mobile development, data analysis, information security etc., this programme is for you.

Career Path after Completing the Programme:

- Software Developer Programmer
- Systems Analyst
- Computer Support Engineer
- Database Administrator
- Systems Administrator
- Web Designer & Developer
- Network Administrator
- Data Entry Operator

PROGRAMME OUTCOME

PO 1- Critical Thinking: Take informed actions after identifying the assumptions that frame our thinking and actions, check out the degree to which these assumptions are accurate and valid, and look at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.

PO 2- Effective Communication: Speak, read, write and listen clearly in personand through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media and technology.

PO 3- Social Interaction: Elicit views of others, mediate disagreements and help reach conclusions in group settings.

PO 4- Effective Citizenship: Demonstrate empathetic social concern and equity-centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.

PO-5 Ethics: Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.
PO-6 Environment and Sustainability: Understand the issues of environmental contexts and sustainable development.
PO-7 Self-directed and Life-long Learning: Acquire the ability to engage in independent and life-long learning in the broadest context of socio-technological changes.

PROGRAMME SPECIFIC OUTCOME

PSO-1 Enrich the knowledge in the areas like Artificial Intelligence, Web Technology, Paradigm of Programming language, Design and Analysis of Algorithms, Database Technologies, Operating System, Software Project Management and core computing subjects. Choose to study any one subject among recent trends in IT provided in the optional subjects.

PSO-2 Research oriented study, including basic history of science, the fundamentals of scientific writing, how to give a scientific talk, how to evaluate a scientific paper, and research ethics. Aware them to publish their work in reputed journals.

PSO-3 Provide opportunities to excel in academics, research or Industry. Get industrial exposure through the 6 months Industrial Internship in IT industry. Students understand all dimensions of the concepts of software application and projects. Developed in-house applications in terms of projects. Interact with IT experts & knowledge by IT visits.

PSO-4 To make them employable according to current demand of IT Industry and responsible citizen.

SEMESTER I
PGDCA101- COMPUTER FUNDAMENTALS

Course Objectives:

- Identify all the parts and main functions of computers.
- Acquaint the students with the applications of computers and understanding latest trends in information technology.
- Learn Basics of software Systems and Linux operating systems

Course Outcomes:

- Use and identify various art (input output devices) of computer system.
- Explain functions of various parts and function of computer.
- Use Linux operating system and create files and folders.
- Explain Software Hardware Components of Computer system.

Unit-wise Syllabus :

Unit -I

Introduction to computers: Evolution, Characteristics & Capabilities: Classification: Analog, Hybrid, Digital, Micro, Mini, Main and Super, Components of Computer System, Block Diagram, Input Devices, Output Devices, CPU, Only preliminary concept of software, Hardware, Low level Language, High level Language, Compiler and Interpreter, Preliminary idea of Multimedia computers and associated basic components.

Unit-II

Number System: Introduction to decimal, binary, Octal, Hexa Decimal Number Systems and their interventions: Coding: (ASCII, EBCDIC, BCD), Introduction to Primary Memories (RAM, ROM,PROM and EPROM), Preliminary concept of Extended, Expanded and virtual Memory, Registers, Counters, Storage Devices: Hard Disks, Floppy disks (sector, cylinder, track, seek, time, latency and response time)

Unit -III

Introduction to Operating Systems: Definition, function, Evolution: (Only preliminary idea of terms: Batch processing, multiprogramming, multiprocessing, multitasking, time sharing, on-line processing, real time and some popular operating Systems for PC's):Introduction to DOS: Internal Commands, external commands (Tree, Diskcopy, Undelete, chkdsk, Fdisk, Backup, Restore, Format, Unformat, Attrib, Xcopy, Diskcomp): Concept of wild cards, batch files, config files, filtering, piping and redirection.

Unit -IV

Unix: Structure of UNIX system, Kernel, Unix file system: Concept of files and directories : File Oriented Commands like cat, cp, grep, pwd, chmod, mv, rm, pg, passwd, bc; File permissions, Directory oriented commands like ls, mkdir, inter-user communication commands like write, mail, mesg, General utilities commands like echo, cut, passwd, kill, date, we, sleep, who, ps, Introduction to vi editor.

Unit -V

Windows: Introduction, windows desktop, start button, taskbar, switching between programs and windows, managing files, folders and objects, windows explorer, creating shortcuts, control panel, windows accessories:- paintbrush, WordPad, customizing windows, sharing information among applications, network neighborhood, sharing folders and printers, Internet Explorer.

REFERENCE BOOKS:

1 Jain Satish: Introduction to Computer Science, BPB
2 Sinha, P.K.: Computer Fundamental, BPB
3 Thomas R: Dos 6 and 6.2 Instant reference, BPB
4 Koparker, P. K.: UNIX for you, TMH
5 Alan Simpson's: Easy Guide to Windows, BPB
6 Yashwant Kanetkar "Unix Shell Programming" BPB Publications

Approved by Board of studies dated 21-09-2020

PGDCA102 (A) -PROGRAMMING IN C

Course Objectives:

- To Make the Student Learna C Programming Language.
- To Learn Problem Solving Techniques using C.
- To Teach the Student to Write Programs in C and to Solve the Problems.
- To Teach the Concepts of C Programming Like Control Structures Functions Learn About Arrays Structures and Union etc.

Course Expected Outcome:

- Explain the Basic Terminology Used in Computer Programming.
- Explain the Process of Problem Solving Using C Programming Language.
- Write Compile and Debug Programs in C Language.
- Analyze and Solve Complex and Real Life Problems by Developing Application Programs using C Programming Language.

Unit-wise Syllabus :

UNIT-I

C Language Programming: Principal of good programming (flowchart, algorithm), Introduction to C language: The structure of a simple program: Simple I/O functions (Scanf, printf, gets, puts, getchar, getche, getch). Use of semicolon, braces, parentheses, Comments and newline character: Data types in C, Assignment statement, Arithmetic, Relational & Logical operators: Conditional operators, Precedence of operators.

UNIT- II

Control Structure: The if-else statements, nesting of if-else, switch statement, Loops: while and do-while, the for loop, Functions: User defined functions, Returning a value from a function, Local and Global variables, Storage classes, Parameters, Type declaration of a function, Functions with more than one parameters, Prototype of a function.

UNIT- III

Arrays: Declaration and Initialization, the break and continue statement, String and Character arrays, operations with arrays, searching in array (linear and binary), Sorting an array (Bubble, Selection and Insertion). String & String functions: sprint, strcpy, scanf, strcat, strlen, malloc, sizeof, strcmp.

UNIT- IV

Pointers: The concept of pointers, passing pointers as parameters, arrays of pointers, Pointer to pointers, Array of pointers to string, Sorting an array, using pointers, Structure: The concept of structure, Initializing, Arrays of structures, Arrays within structures, Structures within Structures. Passing structures to function, unions, basic graphics functions in Turbo C.

UNIT- V

Files: Files in C, Modes for files; Functions used in files (getc, putc, fopen, fclose, fscanf, fread, fwrite, fprintf, fseek, ftell, rewind). Text vs binary files, The C Preprocessor: Preliminaries of C Preprocessor Directives (#define, #undef, #include, #ifdef, #ifndef, #endif, #else, #if), Bitwise Operators.

Reference Books:

1. Gottfried, Programming with C. TMH
2. Rajaraman, Introduction to C, PHI
3. Kerninghan & Ritchie “The C Programming Language” PHI
4. Schildt “C: the Complete Reference” 4th Ed. TMH.
5. Kanetkar Y. “Let Us C” BPB.
6. Kanetkar Y. "Exploring in C", BPB.

Approved by Board of studies dated 21-09-2020

PGDCA102 (B) - MULTIMEDIA APPLICATION

Course Objectives:

- To Provide Students with a Basic Understanding of Multimedia Systems and its Components. This Course Focuses on Topics in Multimedia Information Representation and Multimedia Standards in the Components of Multimedia – Text, Audio, Image, Video and Animation.
- To Provide Information about the Standards Tools and Techniques Used in Development of Multimedia Components for Productions
- To Create Simple Multimedia Applications and Products for Using Standalone, Networked Or Web Based Computers.

Course Outcomes:

- Develop Understanding of Technical Aspect of Multimedia Systems.
- Understand and explain the storage mechanism and applicability of Various File Formats for Audio, Video and Text Media.
- Develop Various Multimedia Systems Applicable in Real Time.
- Create a Multimedia Component Using Various Tools and Techniques.
- Apply the Guidelines and Standards of Multimedia Systems and to Analyze the performance of Multimedia System.

Unit-wise Syllabus :

UNIT-I

Introduction to Multimedia, Needs and Areas of use, Development Platforms for Multimedia Identifying Multimedia Elements Text, Images, Sound, Animation and Video, Making Simple Multimedia with PowerPoint.

Concepts of Plain & Formatted Text, RTF& HTML Texts, Using Common Text Preparation Tools, Conversion to and from of Various Text Formats, Using Standard Software, Object Linking and Embedding Concept.

UNIT-II

Sound - Sound and its Attributes, Sound and its Effects in Multimedia, Frequency, Sound Depth, Channels and its Effects on Quality and Storage, Size Estimation of Space of a Sound File, Sound Card Standard – FM Synthesis Cards, Waves Table Cards, Midi and MP3 Files and Devices, 3D Sounds, Recording and Editing Sound Using Sound Editors Like Audacity, Sound Forge etc.

Importance of Images Graphics in Multimedia, Vector and Raster Graphics, Regular Graphics Vs. Interlaced Graphics, Image Capturing Methods - Scanner, Digital Camera etc. Color Models-RGB, CYMK, HUE, Saturation, and Brightness, Various Attributes of Images Size, Color, Depth etc, Various Image File Format BMP, DIB, CIF, PIC, and TIF Format Their Features and Limitations, Image Format Conversion, Various Effects on Images. Create Images Using Photoshop, Corel draw and Apply Various Effects, Using Layers, Channels and Masks in Images.

UNIT-III

Video- Basic of Video, Analog and Digital Video Type of Video, Digitization of Analog Video, Video Standard – NTSC, PAL, HDTV, Video Capturing Media /Instruments Videodisk Camcorder Compression Techniques, File Formats AVI, JPG, MPEG, Video Editing and Movie Making Tools, Converting Formats of Videos, Recording and Editing Videos Using Video Editing Software Like Adobe Premiere or Sony Vegas.

UNIT-IV

Animation and its Basic – Principals of Animation and its use in Multimedia, Computer System Configuration and Peripherals Requirements, Software for Animation, Effects of Resolution, Pixel Depth, Image Size, on Quality and Storage, Types of Animation and Applications.

Authoring Tools for Multimedia – Introduction to Various Types of Multimedia Authoring Tools, CD/DVD Based and Web Based Tools, Features and Limitations, Creating Multimedia Package Using All Components.

UNIT-V

Introduction to Virtual Reality and its Applications, Virtual Reality Terminology Head Mounts Display (HMD), Boom, Cave, Input Devices and Sensual Technology, Characteristic If Immersive vs. Shared, Augmented and Mixed Reality

Reference Books:

1 Ramesh Bangia-Introduction to Multimedia-Laxmi Publications Pvt. Ltd.

2 Tay Vaughan-Multimedia: Making It Work,TataMc-Graw Hill.

3 Bhatnager G. Elsevie-,Introduction to Multimedia Systems,

4 Satish Jain O Level Introduction to Multimedia (M4.2-R4), BPB Publications.

PGDCA 103(A) ANALYSIS AND DESIGN OF INFORMATION SYSTEM

Course Objectives:

- Understand System Characteristics, Components, Managing Projects, Prototyping.
- Introduce Established and Evolving Methodologies for the Analysis, Design, and Development of an Information System.
- Understand and Learn System Development Life Cycle (SDLC) Phases.
- Learn and Apply the Universal Modeling Language (UML) to Model the System.
- Learn and Inculcate the Technical and Soft Skills Required to System Analysts for Broad Understandings Policies, Culture, Operations and Business Processes of the Organization

Course Outcomes:

- Explain the Characteristics, Components, Activities of SDLC, Models of Information Systems, Types of Information Systems and Benefits of Various Information Systems
- Identify, Analyze, Review and Validate the Requirement of Information System and Also Prepare System Requirement Specification (SRS) Document.
- Design, Develop/Implement, Deploy and Evolve the Efficient, Reliable, Robust, and Cost Effective Information System.
- Apply Universal Modeling Language (UML) to Analyze and Model the Solutions of Information System Problems
- Work Effectively in Various Roles of System Analyst Such as Problem Investigator, Communicators, System Designer, Tester, Project Manager and Maintenance Engineer.

Unit-wise Syllabus:

UNIT-I

Organizational Foundation of IS: Historical Evolution of Information system. The completive Business Environment. Advantages of Using Computerized information System (IS) Six major types of Information System. The changing matter of Information Technology, Challenges of Information systems, Relationship between Organisation and Information systems. Salient Features of Organization and management. Classical Model. Behavioral Model and Decision Model. Levels and types of Decision Making. System Approach Theory. Management Challenges. Ethical and Social Impact of Information System.

UNIT-II

Technical Foundation of Information System: Charting Techniques. Structured Analysis and Design. Decision Tree. Decision Table. DFD. Data Dictionary. Information System Software Tools and Approaches: Advantages and disadvantages of using IS Software tools. Idea of Object Oriented Programming. CASE tool, PERT & CPM. Recent Database Management trends. Distributed Databases: Object Oriented and Hypermedia Database, Telecommunications. The Internet.

UNIT-III

Building Information System Traditional Si stem Development Life Cycle (SDLC). Analysis: Problem Identification. Fact Gathering, Fact Analysis, Feasibility Study, Feasibility report. Design, Physical and Logical Design. File Design. I/o Design, Database Design. Limitation of traditional life cycle approach. Prototyping, Outsourcing information system. A Typical Case Studs of Information System.

UNIT-IV

Implementation: Managing and Controlling of Information System. testing, training, conversion. Post Implementation phase. Ensuring quality with IS. Traditional tool & methodology for quality assurance. New approaches to quality assurance. Measuring Information System Success. Areas of Problem in Information System. Causes of Information system Success and Failure. Controlling Risk Factor. Auditing Information

System.

UNIT-V

Management and Organizational Support Systems: Knowledge Work System. Decision Support System (DSS). Group Decision Support System (GDSS). Executive Support System (ESS). Artificial Intelligence (Al). Expert System. Neural Network. Growth of International Information System. Main Technological Issues: Merger of International Technology and Infrastructure.

Reference Books:

1. Lauden C. Kennieth & Lauden P. Jane: Management Information System: Organization Technique. PHI.
2. Awad E. M.: Systems Analysis and Design. Galgotia Pub.
3. Murdic. Ross. Clagett : Information Systems for Modern Management.
4. PHI Bhatnagar S. C.: Computer & Information Management. PHI.

Approved by Board of studies dated 21-09-2020

PGDCA-103(B) E-COMMERCE AND E-GOVERNANCE

Course Objectives:

- To Develop Skills in Understanding Strategic Issues Related to E- Commerce and E- Governance
- To Develop a Broad Knowledge of E-Governance and E-Commerce Activities in India
- To Understand the Electronic Payment Systems
- To Develop Knowledge of How the Government May Contribute in Moving the Country Towards E-Commerce and E- Governance

Course Outcome:

- Explain and demonstrate E-Governance Initiatives at the National Level in India
- Make Classification of E-Commerce and E- Governance
- Students Able to Think Critically and Analytically to New Successful Business Ideas.

Unit-wise Syllabus :

UNIT-I

Introduction to E-Commerce: Definition, History of E-Commerce, E-Business Models B2B, B2C, C2C, C2B, Environment of E-Commerce, Dimensions of E-Commerce, Ethical Issues, Electronic Data Interchange, Value Chain and Supply Chain, E-Commerce Marketing, E-Commerce Strategy, E-Commerce Infrastructure, Advantages and Disadvantages of E-Commerce.

UNIT- II

Electronic Payment Systems: Payment Gateways, Payment Cards, Credit Cards, Debit Cards, Smart Cards, E-Credit Accounts, E-Money, Marketing on the Web, Categories of E-Commerce, Edi, Marketing Strategies, Advertising on the Web, Customer Service and Support, Internet Banking, Introduction to M-Commerce, Case Study: E-Commerce in Passenger Air Transport, Element of E-Commerce, Issues of E-Commerce

UNIT- III

E-Government, Theoretical Background of E-Governance, Issues in E -Governance Applications, Evolution of E-Governance, its Scope and Content, Benefits and Reasons for the Introduction of E-Governance, E-Governance Models - Broadcasting, Critical Flow, Comparative Analysis, Mobilization and Lobbying, Interactive Services / G2C,C2G

UNIT- IV

E-Readiness, E-Government Readiness, E- Framework, Step & Issues, Application of Data Warehousing and Data Mining in E-Government, Case Studies: NICNET-Role of Nationwide Networking in E-Governance, E-Seva. Origins in India E-Governance Projects in India Measures to Be Considered Before Going for E-Governance, Work plan and Infrastructure

UNIT- V

E-Government Systems Security: Challenges and Approach to Security of E-Government, Security Concern in E-Commerce, Security for Server Computers, Communication Channel Security, Security for Client Computers. E-Security Network and Web Site Risk for E-Business, Information Technology ACT 2000 and its Highlights Related to E-Commerce, E-Security, Firewalls, Electronic Market / E- Shop, Introduction to Security, Types of Securities, Security Tools, Network Security.

Reference Books

1. Gary P. Schneider, “E-Commerce”, Cengage Learning India.
2. C.S.R. Prabhu, “E-Governence: Concept and Case Study”, PHI Learning Private Limited.
3. P. Tjoseph, S.J.,“E-Commerce an Indian Perspective”, Prentice-Hall of India.
4. V. Rajaraamn, “Essentials of E-Commerce Technology”, PHI Learning Private Limited.

Approved by Board of studies dated 21-09-2020

PGDCA-104 OFFICE AUTOMATION S/W TOOLS

Course Objectives:

- To provide an in-Depth Training in use of office Automation Packages.
- To Understand the Basics of Windows Operating Systems
- To Understand How to use Software Packages in Day to Day Activities

Course Outcome:

- Creating Word Documents for office use Knowledge of Mail Merge.
- Use of Formatting Techniques and Presentation Styles.
- Provide Professional Services to the Society.
- Create Presentation Using Animation and Transition and other features.
- Construct Formulas Including the use of Built-in Functions and Relative and Absolute References and Create and Modify Charts and Preview and Print Worksheets.

Unit-wise Syllabus :

UNIT – I

Office Packages-Office activates and their software requirements, Word-processing, Spreadsheet, Presentation graphics, Database, introduction and comparison of various office suites like MS Office, Lotus Office, Star Office, Open Office etc. MS Word Basics: Introduction to MS Office; Introduction to MSWord; Features & area of use. Working with MS word.; Menus & Commands; Toolbars & Buttons; Shortcut Menus, Wizards & Templates; Creating a New Document; Different Page Views and layouts; Applying various Text Enhancements; Working with – Styles, Text Attributes; Paragraph and Page Formatting; Text Editing using various features ; Bullets, Numbering, Auto formatting, Printing & various print options.

UNIT-II

Advanced Features of MS-Word: Spell Check, Thesaurus, Find & Replace; Headers & Footers ; Inserting – Page Numbers, Pictures, Files, Auto texts, Symbols etc.; Working with Columns, Tabs & Indents; Creation & Working with Tables including conversion to and from text; Margins & Space management in Document; Adding references and Graphics; Mail Merge, Envelops & Mailing Labels. Importing and exporting to and from various formats, an overview of Google Doc.

UNIT-III

MS Excel: Introduction and area of use; Working with MS Excel.; concepts of Workbook & Worksheets; Using Wizards; Various Data Types; Using different features with Data, Cell and Texts; Inserting, Removing & Resizing of Columns & Rows; Working with Data & Ranges; Different Views of Worksheets; Column Freezing, Labels, Hiding, Splitting etc.; Using different features with Data and Text; Use of Formulas, Calculations & Functions; Cell Formatting including Borders & Shading; Working with Different Chart Types; Printing of Workbook & Worksheets with various options, an overview of Google sheet.

UNIT-IV

MS PowerPoint: Introduction & area of use; Working with MS PowerPoint; Creating a New Presentation; Working with Presentation; Using Wizards; Slides & its different views; Inserting, Deleting and Copying of Slides; Working with Notes, Handouts, Columns & Lists; Adding Graphics, Sounds and Movies to a Slide; Working with PowerPoint Objects; Designing & Presentation of a Slide Show; Printing Presentations, Notes, Handouts with print options. Outlook Express: Features and uses, Configuring and using Outlook Express for accessing e-mails in office, an overview of Google Slide.

UNIT-V

MS ACCESS: Creating of databases. tables, froms, reports & queries, use of macro & modules, creating of relationships among tables, generating simple queries using databases. MS-Access with other applications and Internet, sharing data between applications, Administering & securing a database. an overview of Google Form.

Reference Books:

1. Mansfield R: The Compact Guide to MS-OFFICE, BPB
2. Murray: Mastering Poser Point 6.0 for Windows, BPB
3. Cowart: ABC's of MS-ACCESS, BPB
4. Ms Office XP Complete BPB Publication

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PGDCA-105 Software LAB I (Problem based on Paper 102)

Course Objectives:

- To Provide the Knowledge of Programming Language to Students.
- To Prepare Students for Role of Professional Programmers.
- To Learn About Programming Methodology, Concepts of C Programming Like Control Structures, Functions, Learn About Arrays, Structures, and Union etc.

Course Outcome:

- Analyze the Problem and Write, Compile and Execute the Program and Verify the Outcome
- Explain and apply a Various features of IDE of C / C++ Compiler .
- Read, Understand and Trace the Execution of Programs Written in C language.
- Write the C Code for a Given Algorithm Using Coding Guidelines .
- Implement Programs with Pointers and Arrays to Manage the Memory.

C Programming Lab:

1 Write a Program in C to Calculate Simple Interest When the Values of Principal, Rate and Time are given.
2 Write a Program in C to Calculate Area of a Circle When its Radius is Input from Keyboard.
3 Write a Program in C to Calculate Temperature in Centigrade When Temperature in Fahrenheit is Input from Keyboard.
4 Write a Program in C to Calculate Area of a Triangle When its Three Sides are Input from Keyboard (by Hero's Formula).
5 Write a Program in C to Determine Whether an Input Year is Leap Year Or Not.
6 Write a Program in C to Display the Table of a Number Input from Keyboard in the Following Format:
N X 1 = N
Eg: 5 X 1 = 5
i. 5 X 2 = 10
7 Write a Program in C to Display the Table of Tables from 1 to 10.
8 Write a Program in C to Display the Following Patterns
9 Write a Program to Calculate the Factorial of a Number Input from Keyboard Using Recursive Method.
10 Write a Program in C to Show How to Pass an Array to a User Defined Function.
11 Write a Program in C to Display Largest Element of an Array When the Elements of the Array are Input from Keyboard.
12 Write a Program in C to Calculate Area of a Circle in a User Defined Function.
13 Write a Program in C to Swap Two Numbers Using Call By Value and Call By Address.
14 Write a Program in C to Show How to Pass an Structure to a User Defined Function.
15 Write a Program in C to Show How to Pass an Structure to a User Defined Function.
16 Write a Program to Calculate Total Marks, Percentage and Grade of a Student. Marks Obtained in Each of the Five Subjects are to Be Input by the User. Assign Grades According to the Following Criteria:
a. Grade a: Percentage >=80 Grade B: Percentage>=70 and <80
b. Grade C: Percentage>=60 and <70 Grade D: Percentage>=40 and <60
c. Grade E: Percentage<40
17 Write a Menu-Driven Program, Using User-Defined Functions to Find the Area of Rectangle, Square, Circle and Triangle by Accepting Suitable Input Parameters from User.
18 Write a Program in C to Display the First N Terms of Fibonacci Series.
19 Write a Program in C to Calculate the Sum of Two Compatible Matrices.
20 Write a Program in C to Calculate the Product of Two Compatible Matrices.

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PGDCA-106- Software LAB II (Problem based on Paper 101 & 104)

Course Objectives:

- To Provide the Knowledge of Microsoft Office Package.
- To Prepare Students to makeuse ofMs-Office Package Professionally.
- To Learn About Word Processing, Ms Excel, Power Point Presentation etc.

Course Objectives

- Use Microsoft Office Programs to Create Personal, Academic and Business Documents Using CurrentProfessional and/or Industry Standards.
- Perform Calculations in Microsoft Excel Using Formulas and Built-in Functions.
- Prepare Datasheet and Graphs to Describe and analyze the Data in MicrosoftExcel.
- Create Effective Presentation Using Various Features of MsPowerPoint

Experiment on Windows

1 Starting the Windows, Starting a Program, Running a Program Running Multiple Programs and Switching Between Windows, Customizing the Task BarRecycle Bin, Restoring the Deleted Files

2 Creating and Removing Folders, Making the Taskbar Wider, Arranging Icons on the Desktop Displaying and Hiding the Taskbar Clock, Controlling the Size of Start Menu Options, Creating Shortcuts.

3 Installing a Screen Saver, Assigning a Wallpaper to Desktop, Adding a Program to the Start Menu, Adding a Program Shortcut in the Desktop, Customizing the Mouse Settings. Expanding and Collapsing a Folder, Recognizing File Types Using Icons, Running a Program fromExplorer, Renaming a File or Folder, Sorting a Folder

4 Displaying the Properties for a File or Folder, Using Cut and Paste Operations to Move a File Using Copy and Paste Operations to Copy a File, Moving and Copying Files with Mouse, Searching a File or Folder by Using Search Command, Finding a File or Folder, by Name Defragmenting the Disk, Using Disk Defragmenter, Controlling the Speaker Volume Recording and Saving an Audio File, Connecting a Printer to the Pc

Experiment on Word Processing:

1 Type the Following Paragraph as Given.

"My Dream Career"

My Ambition of Life is to Become a Doctor. I Have Taken Up Science and Hygiene as Optional Subjects. When I Joint College, I Shall Take UP Medical Group. I Shall Appear in the P.M.T. Examination to Qualify for Joining a Medical College. After Passing the P.M.T., I Shall Join the Medical College to Become a Doctor.

I Would Like to Be a Doctor. My Country Has Become Free from Diseases, Government Has Decided to Uproot the Diseases from the Country and Improve the Health of the People. Hospitals are Being Opened for This Purpose. There is Great Demand for Doctor. Taking All These Things into Consideration I Have Made Up Mind to Become a Doctor.

I Do Not Want to Be Clerk. This Line Does Not Suit Me. I Do Not Want to Be a Teacher. Law is Not a Paying Profession These Days So Becoming Lawyer is Not My Goal.

2. Correct any Spelling Errors Displayed in the Given Text.
3. Save the Document as <My Dream >_W01.
4. Change the Layout of the Page as Given Below.

>Page Size: A4 (8.27″ X 11.69″) >Page Orientation: Landscape.

5. Change the Page Margins as Follows:

>Top: 1.25″>Bottom: 1.25″>Right: 1.25″>Left: 1.25″

6. Format the Entire Document as Given Below.

>Line Spacing: 1.15">Font: Times New Roman >Font Size: 14

>Align: Justify

7. Select the Heading “Academy Award” and Format It as Given Below.
>Font Color: Blue >Style: Bold and Underline >Align: Center
>Change All the Letters to Uppercase

8. Make the First Letter of the Paragraph Larger and Fallinto Three Lines (Drop Cap).

9. Format the Heading “My Dream Career” with Style: Heading 2.

10. Create a Bulleted List for the Last Paragraph Lines of Document.

11. Enter “My Document Tutorial” Text as the Heading of the Table and Format It to Get the Following Output Using a Word Art. (Font: Arial Black, Font Size: 16, Align: Center)

12. Insert Footer with the Following Formatting Options.

>Caption: <My First Document>>Font: Times New Roman >Font Size: 12

13. Insert the W01 Image Given in the "Resources" Directory, to the Right Hand Side of the Bulleted List of the Document.

14. Prepare Your Class Time Table Using and Format the Entire Table as Given Below.

Change the Cell Size of the Table to Auto Fit to Contents. >Align: Center

15. Select the Heading Row and Format It as Given Below.

Convert All Text in to Capital Letters >Style: Bold >Align: Center

16. Insert a New Row Just Below the Last Row of the Table and Enter the Following Information into the New

Row: >Saturday: Special Lecture on Cloud Computing > Merging All the Column.

17. Send a Call Letter for All Applicants to Inform Interview Details Using Mail Merge Base

18. Preparing a Govt. Order / official Letter / Business Letter / Circular Letter

Covering Formatting Commands - Font Size and Styles - Bold, Underline, Upper Case, Lower Case, Superscript, Subscript, Indenting Paragraphs, Spacing Between Lines and Characters, Tab Settings etc.

19. Preparing a News Letter:

To Prepare a Newsletter with Borders, Two Columns Text, Header and Footer and Inserting a Graphic Image and Page Layout.

20. Creating and Using Styles and Templates

21To Create a Style and Apply That Style in a Document

22 To Create a Template for the Styles Created and Assemble the Styles for the Template.

Spreadsheet Experiment:

1. Create a Blank Spreadsheet in and Save It as "<Your Index No>_E01".
2. Create a Table with 7 Rows and 8 Columns in the Cell Range A3:H9.
3. Insert a Title “Vivekananda College " and a Sub Title "Mark Sheet for a/L Biology- Class a", by Centering It with the Table, Making the Text Bold, and Changing the Font Size 16 for Main Title and 14 for Subtitle.
4. Enter Data of 6 Students Under the Columns, "Roll No", "Name", "Physics", "Chemistry", "Biology", and "English".
5. Use the Relevant Formula to Calculate the Total Marks and Average and Copy the Formula to the Relevant Cells.
6. Format the "Average" Column with Two Decimal Places.
7. Use Conditional Formatting to Change the Color of the Cells of Which the Average Mark is More Than 60, into Green.
8. Select the Columns, "Roll No", "Physics", "Chemistry", "Biology", and "English" Column and Draw a Column Chart.
9. Insert the Title, "Vivekananda College ", and the Sub Title, "Mark Sheet for a/L Biology - Class a" to the Top of the Chart.
10. Set the X Axis Labels with the Index Numbers.
11. Label the X Axis Title as, "Roll No" and Y Axis Title as, "Marks".
12. Label the Legends for 4 Subjects, "Physics", "Chemistry", "Biology" and "English".
13. Make Sure to Get a Graph Similar to the One Given Below.
14. Sorting Data, Filtering Data and Creation of Pivot Tables.
15. Operating on the Sheets: Finding, Deleting and Adding Records, Formatting Columns, Row Height, Merging, Splitting Columns etc. Connecting the Worksheets and Enter the Data.

Presentation Experiments

1. Create a Presentation with Four Blank Slides.
    - Modify the Presentation as Follows.
    - Insert a Suitable Design Template.
    - Insert a Footer to Show Your Name and Your Student Id.
    - Insert Today’s Date as a Fixed Date in the Date Area.
    - Make Necessary Changes to Appear Slide Numbers in the Slide Number Area.
    - Make Necessary Changes So That the Footer, Date and the Slide Number Do Not Appear on the Title Slide (First Slide).
    - Add Content to the Title Slide (First Slide) by Following the Instruction Given Below.
    - Type "River” as the Slide Title and It’s Format Should Be Font Type: Arial, Style: Bold, Size:96, Color: Black
    - Type “Our Life Support” as the Sub Title and Insert an Image from the Resources Directory to a Suitable Location.

- Add Content to the Second Slide by Following the Instruction Given Below.

- Type the Slide Title as, "Rivers of North India" and Format It as, Font Type: Arial, Style: Bold, Size: 44, Color: Black

2. Insert the Following Content as Shown Below.

   - The Ganga
   - The Indus
   - The Brahmaputra
   - In the Third Slide, Add the Following Components.

o Type the Slide Title as, "Tributaries"

   - Insert Rivers and Their Tributaries of Slide 2 in a Table.
   - Insert Few More Important Rivers of India with Their Regions.
   - Add the Following Animation Effects to Your Presentation.
   - Apply Emphasis Animation Effect to Each Main Point and Sub Point in the Second Slide.
   - Apply Sound Effect When the Second Slide Appears in the Slideshow.
   - Hide the Fourth Slide from the Slide Show.
   - Save Your Presentation with the Following File Name <Rivers of _North India>_ P01. Next Practicals

3. Creating a New Presentation Based on a Template – Using Auto Content Wizard, Design Template and Plain Blank Presentation.

Operating System

4. Discuss all Internal and external commands of DOS with suitable example.
5. Discuss all Unix/Linux commands with suitable example.

II Semester
PGDCA 201(A)– JAVA PROGRAMMING

Course Objectives:

- Introduce and Learn the Usage of the Java SDK Environment to Create, Debug and Run Java Programs.
- Understand Fundamentals of Java Programming Such as Character Set, Variables, Data Types, and Control Structures, Array, Class and Methods.
- Understand the Concepts of (OOPs) and Learn Implementation in Java Defining Classes, Invoking Methods, Using Class Libraries.
- Introduce Strings, Vectors, Interfaces, Packages and Threads Handling in Java. Gain the Knowledge of Java Applets, AWT, Swings, Servelet.

Course Outcomes :

- Explain and Apply the Object Oriented Concepts for Solving Real Problem.
- Use the Java SDK Environment to Create, Debug and Run Simple Java Programs.
- Apply Java Technology to Develop the Small Applications, Utilities, and Web Applications.
- Apply Events Management and Layout Managers Using AWT, Swing, JDBC and Servlet for Developing the Software for Various Problems.

Unit-wise Syllabus :

UNIT-I

Introduction to Object Oriented Programming: Basic concepts, benefits of OOPS, Application of OOP. Java evolution: history, features, C, C+ + & Java a comparison. Java and WWW, HW & SW requirements for Java, Structure of simple Java program, Java tokens, statements, Java virtual machine, Command line arguments, programming style. constants & variables, symbolic constants, type casting: Various operators in Java (arithmetic, relational, logical, assignment, increment decrement, conditional, bitwise & special operator): arithmetic expressions & their evaluation, precedence of arithmetic operators, type conversations in expressions, operator precedence and associatively, mathematical functions.

UNIT-II

Decision making and branching: Decision making with if statement, simple if statement, the if ... else statement, nesting of if else statements, the else if Ladder, the switch statement. The ? operators, the while statement, the do statement, the do statement, the for statement, jump in loops, labeled loops, classes, objects and methods; Defining a class, objects and methods: Defining a class, adding variables and methods, creating objects, accessing class members, constructors, method overloading. Static members, nesting of methods inheritance: extending a class, overriding methods, final variables and methods, final classes, finalize methods, abstract methods and classes visibility control.

UNIT-III

Arrays, strings and vectors: Arrays, one dimensional arrays, creating an array, two dimensional arrays. Strings, Vectors, Wrapper classes, defining interfaces, multiple inheritance, extending interfaces, implementing interfaces, accessing interface variable. Packages: Java API packages, using system packages, naming conventions, creating packages, accessing a package, using a package, adding a class to a package, hiding classes

UNIT-IV

Exception Handling & Multithreading: Exception Handling: Introduction to Exception Handling, Try-Catch, Finally, Throws. Multithreading Programming: Creating threads, extending the thread class stopping and

blocking a thread, life cycle of a thread, using thread methods, thread exceptions thread priority, Synchronization, implementing the runnable interface, thrashing, other consideration, demand segmentation.

UNIT-V

Applet programming: Local and remote applets, how applets differ from applications, preparing to write applets, building applets code, applet life cycle, creating an executable applet, designing a web page, adding applet to HTML file, running the applet, More about applet tag, passing parameters to applets. aligning the display more about HTML tags, displaying numerical values, getting input from the user. AWT Classes, Swing Classes, Event Handling, AWT Programming: Working with Windows, Graphics and Text, Using AWT Controls, Layout Managers and Menus, Handling Image, Animation, Sound and Video. Java Swing: Japplet, Icons and Labels, Text Fields, Buttons, Radio Buttons, Check Boxes, Combo Boxes, List Boxes, Tabbed and Scroll Panes, Tables. Event Handling:

Reference Books:

1. E. Balagurusamy, "Programming with Java, a Primer",TMH, ISBN-13: 978-0-07-061713-1, ISBN-10: 0-07-061713-9.
2. Patrick Naughton and Herbert Schildt, "Java: the Complete Reference", TMH Publication, ISBN 0-07-463769-X.
3. Yashavant kanetkar, "Let us Java", BPB Publications.
4. Ivan Bayross, "Web Enabled Commercial Application Development Using HTML, DHTML, Javascript, Perl CGI",BPB Publications
5. Mastering in java, Techmedia Pub.schatz & Galvin
6. CoreJAVA 2 Volume- l Fundamentals sun Microsystems

PGDCA-201 (B) -WEB TECHNOLOGY

Course Objectives:

- Learn How to Design and Develop a Web Page Using HTML and CSS
- Learn How to Link Pages So that they Create a Web Site.
- Design and Develop a Web Site Using Text Images Links Lists and Tables for Navigation and Layout.
- Style Your Page Using CSS Internal Style Sheets and External Style Sheets.
- Learn to use Java Script & XML in Web Design.
- Learn How to use Database in Web Design.

Course Outcome:

- Describe the concepts of WWW including Browser and HTTP Protocol.
- ListtheVariousHTMLTagsandusethemtodeveloptheUserFriendlyWebPages.
- Define the CSS with its Types and use them to provide the Styles to the Web Pages at Various Levels.
- DeveloptheModernWebPagesusingtheHTMLandCSSFeatureswithdifferentlayoutsas per Need of Applications.
- Use the Java script to develop the dynamic WebPages.
- Use Server Side Scripting with PHP to Generate the Web Pages dynamically using the Database Connectivity.
- Develop the Modern Web Applications using the Client and Server Side Technologies and the Web Design Fundamentals.

Unit-wise Syllabus :

UNIT-I

Introduction to Web Web Designing and Website Planning :concept of WWW Internet and WWW HTTP Protocol : Request and Response Web Browser and Web Servers Website Hosting-Free Vs. Paid Linux Vs. Windows Hosting Concepts & use of Database & Mail Servers Associated with Web Sites Features of Web Concepts of Effective Web Design Web Design Issues Including Browser Bandwidth and Cache Display Resolution Look and Feel of the Website Page Layout and Linking User Centric Design Sitemap Planningand Publishing Website Designing Effective Navigation. Website Hosting Issues C panel and FTP.

UNIT-II

Web Development with HTML : Basics of HTML Formatting and Fonts Commenting Code Color Hyperlink Lists Tables Images Forms Meta Tags Character Entities Frames and Frame Sets Browser Architecture and Web Site Structure. Overview and Features of HTML5 use of HTML Code Editor& WYSIWYG Editor. Cascading Style Sheets (CSS): Style Sheets : Need for CSS Introduction to CSS Basic Syntax and Structure Using CSS Background Images Colors and Properties Manipulating Texts Using Fonts Borders and Boxes Margins Padding Lists Positioning Using CSS CSS2 Overview and Features of CSS3.

UNIT-III

Technologies for Web Applications Javascript & XML: Javascript : Client Side Scripting with Javascript Variables Functions Conditions Loops and Repetition Pop Up Boxes Advance Javascript: Javascript and Objects Javascript Own Objects the Dom and Web Browser Environments Manipulation Using Dom Forms and Validations DHTML : Combining HTML, CSS and Javascript Events and Buttons. XML : Introduction of XML Validation of XML Documents DTD Ways to use XML, XML for Data Files Html Vs XML Embedding XML into HTML Documents Converting XML to HTML for Display Displaying XML Using

CSS and XSL Rewriting HTML as XML Relationship Between HTML SGML and XML Web Personalization Semantic Web Semantic Web Services. Transforming XML Using XSL and XSLT

UNIT-IV

Web Design with PHP: Introduction and Basic Syntax of PHP Decision and Looping with Examples PHP and HTML Arrays Functions Browser Control and Detection String Form Processing Files Advance Features: Cookies and Sessions Object Oriented Programming with PHP.

UNIT-V

Introduction to Database Driven Websites with PHP: PHP and MYSQL: Basic Commands with PHP Examples Connection to Server Creating Database Selecting a Database Listing Database Listing Table Names Creating a Table Inserting Data Altering Tables Queries Deleting Database Deleting Data and Tables PHP My admin and Database Bugs.

Reference Books:

1. Roger S. Pressman David Lowe "Web Engineering" Tata McGraw Hill Publication 2007
2. Achyut S Godbole and Atul Kahate "Web Technologies" Tata McGraw Hill
3. Gopalan N P Akilandeswari "Web Technology: a Developer S Perspective" PHI
4. Chris Bates Web Programming: Building Internet Applications Wiley
5. C. Xavier "Web Technology & Design" Tata McGraw Hill.
6. Ivan Bay Ross "HTML DHTML Java Script Perl CGI" BPB.
7. Ralph Moseley and M.T. Savaliya- Developing Web Applications Wiley-India
8. Web Technologies Black Book Dreamtech Press
9. HTML5 Black Book Dreamtech Press
10. Joel Sklar- Web Design Cengage Learning
11. Harwani- Developing Web Applications in PHP and Ajax Mcgrawhill
12. P.J. Deitel & H.M. Deitel- Internet and WorldWideWeb How to Program Pearson

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PGDCA202 (A)-COMPUTER NETWORKS

Course Objectives:

- Build an Understanding of the Fundamental Concepts of Computer Networking.
- Familiarize the Student with the Basic Taxonomy and Terminology of the Computer Networking Area.
- Introduce the Student to Advanced Networking Concepts Preparing the Student for Entry Advanced Courses in Computer Networking.

Course Outcome:

- Demonstrate the Basic Concepts of Networking, Networking Principles Routing Algorithms IP Addressing and Working of Networking Devices.
- Demonstrate the Significance Purpose and application of Networking Protocols and Standards.
- Describe compare and contrast LAN WAN MAN Intranet Internet AM FM PM and Various Switching Techniques.
- ExplaintheworkingofLayersandapplythevariousprotocolsofOSI&TCP/IPmodel.
- Analyze the Requirements for a Given Organizational Structure and Select the Most Appropriate Networking Architecture and Technologies.

Unit-wise Syllabus:

UNIT-I

Introduction to Computer Networks Types of Network - LAN WAN MAN Internet Network Topologies Transmission Media Communication Mode- Simplex Half Duplex Full Duplex Analog& Digital Signals Base Band Broad Band Error Detection and Correction OSI Model:- Functions of Each Layer Services and Protocols Inter-Networking Devices Hub Repeater Bridge Switch Modem Routers Gateways.

UNIT- II

Multiplexing Multiplexer FDM TDM Statistical Multiplexing Modulation AM FM PM Switching Technique Message Switching Circuit Switching Packet Switching Virtual Circuit IEEE Standards 802.4802.5.FastEthernetFDDITokenRing.

UNIT- III

Rooting Algorithms:- Shortest Path Routing Distance Vector Routing Unicast Routing Multicast Routing Link State Routing Broadcast Routing Congestion Control Traffic Shaping. TCP/IP: IntroductionHistoryofTCP/IPArchitectureLayersofTCP/IPComparisonBetweenOSIandTCP/IP Models Transmission Control Protocol User Datagram Protocol Internet Protocol IP Addressing IP Addressing Classes Internet Protocols–IP Packet ARPRARPICMP

UNIT- IV

Various Protocol HTTP Telnet FTP SMTP Mine UDP URL (Uniform Resource Locater) ISDN Channel ISDN Services Base Band ISDN Broadband ISDN Network Security : Network Security IssuesFirewalls–NeedandFeaturesofFirewallsTypesofFirewallTechnology-NetworkLeveland ApplicationLevelIPPacketsFilterScreeningRoutersLimitationsofFirewalls.

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UNIT- V

Introduction to Wireless Network Fundamentals of Cellular Systems Mobile Ad-Hoc and Sensor Networks Wireless PAN/LAN/MAN Multi-Path Propagation Path Loss Slow Fading Fast Fading Frequency Reuse Cell Splitting Cell Sectoring.

Reference Books

1. AndrewS.Tanenbaum-ComputerNetworksPearson-4thEdition
2. Behrouza.Forouzan-DataCommunicationsandNetworking-GlobalEd-5thEdition
3. William a Shay - Understanding Data Communications and Networks -Course Technology Inc-3rd RevisedEdition
4. PrakashC.Gupta-DataCommunicationsandComputerNetworks-PHI-2ndEdition
5. William Stallings- Data and Computer Communications Pearson Education India 10th Edition
6. LarryL.PetersonandBruceS.Davie-ComputerNetworks–aSystemsApproach-MorganKaufmannPublishers-FifthEdition2011

PGDCA202(B) -BIG DATA ANALYSIS

Course Objectives:

- Familiarize the Students with Most Important Information Technologies used in Manipulating, Storing, and Analyzing Big Data.
- This Course Gives Students all Around Learning of the Big Data Framework using Hadoop and Spark, Including Yarn, HDFS and Map reduce
- It Provide an Overview of Approaches Facilitating Data Analytics on Huge Datasets.

Course Outcome:

- Ability to identify the characteristics of datasets and compare the trivial data and big data for various applications.
- Demonstrate an ability to use Hadoop framework to efficiently store retrieve and process Big Data for Analytics.
- Implement several Data Intensive tasks using the Map Reduce Paradigm

Unit-wise Syllabus :

UNIT-I

Big Data- Introduction, Characteristics, Types, Elements, Traditional vs. Big Data Business Approach, Big Data Analytics, Advantages, Applications, Distributed & Parallel Computing for Big Data, Components in Big Data Architecture, Virtualization Approaches.

UNIT- II

Statistics and Probability: Sampling Techniques - Data Classification, Tabulation, Frequency and Graphic Representation, Measures of Central Value - Mean, Mode, Median, Random Variable and Probability Theory.

UNIT- III

Hadoop- Introduction, Features, Advantages, Versions, Key Considerations of Hadoop, RdbmsVsHadoop, Hadoop Ecosystem, HDFS - Architecture, Features, Commands, Processing Data withHadoop, Hadoop Yarn.

UNIT- IV

Mapreduce Framework, Features, Uses, Working onMapreduce, Mapreduce Input and Output Operations, Exploring Map and Reduce Functions, Mapreduce Optimization Technique, HBASE Introduction, Architecture, HBASE in Hadoop Applications.

UNIT- V

Processing Data withMapreduce, Task Execution & Environment – Installation of Eclipse, Hadoop, Java Development Kit and Linux Ubuntu OS, Mapreduce Program Steps to Obtain Word Count, Functionality of Input Format- Inputsplit, Recordreader, Fileinputformat, Output Process of Fileoutputformat – Outputformat, Recordwriter, Role of Combiner, Partitioner, Debugging Mapreduce.

Reference Books:

1. Rob Kitchin The Data Revolution: Big Data Open Data Data Infrastructures And Their Consequences SAGE Publications Ltd
2. Croll and B. Yoskovitz Lean Analytics: Use Data to Build a Better Startup Faster o'reilly
3. Mayer-Schönberger and K. Cukier Big Data: A Revolution That Will Transform How We Live Work and Think

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PGDCA203 - DATABASE MANAGEMENT SYSTEM (DBMS)

Course Objectives:

- To Understand the Fundamentals of Data Models and Conceptualize and Depict a Database System Using ER Diagram.
- To Make a Study of Relational Database Design.
- To Know about Data Storage Techniques and Query Processing.
- To Acquire the Knowledge of Query Evaluation to Monitor the Performance of the DBMS.
- To Impart Knowledge in Transaction Processing, Concurrency Control Techniques and Recovery Procedures.

Course Outcome:

- Understand and describe the basic concepts and terminology of Database Management System.
- Analyze and Design the database of applications using ERmodeling and Normalization.
- Evaluate business information problem and find out the data requirements of organization.
- Demonstrate the database schema, data modeling and normalization process with the help of example.Implement the database design using appropriate database tools.

Unit-wise Syllabus :

UNIT-I

Basic Concept: An Introduction to database System, Database System Architecture, Purpose of DBMS, Data Independency, Basic File Systems, File Organization: Sequential, Index Sequential, Hosting. B-Tree based index, Sequential File Organization. Detailed Design of E-R Data Model, Security & Integrity: Introduction, Access Control. Crypto Systems, Statistical Data base Security, Concurrency Control: Transaction & Locking Database. Kinds of Failure, Recovery Techniques.

UNIT-II

Three Data Models: An Overview of three Main Data Models i.e. Hierarchical Model, Network Model, Relational Model and their Inter comparison. Concept of Relation, Relational Algebra: Basic Operation like Union, Intersection, Difference, Product, Join. The Power of SQL (Creation, Insertion, Deletion, Indexing & Modification of Databases in SQL)

UNIT-III

Normalisation: Relational Database Design: Integrity Constraints, Functional Dependency: Single Value and Multi Value Functional dependence, Normal Forms: I, II, III, Boyce Codd, & IV Normal forms. Join dependency. Special Purpose Databases: OODBMS- Object Based Databases, OO Data Model, OO Languages, Persistence, Object, Relational Databases, XML, Structure of XML, Temporal Databases, Mobile Databases, Spatial Databases

UNIT-IV

Introduction to Database and Foxpro package: Ideas of database hierarchy (bit, byte. field, record). Foxpro commands: create, use, list, display, edit, browse, append, insert, delete, zap, pack, copy, to print, quit, clear, go top, go bottom, modify structure, recall, replace, sort, index, locate, continue, seek, search, find, close. Arithmetic, date. time and string function with database using commands/ functions such as count, average, sum, time, day, dow, cdow, year, date, ctod, dtoc, cmonth, month, val, trim, str. displaying information with ? and ??.

UNIT- V

Programming: Using Input, Output statements and Conditional statement ACCEPT, INPUT, IF-ELSE-ENDIF, DO CASE-ENDCASE, DO WHILE-ENDDO, TEXT-ENDTEXT, SKIP, WAIT, STORE, SET commands. Generation of Report, Label and Customized Screen, Use of multiple files: Master file updation, Setting relations

Reference Books:

1. Henry F. Korth& A. Silbershatz: Data Base System Concepts, MGH
2. C.J. Date: Database Management System, MGH
3. R. K. Taxali: Foxpro 2.6, TMH.
4. Arun K. Majumdar & P. Bhattacharya: Data Base Management System, TMH
5. Jeffrey O. Ullman: Principles of Database Systems, Galgotia Pub. Co. Ltd.
6. Bipin C. Desai: An Introduction to Database Systems, Galgotia Pub. Co. Ltd.
7. James Martin: Principles of Database Management, PHI
8. James Martin, Computer Database organization, PHI

PGDCA204 – Software Lab I (Problem based on 201)

Course Objectives:

- Implement Strings, Vectors, Interfaces, Packages and Threads Handling in Java. Implement Java Applets, AWT, Swings, Servelet.
- Learn and Understand the Implementation of GUI Application, Web Applications, N-Tier Architecture.
- Develop the Understandings of File Handling, Database Connectivity, Java Servlets and Web Application in Java.
- Learn and Understand the Implementation of GUI Application, Web Applications, N-Tier Architecture.

Course Outcomes

- Use the Java SDK & JRE Environment to Create, Debug and Run Simple Java Programs.
- Analyze the Problem, Identify the Requirements & Features of Applications and Utilities
- Implement Object Oriented Concepts for Solving Real Problem.
- Develop Small Applications, Utilities, and Web Applications Using AWT, Event and Layout Managers

List of Experiments on Java:

1. Write a Program in Java to Calculate the Simple Interest.
2. Write a Program in Java to Calculate Sum of Two Numbers Input from Command Line Argument.
3. Write a Program in Java to Calculate Area of Circle Using Scanner Class.
4. Write a Program in Java to Calculate Square Root of a Number.
5. Write a Program in Java to Display Name, Age, Calendar and Salary of a Person Input from the Keyboard.
6. Write a Program in Java to Display Grading of Student When His Percentage is Input from Keyboard.
7. Write a Program in Java to Display Odd Number from 1 to 100.
8. Write a Program in Java to Calculate the Factorial of a Number.
9. Write a Program in Java to Determine Whether a Number Input from Keyboard is Prime Number Or Not.
10. Write a Program in Java to Display the Prime Numbers from 1 to 500 Using Function.
11. Write a Program in Java to Show Accessing Class Members and use a Dot(.).
12. Write a Program in Java to Show Multilevel Inheritance.
13. Write a Program in Java to Show Single Inheritance.
14. Write a Program in Java to Concatenate Two Strings Without Using Library Function.

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15. Write a Program in Java to Make First Alphabet Capital of Each Word in a String.
16. Write a Program in Java to Get the Last Index of Any Given Character in a String.
17. Write a Program in Java to Reverse Words of a String.
18. Write a Program in Java to Find Occurrences of Each Character in a String.
19. Java Program to Get String and Count Number of Words in Provided String.
20. Write a Program in Java to Check Given String is Palindrome String Or Not in Java.
21. Write a Program in Java to Reverse Each Word of Given String.
22. Write a Program in Java to Get Sub String from a Given String.
23. Java Program to Convert String to Lowercase and Uppercase.
24. Create a Java Applet and Show the use of Drawstring() Function.
25. Create a Java Applet to Show How to use Various Methods of Applet Class and Graphics Class in a Java Applet.
26. Write a Program in Java to Show the use of Interface.
27. Write a Program in Java to Display the Following Pattern.

    1
    2 2
    3 3 3
    4444
    55555
28. Write a Program in Java to Display the Following Pattern Using Function.

    1
    2 2
    3 3 3
    4444
    55555
29. Write a Program in Java to Display the Following Pattern Using Function.

    1
    2
    2 3
    2 3 4
    2345
30. Write a Program in Java to Display the Following Pattern Using Function.

    1
    3
    4 5 6
    78910
    11 12 13 14

PGDCA205 – Software Lab II (Problem based on 203)

Course Objectives:

- To provide practical practice to the discipline of database management.
- To familiarise the participant with the nuances of database environments towards an information-oriented data-processing oriented framework.
- To give a good formal foundation on the relational model of data.
- To give an introduction to systematic database design approaches.
- To present the concepts and techniques relating to Query Processing, Form and Reports in Ms Access.

Course Outcome:

- Understand and apply the key concepts of database technology.
- Analyze, design and implement the database system to solve the real problems.
- Carry out the administration and Management activities of Database System using SQL, Foxpro
- Write the SQL & Foxpro program for optimal query for fetching the information from database

LIST OF EXPERIMENTS ON DBMS

1. Draw an ER Diagram for University Database.
2 Draw an ER Diagram for Library Management System. Convert it to Tables.
3 Create a Library Management Schema/ Database and Search Anomalies in it.

4 Normalize the Following Schema with Given Constraints.
Books(Accessionno,Isbn,Title,Author,Publisher)
Users(Userid,Name,Deptid,Deptname)
Accessionno ->ISBN
ISBN ->Title
ISBN -> Publisher
ISBN ->Title
Userid -> Name,
Userid ->Deptid
Deptid -> Department

7. Compare 3NF and BCNF with Appropriate Example

Database Query

8. Give Exercise on DDL and DML.

9. Create a Database Named “School.Mdb” and Perform the Following Tasks Using Ms Access or My SQL

10. Create a Table Named “Studentinfo” Having Following Table Structure.

Field Name	Data Type	Structure
Class	Number	
Section	Text	
Roll No.	Number	
Name	Text	40 Characters Long
Status	Lookup Wizard	Two Value:Senior and Junior
Photo	Ole Object	Photos of Student
Dob	Date/Time	Date of Birth of Students
Remarks	Memo	

- Fill At List 5 Records
- Prepare a Query to Display All Records and Name Should Be in Ascending Order.
- Prepare a Query Name “ Senior” to Display Records Including Fields Name, Class, Sec, Rollno. Status, Photo and Value of “Status” Field Must Be senior
- Prepare a Form of Above Query “Senior”
- Prepare a Report of All the Fields of Above Table

Forms and Report

11. Create a Database Named “Library.Mdb” and Perform the Following Tasks:

12. Create a Table Named “Book” Having Following Structure:

Field Name	Data Type
Bookid	Text
Bname	Text
Wname	Text
Pyear	Date/Time
Pname	Text
Price	Currency

- Add at Least 5 Records.
- Prepare a Query to Display Only Records Including Book Name, Writer Name and
- Name. Save the Query as “Q_Book”.
- Prepare a Query to Display All Records on the Basis of Price Which is More Than Rs500.
- Prepare a Form on the Basis of Table.
- Prepare a Report on the Basis of Query Named "Q_Book

Fox Pro

13. Discuss all Foxpro commands with suitable example.
14. Create a Report in Foxpro.
15. Create a Form in Foxpro.
16. Write a program in Foxpro which illustrate the use of If-Else-Endif.
17. Write a program in Foxpro which illustrate the use of Do Case End Case.
18. Write a program in Foxpro which illustrate the use of Do while-end do.
19. Write a program in Foxpro which illustrate the use of Text-EndText.

DEPARTMENT OF COMPUTER SCIENCE

AWADHESH PARATAP SINGH UNIVERSITY, REWA (M.P.)

Programmes Structure (4 Years) Semester System
B.Sc. (Hons) Computer Science
UGC-CBCS System as per Ordinance 14(A)
2021-22

SEMESTER-I					
Course Code and Name	**Course Type**	**Theory Paper**	**Internal Assessment**	**Maximum Marks**	**Credit**
101: Programming Methodology	Major Core	60	40	100	6
102: Calculus	Minor Core	60	40	100	6
103: Internet Technology*	GE	60	40	100	4
104: English	AE	60	40	100	4
SEMESTER TOTAL				**400**	**20**
CUMULATIVE TOTAL				**400**	**20**

SEMESTER-II					
Course Code and Name	**Course Type**	**Theory Paper**	**Internal Assessment**	**Maximum Marks**	**Credit**
201: Computer System Architecture	Major Core	60	40	100	6
202: Algebra and Geometry	Minor Core	60	40	100	6
203: Mobile Application Development*	GE	60	40	100	4
204: Environment Science	AE	60	40	100	4
SEMESTER TOTAL				**400**	**20**
CUMULATIVE TOTAL				**400**	**20**

DEPARTMENT OF COMPUTER SCIENCE

AWADHESH PARATAP SINGH UNIVERSITY, REWA (M.P.)

Programmes Structure (4 Years) Semester System
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2021-22

SEMESTER-III					
Course Code and Name	**Course Type**	**Theory Paper**	**Internal Assessment**	**Maximum Marks**	**Credit**
301: Data Structure And Algorithms	Major Core	60	40	100	6
302: Mechanics	Minor Core	60	40	100	6
303: Data Mining*	GE	60	40	100	4
304: Programming in Java	SE	60	40	100	4
SEMESTER TOTAL				**400**	**20**
CUMULATIVE TOTAL				**400**	**20**

SEMESTER-IV					
Course Code and Name	**Course Type**	**Theory Paper**	**Internal Assessment**	**Maximum Marks**	**Credit**
401: Discrete Structure	Major Core	60	40	100	6
402: Mathematical Physics	Minor Core	60	40	100	6
403: Python Programming*	GE	60	40	100	4
404: MATLAB Programming	SE	60	40	100	4
SEMESTER TOTAL				**400**	**20**
CUMULATIVE TOTAL				**400**	**20**

DEPARTMENT OF COMPUTER SCIENCE

AWADHESH PARATAP SINGH UNIVERSITY, REWA (M.P.)

Programmes Structure (4 Years) Semester System
B.Sc. (Hons) Computer Science
UGC-CBCS System as per Ordinance 14(A)
2021-22

SEMESTER-V					
Course Code and Name	**Course Type**	**Theory Paper**	**Internal Assessment**	**Maximum Marks**	**Credit**
501: Database Management System	Major Core	60	40	100	6
502 (A): Object Oriented Programming** 502(B): Image Processing** 502(C): Data Analytics**	DSE	60	40	100	4
503: Web Programming	SE	60	40	100	4
504: Field Project / Internship / Apprenticeship	Core	60	40	100	6
SEMESTER TOTAL				**400**	**20**
CUMULATIVE TOTAL				**400**	**20**

SEMESTER-VI					
Course Code and Name	**Course Type**	**Theory Paper**	**Internal Assessment**	**Maximum Marks**	**Credit**
601: Computer Network	Major Core	60	40	100	6
602(A): System Security** 602(B): Computer Ethics** 602(C): Human Computer Interface**	DSE	60	40	100	4
603 (A): Software Engineering** 603 (B): Modelling and Simulation** 603(C): GIMP (GNU Image Manipulation Program**	DSE	60	40	100	4
604: Field Project / Internship / Apprenticeship	Core	60	40	100	6
SEMESTER TOTAL				**400**	**20**
CUMULATIVE TOTAL				**400**	**20**

DEPARTMENT OF COMPUTER SCIENCE

AWADHESH PARATAP SINGH UNIVERSITY, REWA (M.P.)

Programmes Structure (4 Years) Semester System
B.Sc. (Hons) Computer Science
UGC-CBCS System as per Ordinance 14(A)
2021-22

SEMESTER-VII					
Course Code and Name	**Course Type**	**Theory Paper**	**Internal Assessment**	**Maximum Marks**	**Credit**
701: Operating System	Major Core	60	40	100	6
702 (A): Cloud Computing ** 702 (B): System Programming** 702 (C): Artificial Intelligence** 702 (D): Internet of Things**	DSE	60	40	100	4
703: Research Methodology	Minor Core	60	40	100	4
704: Field Project / Internship / Apprenticeship	Core	60	40	100	6
SEMESTER TOTAL				**400**	**20**
CUMULATIVE TOTAL				**400**	**20**

SEMESTER-VIII					
Course Code and Name	**Course Type**	**Theory Paper**	**Internal Assessment**	**Maximum Marks**	**Credit**
801: Theory of Computation (TOC)	Major Core	60	40	100	6
802: Quantum Mechanics	Minor Core	60	40	100	4
803: Field Project / Internship / Apprenticeship or Research Project	Core			200	10
SEMESTER TOTAL				**400**	**20**
CUMULATIVE TOTAL				**400**	**20**

DEPARTMENT OF COMPUTER SCIENCE

AWADHESH PARATAP SINGH UNIVERSITY, REWA (M.P.)

Programme – B.Sc. (Hon) Computer Science

Programme Outcomes

PO 1- Critical Thinking: Take informed actions after identifying the assumptions that frame our thinking and actions, check out the degree to which these assumptions are accurate and valid, and look at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.

PO 2- Effective Communication: Speak, read, write and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media and technology.

PO 3- Social Interaction: Elicit views of others, mediate disagreements and help reach conclusions in group settings.

PO 4- Effective Citizenship: Demonstrate empathetic social concern and equity-centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.

PO-5 Ethics: Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.

PO-6 Environment and Sustainability: Understand the issues of environmental contexts and sustainable development.

PO-7 Self-directed and Life-long Learning: Acquire the ability to engage in independent and life-long learning in the broadest context of socio-technological changes.

Programme Specific Outcomes

PSOs.1	Demonstrate understanding of the principles and concepts of the computer systems to develop efficient computing system.
PSOs.2	Analyze, design, develop, implement and test computer programme for providing solutions for computing problems.
PSOs.3	Enhancing skills and learning new computing technologies for attaining professional excellence and research.
PSOs.4	Design and develop computer programs/computer-based systems in the areas related to algorithms, networking, web design and data analytics of varying complexity.

DEPARTMENT OF COMPUTER SCIENCE

AWADHESH PARATAP SINGH UNIVERSITY, REWA (M.P.)

B.Sc. (HONS) COMPUTER SCIENCE I SEM

101: PROGRAMMING METHODOLOGY

Course Learning Outcomes

1. Learn to develop simple algorithms and flow charts to solve a problem.
2. Develop problem solving skills coupled with top down design principles.
3. Learn about the strategies of writing efficient and well-structured computer algorithms/programs.
4. Develop the skills for formulating iterative solutions to a problem.
5. Learn array processing algorithms coupled with iterative methods.

SYLLABUS

A. Theory **Credit 6**

UNIT-I

Introduction to Programming, Program Concept, Characteristics of Programming, Stages in Program Development, Algorithms, Notations, Design, Flowcharts, Types of Programming Methodologies, Introduction to C++ Programming- Basic Program Structure In C++, Variables and Assignments, Input and Output, Selection and Repetition Statements.

UNIT-II

Top-Down Design, Predefined Functions, Programmer -defined Function, Local Variable, Function Overloading, Functions with Default Arguments, Call -By-Value and Call-By-Reference Parameters, Recursion.

UNIT-III

Introduction to Arrays, Declaration and Referring Arrays, Arrays in Memory, Initializing Arrays, Arrays in Functions, Multi-Dimensional Arrays.

UNIT-IV

Structures- Member Accessing, Pointers to Structures, Structures and Functions, Arrays of Structures, Unions.

UNIT-V

Declaration and Initialization, Reading and Writing Strings, Arrays of Strings, String and Function, Strings and Structure, Standard String Library Functions, Searching Algorithms - Linear Search, Binary Search, Use of files for data input and output, merging and copy files.

TEXT AND REFERENCE BOOKS

1. Problem Solving and Program Design in C, J. R. Hanly and E. B. Koffman, Pearson, 2015.
2. Programming and problem solving with C++: brief edition, N. Dale and C. Weems, Jones & Bartlett Learning, 2010.

B. Practical

1. Given the problem statement, students are required to formulate problem, develop flowchart/algorithm, write code, execute and test it. Students should be given assignments on following:

a. To learn elementary techniques involving arithmetic operators and mathematical expressions, appropriate use of selection (if, switch, conditional operators) and control structures
b. Learn how to use functions and parameter passing in functions, writing recursive programs.

2. Write Programs to learn the use of strings and string handling operations.
a. Problems which can effectively demonstrate use of Arrays, Structures and Union.
b. Write programs using pointers.
c. Write programs to use files for data input and output.
d. Write programs to implement search algorithms.

DEPARTMENT OF COMPUTER SCIENCE

AWADHESH PARATAP SINGH UNIVERSITY, REWA (M.P.)

B.Sc. (HONS) COMPUTER SCIENCE I SEM

102: CALCULUS

Course Learning Outcomes: This course will enable the students to-

1. Assimilate the notions of limit of a sequence and convergence of a series of real numbers.
2. Calculate the limit and examine the continuity of a function at a point.
3. Understand the consequences of various mean value theorems for differentiable functions.
4. Sketch curves in Cartesian and polar coordinate systems.
5. Apply derivative tests in optimization problems appearing in social sciences, physical sciences, life sciences and a host of other disciplines.

SYLLABUS **Credit 6**

Unit-I

Sequences and Integration

Real numbers, Sequences of real numbers, Convergence of sequences and series, Bounded and monotonic sequences; Definite integral as a limit of sum, Integration of irrational algebraic functions and transcendental functions, Reduction formulae, Definite integrals.

Unit-II

Limit and Continuity

Definition of limit of a real valued function, Limit at infinity and infinite limits; Continuity of a real valued function, Properties of continuous functions, Intermediate value theorem, Geometrical interpretation of continuity, Types of discontinuity; Uniform continuity.

Unit-III

Differentiability

Differentiability of a real valued function, Geometrical interpretation of differentiability, Relation between differentiability and continuity, Differentiability and monotonicity, Chain rule of differentiation; Darboux's theorem, Rolle's theorem, Lagrange's mean value theorem, Cauchy's mean value theorem, Geometrical interpretation of mean value theorems, Successive differentiation, Leibnitz's theorem.

Unit-IV

Expansions of Functions

Maclaurin's and Taylor's theorems for expansion of a function in an infinite series, Taylor's theorem in finite form with Lagrange, Cauchy and Roche–Schlomilch forms of remainder, Maxima and minima.

DEPARTMENT OF COMPUTER SCIENCE

AWADHESH PARATAP SINGH UNIVERSITY, REWA (M.P.)

Unit-V

Curvature, Asymptotes and Curve Tracing

Curvature; Asymptotes of general algebraic curves, Parallel asymptotes, Asymptotes parallel to axes; Symmetry, Concavity and convexity, Points of inflection, Tangents at origin, Multiple points, Position and nature of double points; Tracing of Cartesian, polar and parametric curves.

REFERENCES BOOKS

1. Howard Anton, I. Bivens & Stephan Davis (2016). Calculus (10th edition). Wiley India.
2. Gabriel Klambauer (1986). Aspects of Calculus. Springer-Verlag.
3. Wieslaw Krawcewicz & Bindhyachal Rai (2003). Calculus with Maple Labs. Narosa.
4. Gorakh Prasad (2016). Differential Calculus (19th edition). Pothishala Pvt. Ltd.
5. George B. Thomas Jr., Joel Hass, Christopher Heil & Maurice D. Weir (2018).
6. Thomas' Calculus (14th edition). Pearson Education

DEPARTMENT OF COMPUTER SCIENCE

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B.Sc. (HONS) COMPUTER SCIENCE I SEM

103: INTERNET TECHNOLOGIES

Course Learning Outcomes

1. To understand the terms related to the Internet and how the Internet is changing the world.
2. To understand how computers are connected to the Internet and demonstrate the ability to use the World Wide Web.
3. Demonstrate an understanding of and the ability to use electronic mail and other internet based services.
4. Understand the design principles of Web pages and how they are created
5. To develop skills and an ability to create basic Web pages with HTML.

SYLLABUS **Credits 4**

UNIT-I

Introduction: Overview, Network of Networks, Intranet, Extranet and Internet. World Wide Web, Domain and Sub domain, Address Resolution, DNS, Telnet, FTP, HTTP. Review of TCP/IP: Features, Segment, Three-Way Handshaking, Flow Control, Error Control, Congestion control

UNIT-II

IP Datagram, IPv4 and IPv6, IP Subnetting and addressing: Classful and Classless Addressing, Subnetting, NAT, IP masquerading, IP tables. Internet Routing Protocol: Routing -Intra and Inter Domain Routing, Unicast and Multicast Routing, Broadcast. Electronic Mail: POP3, SMTP

UNIT-III

HTML:Introduction, Editors, Elements, Attributes, Heading, Paragraph. Formatting, Link, Head, Table, List, Block, Layout, CSS. Form, Iframe, Colors, Colorname, Colorvalue, Image Maps: map, area, attributes of image area. Extensible Markup Language (XML): Introduction, Tree, Syntax, Elements, Attributes, Validation, Viewing. XHTML in brief, CGI Scripts: Introduction, Environment Variable, GET and POST Methods.

UNIT-IV

PERL: Introduction, Variable, Condition, Loop, Array, Implementing data structure, Hash, String, Regular Expression, File handling, I/O handling. JavaScript: Basics, Statements, comments, variable, comparison, condition, switch, loop, break, Object-string, array, Boolean, reg-ex, Function, Errors, Validation, Cookies: Definit ion of cookies, Create and Store a cookie with example. Java Applets: Container Class, Components, Applet Life Cycle, Update method; Parameter passing applet, Applications.

UNIT-V

Client-Server programming In Java: Java Socket, Java RMI. Threats: Malicious code-viruses, Trojan horses, worms; eavesdropping, spoofing, modification, denial of service attacks. Network security techniques: Password and Authentication; VPN, IP Security, security in electronic transaction, Secure Socket Layer (SSL), Secure Shell (SSH). Firewall: Introduction, Packet filtering, Stateful, Application layer, Proxy.

Internet Telephony: Introduction, VoIP. Multimedia Applications: Multimedia over IP: RSVP, RTP, RTCP and RTSP. Streaming media, Codec and Plug-ins, IPTV, mywbut.com Search Engine and Web Crawler: Definition, Meta data, Web Crawler, Indexing, Page rank, overview of SEO.

REFERENCE BOOKS

1. Web Technology: A Developer's Perspective, N.P. Gopalan and J. Akilandeswari, PHI, Learning, Delhi, 2013.
2. Internetworking Technologies, An Engineering Perspective, Rahul Banerjee, PHI, Learning, Delhi, 2011

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B.Sc. (HONS) COMPUTER SCIENCE I SEM

104: ENGLISH

Course Level Learning Outcomes

1. Appreciate the diversity of modern Indian literatures and the similarities between them understand and creatively engage with the notion of nation and nationalism
2. Appreciate the impact of literary movements on various Indian literatures
3. Critically engage with significant social issues like caste and gender
4. Understand the historical trajectories of Indian literatures

Course Content

The texts suggested here are in addition to those in the CBCS syllabus. Some texts/portions have been changed keeping in view the Course Level Learning Outcomes (CLLO) as well as global guidelines in the LOCF documents. Stakeholders, as already suggested, may make amendments in the finalization of the corpus as well as the points raised in the CLLO.

SYLLABUS **Credit 4**

UNIT-I

Grammar: The simple sentence, Statements, questions, imperatives and exclamations, Questions and answers, Leaving out and replacing words, Information and emphasis, Verb Forms: The verb phrase, Verb tenses and aspects, The future, Be, have and do, Modal verbs, The passive, Infinitive, gerund and participles: The infinitive, The gerund, The noun phrase: Nouns and noun phrases, Agreement, The articles: a/an and the, Possessives and demonstratives, Quantifiers, Pronouns, Numbers and measurements, Adjectives, adverbs and prepositions: Adjectives, Adverbials, Comparison, Prepositions, Phrasal verbs and patterns with prepositions.

UNIT-II

The Aesthetics and Politics of Translation, Linguistic Regions and Languages, Modernity in Indian Literature, Caste, Gender and Resistance, Questions of Form in 20th Century Indian Literature

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UNIT-III

SHORT FICTION: Definition, History, Importance

- Premchand, 'The Shroud', in Penguin Book of Classic Urdu Stories, ed. M. Asaduddin (New Delhi: Penguin/Viking, 2006).
- Ismat Chugtai, 'The Quilt', in Lifting the Veil: Selected Writings of Ismat Chugtai, tr. M. Asaduddin (New Delhi: Penguin Books, 2009).
- Gurdial Singh, 'A Season of No Return', in Earthy Tones, tr. Rana Nayar (Delhi: Fiction House, 2002).
- Fakir Mohan Senapati, 'Rebati', in Oriya Stories, ed. Vidya Das, tr. Kishori Charan Das (Delhi: Srishti Publishers, 2000).
- G. Kalyan Rao, Untouchable Spring, tr. Alladi Uma and M. Sridhar (Delhi: Orient Black Swan, 2010)/ Bama, Karukku, tr. Lakshmi Holmstrom (Delhi: OUP, 2000)

UNIT-IV

POETRY: Definition, History, Importance

- Rabindra Nath Tagore, 'Light, Oh Where is the Light?' and 'When My Play was with thee', in Gitanjali: A New Translation with an Introduction by William Radice (New Delhi: Penguin India, 2011)
- G.M. Muktibodh, 'The Void', (tr. Vinay Dharwadker) and 'So Very Far', (tr. Tr. Vishnu Khare and Adil Jussawala), in The Oxford Anthology of Modern Indian Poetry, ed.Vinay Dharwadker and A.K. Ramanujam (New Delhi: OUP, 2000).
- Amrita Pritam, 'I Say Unto Waris Shah', (tr. N.S. Tasneem) in Modern Indian Literature: An Anthology, Plays and Prose, Surveys and Poems, ed. K.M. George, vol. 3 (Delhi: Sahitya Akademi, 1992).
- Thangjam Ibopishak Singh, 'Dali, Hussain, or Odour of Dream, Colour of Wind' and 'The Land of the Half-Humans', tr. Robin S. Ngangom, in The Anthology of Contemporary Poetry from the Northeast (NEHU: Shillong, 2003).

UNIT-V

DRAMA: Definition, History, Indian Drama , Indian Drama and Importance

- Dharamveer Bharati Andha Yug, tr. Alok Bhalla (New Delhi: OUP, 2009).
- Hanif Kureshi My Beautiful Launderette

REFERENCE BOOK

1. Oxford Guide to English Grammar e-book, by John Eastwood.

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B.Sc. (HONS) COMPUTER SCIENCE II SEM

201: COMPUTER SYSTEM ARCHITECTURE

Course Learning Outcomes

1. To make students understand the basic structure, operation and characteristics of digital computer.
2. To familiarize the students with arithmetic and logic unit as well as the concept of the concept of pipelining.
3. To familiarize the students with hierarchical memory system including cache memories and virtual memory.
4. To make students know the different ways of communicating with I/O devices and standard I/O interfaces.

SYLLABUS

A. Theory **6 credits**

UNIT-I

Fundamentals of Digital Electronics: Data Types, Complements, Fixed-Point Representation, Floating-Point Representation, Other Binary Codes, Error Detection Codes, Logic Gates, Boolean Algebra, Map Simplification, Combinational Circuits, Flip Flops, Sequential Circuits, Registers, Counters, Multiplexer, Demultiplexer, Decoder, Encoder.

UNIT-II

Register Transfer and Micro operations: Register Transfer Language, Register Transfer, Bus & Memory Transfer, Arithmetic Micro operations, Logic Micro operations, Shift Micro operation

Basic Computer Organization: Instruction codes, Computer Registers, Computer Instructions, Timing & Control, Instruction Cycles, Memory Reference Instruction, Input - Output & Interrupts, Complete Computer Description & Design of Basic Computer.

UNIT-III

Processor and Control Unit: Hardwired vs. Micro programmed Control Unit, General Register Organization, Stack Organization, Instruction Format, Data Transfer & Manipulation, Program Control, RISC, CISC, Pipelining – Pipelined data path and control – Handling Data hazards & Control hazards.

UNIT-V

Memory and I/O Systems: Peripheral Devices, I/O Interface, Data Transfer Schemes, Program Control, Interrupt, DMA Transfer, I/O Processor. Memory Hierarchy, Processor vs. Memory Speed, High-Speed Memories, Cache Memory, Associative Memory, Interleave, Virtual Memory, Memory Management.

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UNIT-VI

Parallelism: Instruction-level-parallelism – Parallel processing challenges – Flynn's classification – Hardware multithreading – Multicore processors.

TEXT BOOKS

1. Computer System Architecture, M. Morris Mano, 3rd Edition, Prentice Hall.
2. Computer Organization and Design, David A. Patterson and John L. Hennessey, Fifth edition, Morgan Kauffman / Elsevier, 2014.

REFERENCE BOOKS

1. Computer Architecture: A Quantitative Approach, John L. Hennessy, David A. Patterson, 4th Edition.
2. Computer Organization and Architecture, William Stallings, Prentice Hall.

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B.Sc. (HONS) COMPUTER SCIENCE II SEM

202: ALGEBRA AND GEOMETRY

Course Learning Outcomes: This course will enable the students to:

1. Understand the importance of roots of real and complex polynomials and learn various methods of obtaining roots.
2. Familiarize with relations, equivalence relations and partitions.
3. Employ De Moivre's theorem in a number of applications to solve numerical problems.
4. Recognize consistent and inconsistent systems of linear equations by the row echelon form of the augmented matrix, using rank.
5. Understand the properties of three dimensional shapes

SYLLABUS **6 credits**

Unit-I

Theory of Equations and Complex Numbers

Elementary theorems on the roots of an equations including Cardan's method, The remainder and factor theorems, Synthetic division, Factored form of a polynomial, The Fundamental theorem of algebra, Relations between the roots and the coefficients of polynomial equations, Imaginary roots, Integral and rational roots; Polar representation of complex numbers, The *n*th roots of unity, De Moivre's theorem for integer and rational indices and its applications.

Unit-II

Relations and Basic Number Theory

Relations, Equivalence relations, Equivalence classes; Functions, Composition of functions, Inverse of a function; Finite, countable and uncountable sets; The division algorithm, Divisibility and the Euclidean algorithm, The fundamental theorem of arithmetic, Modular arithmetic and basic properties of congruences, Principles of mathematical induction and well ordering.

Unit-III

Row Echelon Form of Matrices and Applications

Systems of linear equations, Row reduction and echelon forms, Linear independence, The rank of a matrix and applications; Introduction to linear transformations, The matrix of a linear transformation, Matrix operations, Determinants, The inverse of a matrix, Characterizations of invertible matrices; Applications to Computer Graphics, Eigenvalues and eigenvectors, The characteristic equation and the Cayley–Hamilton theorem

Unit-IV

Planes, Straight Lines and Spheres

Planes: Distance of a point from a plane, Angle between two planes, pair of planes, Bisectors of angles between two planes; Straight lines: Equations of straight lines, Distance of a point from a straight line, Distance between two straight lines, Distance between a straight line and a plane; Spheres: Different forms, Intersection of two spheres, Orthogonal intersection,

Tangents and normal, Radical plane, Radical line, Coaxial system of spheres, Pole, Polar and Conjugacy.

Unit-V

Locus, Surfaces, Curves and Conicoids

Space curves, Algebraic curves, Ruled surfaces, Some standard surfaces, Classification of quadric surfaces, Cone, Cylinder, Central conicoids, Tangent plane, Normal, Polar planes, and Polar lines.

REFERENCES BOOKS

1. Titu Andreescu, & Dorin Andrica (2014). Complex Numbers from A to...Z. (2nd edition).
3. Robert J. T. Bell (1994). An Elementary Treatise on Coordinate Geometry of Three Dimensions. Macmillan India Ltd.
4. D. Chatterjee (2009). Analytical Geometry: Two and Three Dimensions. Narosa Publishing House.
5. Leonard Eugene Dickson (2009). First Course in the Theory of Equations. The Project Gutenberg EBook (http://www.gutenberg.org/ebooks/29785)
6. Edgar G. Goodaire & Michael M. Parmenter (2015). Discrete Mathematics with Graph Theory (3rd edition). Pearson Education Pvt. Ltd. India.
7. Bernard Kolman & David R. Hill (2003). Introductory Linear Algebra with Applications (7th edition). Pearson Education Pvt. Ltd. India.
8. David C. Lay, Steven R. Lay & Judi J. McDonald (2016). Linear Algebra and its Applications (5th edition) Pearson Education Pvt. Ltd. India.

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B.Sc. (HONS) COMPUTER SCIENCE II SEM

203: MOBILE APPLICATION DEVELOPMENT

Course Learning Outcomes

1. To understand Android platform and its architecture.
2. To learn activity creation and Android User Interface designing.
3. To learn about different wireless mobile data transmission standards.
4. To understand and learn how to integrate basic phone features, multimedia, camera and Location based services in Android Application.
5. To learn about different systems for mobile application development, deployment and distribution in Mobile market place (Android, IoS).

SYLLABUS **Credits 4**

UNIT I

(Introduction) What is Android, Android Versions and its Feature Set, Various Android Devices on the Market, Android Market Application Store, Android Development Environment System Requirements, Android SDK, Installing Java, and ADT bundle - Eclipse Integrated Development Environment (IDE), Creating Android Virtual Devices (AVDs)

UNIT II

(Android Architecture Overview and Application) Android Software Stack, The Linux Kernel, Android Runtime - Dalvik Virtual Machine, Android Runtime – Core Libraries, Dalvik VM Specific Libraries, Java Interoperability Libraries, Android Libraries, Application Framework, Creating a New Android Project ,Defining the Project Name and SDK Settings, Project Configuration Settings, Configuring the Launcher Icon, Creating an Activity, Running the Application in the AVD, Stopping a Running Application, Modifying the Example Application, Reviewing the Layout and Resource Files

UNIT III

(Android Software Development Platform and Framework) Understanding Java SE and the Dalvik Virtual Machine, The Directory Structure of an Android Project, Common Default Resources Folders, The Values Folder, Leveraging Android XML, Screen Sizes , Launching Mobile Application: The AndroidManifest.xml File, Android Application Components, Android Activities: Defining the UI, Android Service s: Processing in the Background, Broadcast Receivers: Announcements and Notifications Content Providers: Data Management, Android Intent Objects: Messaging for Components, Android Manifest XML: Declaring Your Components

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UNIT IV

(Understanding Android User Interfaces, Views and Layouts) Designing for Different Android Devices, Views and View Groups, Android Layout Managers, The View Hierarchy, Designing an Android User Interface using the Graphical Layout Tool Displaying Text with TextView, Retrieving Data from Users, Using Buttons, Check Boxes and Radio Groups, Getting Dates and Times from Users, Using Indicators to Display Data to Users, Adjusting Progress with Seek Bar, Working with Menus using views, Gallery, Image Switcher, Grid View, and Image View views to display images, Creating Animation.

UNIT V

(Databases, Intents, Location-based Services) Saving and Loading Files, SQLite Databases, Android Database Design, Exposing Access to a Data Source through a Content Provider, Content Provider Registration, Native Content Providers Intents and Intent Filters: Intent Overview, Implicit Intents, Creating the Implicit Intent Example Project, Explicit Intents, Creating the Explicit Intent Example Application, Intents with Activities, Intents with Broadcast Receivers.

Sending SMS Messages Programmatically, Getting Feedback after Sending the Message Sending SMS Messages Using Intent Receiving, sending email, Introduction to location-based service, configuring the Android Emulator for Location -Based Services, Geocoding and Map-Based Activities Multimedia: Audio, Video, Camera: Playing Audio and Video, Recording Audio and Video, Using the Camera to Take and Process Pictures.

REFERENCE BOOKS

1. Android Programming Unleashed (1st Edition) by Harwani.
2. Beginning Mobile Application Development in the Cloud (2011), Richard Rodger.

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B.Sc. (HONS) COMPUTER SCIENCE II SEM

204: ENVIRONMENT SCIENCE

Course Learning Outcomes

1. Knowledge of the environment and the role of human beings in shaping the environment
2. Understand various components of the environment and interfaces
3. Critically appreciate the environmental concerns of today

SYLLABUS **Credit 4**

UNIT-I

Multidisciplinary nature of Environmental Science

Environment– Definition and the components– the physical components, socioeconomic and cultural component, Natural resources – definition and types, renewable and non-renewable resources, resource use and depletion

UNIT-II

The atmosphere – structure and composition, physicochemical role of the atmosphere, radiative balance and earth's temperature regime

UNIT-III

Rocks and minerals, the rock cycle, biogeochemical cycles, soil- structure and types, land resources, and landforms, Water resources, water bodies and water use, issues with water and conservation, Ecosystems – concepts and structure, diversity and stability, concepts of biomes, biodiversity

UNIT-IV

The Urban environment and issues – internal migration, waste generation and management, vehicular traffic, air and water pollution, urban heat island, future of cities, urban green space and aesthetics, Concept of smart cities, sustainable cities

UNIT-V

Environmental issues- local, regional and global, Concepts of pollution of air, water, and land, urbanization and solid wastes, biodiversity loss, land degradation and desertification, biodiversity loss, ozone layer depletion, climate change Environmental concerns – historical development of environmentalism and conservation with Indian perspective

TEXTBOOKS

1. William P. Cunningham, Mary Ann Cunningham, Barbara Woodworth Saigo, Environmental Science: A global concern, McGrawHill 2003
2. William Cunningham, Mary Cunningham, Principles of Environmental Science: Seventh Edition, McGrawHill 2014

REFERENCE BOOKS

1. Roosa SA, Sustainable Development Handbook, CRC Press 2008
2. Atkinson G., Dietz S., Neumayer E., Agarwala M, Handbook of Sustainable Development, Edward Elger, 2014

DEPARTMENT OF COMPUTER SCIENCE

AWADHESH PARATAP SINGH UNIVERSITY, REWA (M.P.)

B.Sc. (HONS) COMPUTER SCIENCE III SEM

301: DATA STRUCTURE AND ALGORITHMS

Course Learning Outcomes

1. To learn good principles of algorithm design;
2. To learn how to analyse algorithms and estimate their worst-case and average case behaviour (in easy cases);
3. To become familiar with fundamental data structures and with the manner in which these data structures can best be implemented; become accustomed to the description of algorithms in both functional and procedural styles;
4. To learn how to apply their theoretical knowledge in practice (via the practical component of the course)

SYLLABUS **Credit 6**

UNIT-I

Introduction: Basic Design and Analysis Techniques of Algorithms, Correctness of Algorithm. Algorithm Design Techniques: Iterative Techniques, Divide and Conquer, Dynamic Programming, Greedy Algorithms.

UNIT-II

Sorting and Searching Techniques: Elementary Sorting techniques– Bubble Sort, Insertion Sort, Merge Sort, Advanced Sorting techniques- Heap Sort, Quick Sort, Sorting in Linear Time - Bucket Sort, Radix Sort and Count Sort, Searching Techniques- Medians & Order Statistics, complexity analysis

UNIT-III

Graphs, Graph ADT, Graph Representations, Graph Traversals, Graphs Algorithms: Graph Algorithms– Breadth First Search, Depth First Search and its Applications, Minimum Spanning Trees. String Processing, Hashing- Introduction, Hash tables, Hash functions, Overflow Handling.

UNIT-IV

Tree Data structure, Search Trees- Binary Search Trees, AVL Trees- Definition and Examples. Lower Bounding Techniques: Decision Trees, Balanced Trees, Red-Black Trees and Splay Trees, Comparison of Search Trees, Pattern Matching Algorithm- The Knuth-Morris-Pratt Algorithm

UNIT-V

Advanced Analysis Technique: Randomized Algorithm, Distributed Algorithm, Heuristics Algorithms, Parallel Algorithms

REFERENCE BOOKS

1. T.H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein Introduction to Algorithms, PHI, 3rd Edition 2009
2. Sara basse & A.V. Gelder Computer Algorithm – Introduction to Design and Analysis, Publisher – Pearson 3rd Edition 1999

B. Practical

The student shall develop programs in a chosen language to solve problems using algorithm design techniques such as Divide and Conquer, Greedy, Dynamic programming and Backtracking. Some of the problems to be solved are indicated below-

1. Write a test program to implement Divide and Conquer Strategy. Eg: Quick sort algorithm for sorting list of integers in ascending order
2. Write a program to implement Merge sort algorithm for sorting a list of integers in ascending order.
3. Write program to implement the DFS and BFS algorithm for a graph.
4. Write program to implement backtracking algorithm for solving problems like Nqueens.
5. Write a program to implement the backtracking algorithm for the sum of subsets problem
6. Write program to implement greedy algorithm for job sequencing with deadlines.
7. Write a program to implement Dijkstra's algorithm for the Single source shortest path problem.
8. Write a program that implements Prim's algorithm to generate minimum cost spanning tree.
9. Write a program that implements Kruskal's algorithm to generate minimum cost spanning tree
10. Write program to implement Dynamic Programming algorithm for the 0/1 Knapsack problem.
11. Write program to implement Dynamic Programming algorithm for the Optimal Binary Search Tree Problem.

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302: MECHANICS

Course learning outcome

After going through the course, the student should be able to

1. Understand the role of vectors and coordinate systems in Physics.
2. Understand the analogy between translational and rotational dynamics, and application of both motions simultaneously in analyzing rolling with slipping.
3. Apply Kepler's law to describe the motion of planets and satellite in circular orbit.
4. Describe how fictitious forces arise in a non-inertial frame, e.g., why a person sitting in a merry-go-round experiences an outward pull.
5. Describe special relativistic effects and their effects on the mass and energy of a moving object

SYLLABUS **Credit 6**

UNIT-I

Fundamentals of Dynamics: Reference frames, Inertial frames, Galilean transformations, Galilean invariance, Review of Newton's Laws of Motion. Momentum of variable mass system: motion of rocket, Dynamics of a system of particles, Principle of conservation of momentum. Impulse, Determination of Centre of Mass of discrete and continuous objects having cylindrical and spherical symmetry (1-D, 2-D & 3-D)

UNIT-II

Work and Energy: Work and Kinetic Energy Theorem, Conservative and non-conservative forces, Potential Energy, Energy diagram, Stable, unstable and neutral equilibrium. Force as gradient of potential energy, Work & Potential energy, Work done by non-conservative forces, Law of conservation of Energy.

Collisions: Elastic (1-D and 2-D) and inelastic collisions. Centre of Mass and Laboratory frames.

UNIT-III

Rotational Dynamics: Angular momentum of a particle and system of particles, Torque, Principle of conservation of angular momentum, Rotation about a fixed axis, Moment of inertia, theorem of parallel and perpendicular axes, Determination of moment of inertia of

discrete and continuous objects [1-D, 2-D & 3-D (rectangular, cylindrical and spherical)], Kinetic energy of rotation, Motion involving both translation and rotation.

Gravitation and Central Force Motion: Law of gravitation, Gravitational potential energy, Inertial and gravitational mass, Potential and field due to spherical shell and solid sphere.

UNIT-IV

Motion of a particle under a central force field: Two-body problem, its reduction to one body problem and its solution. Reduction of angular momentum, kinetic energy and total energy, the energy equation and energy diagram, Kepler's Laws, Satellite in circular orbit, Geosynchronous orbits.

Oscillations: Idea of SHM, Differential equation of SHM and its solution, Kinetic energy, potential energy, total energy and their time-average values, Compound pendulum, Damped oscillation

Forced oscillations: Transient and steady states, sharpness of resonance and Quality Factor, Non-Inertial Systems: Non-inertial frames and fictitious forces, Uniformly rotating frame, Centrifugal force, Coriolis force and its applications.

UNIT-V

Special Theory of Relativity: Outcomes of Michelson-Morley Experiment, Postulates of Special Theory of Relativity, Lorentz Transformations, Simultaneity, Length contraction, Time dilation, Relativistic transformation of velocity, acceleration, frequency and wave number, Mass of relativistic particle, Mass-less Particles, Mass-energy Equivalence, Relativistic Doppler effect (transverse and longitudinal), Relativistic Kinematics (decay problems, inelastic collisions and Compton effect), Transformation of Energy and Momentum.

REFERENCES BOOKS

1. An Introduction to Mechanics (2/e), Daniel Kleppner & Robert Kolenkow, 2014, Cambridge University Press.
2. Mechanics Berkeley Physics Course, Vol. 1, 2/e: Charles Kittel, et. al., 2017, McGraw Hill Education.
3. Theory and Problems of Theoretical Mechanics, Murray R. Spiegel, 1977, McGraw Hill Education.
4. Intermediate Dynamics, Patrick Hamill, 2010, Jones and Bartlett Publishers.
5. Analytical Mechanics, G. R. Fowles and G. L. Cassiday, 2005, Cengage Learning.

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B.Sc. (HONS) COMPUTER SCIENCE III SEM

303: DATA MINING

Course Learning Outcomes

1. Demonstrate advanced knowledge of data mining concepts and techniques.
2. Apply the techniques of clustering, classification, association finding, feature selection and visualisation on real world data
3. Determine whether a real world problem has a data mining solution
4. Apply data mining software and toolkits in a range of applications
5. Set up a data mining process for an application, including data preparation, modelling and evaluation

SYLLABUS **Credit 4**

UNIT I

Introduction to Data Mining, Understanding Data, Data Mining Functionalities, Data mining Architecture, Major Issues in Data Mining, Relations to Database, Statistics, Machine Learning

UNIT II

Association Rule Mining, Level-wise Method, FP-Tree Method, Other Variants, Association Mining to Correlation Analysis, Constraint Based Association Mining

UNIT III

Classification, Classification and prediction, Decision Tree Algorithm, CART, PUBLIC, Pruning Classification Tree, Issue regarding classification

UNIT IV

Clustering Techniques, Clustering of Numeric Data, of Ordinal Data, Efficiency of Clustering, Consensus Clustering, Spectral Clustering, cluster Analysis

UNIT V

Rough Set Theory and its Application to Data Mining, ROC Analysis, Data Mining Trends, Big Data, Data Analytics

TEXT BOOKS

Data Mining Techniques (4e) Universities Press Arun K Pujari

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304: PROGRAMMING IN JAVA

Course Learning Outcomes

1. Knowledge of the structure and model of the Java programming language,
2. Use the Java programming language for various programming technologies
3. Develop software in the Java programming language,
4. Evaluate user requirements for software functionality required to decide whether the Java programming language can meet user requirements

SYLLABUS **4 credits**

A. Theory

UNIT-I

Introduction: Java Essentials, Its characteristics, Execution and Compilation, Keyword, Data types, Variables, Operators, Control Statements, Standard Input/ Output

UNIT-II

Object Oriented Concepts: Classes, Object, Encapsulation, Abstraction, Inheritance, Polymorphisms, Constructors, Array, JAVA Packages

UNIT-III

String Handling, String Operations, Java Memory Management, Exception Handling, Wrapper Classes, Auto-boxing, Multi-thread Programming, Java Thread Model, Creating a Thread

UNIT-IV

Applets: Applet Class, Applet Architecture, Applet Skeleton, Event Handling, AWT, Database Handling using JDBC

UNIT-V

Java Collections Framework overview, Collection interfaces, Collection Classes, java utility classes, String Tokenizer, Working with java graphics

B. Practical

Students are required to implement object-oriented paradigm using JAVA. Below are the list of some of the experiments.

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Part A

1. Program on strings: Check the equality of two strings, Reverse a string.
2. Program using loops: to find the sum of digits of a given number, display a multiplication table, display all prime numbers between 1 to 1000.
3. Program to demonstrate all math class functions.

Part B

4. Program on files: to copy a file to another file using Java to package classes.
5. Program to demonstrate method over-riding and overloading
6. Programs on inheritances.
7. Multi-threaded programming.

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B.Sc. (HONS) COMPUTER SCIENCE III SEM

401: DISCRETE STRUCTURE

Course Learning Outcomes

1. Understand the notion of mathematical thinking, mathematical proofs, and algorithmic thinking, and be able to apply them in problem solving.
2. Understand the basics of combinatory, and be able to apply the methods from these subjects in problem solving.
3. Be able to use effectively algebraic techniques to analyze basic discrete structures and algorithms.
4. Understand asymptotic notation, its significance, and be able to use it to analyze asymptotic performance for some basic algorithmic examples.
5. Understand some basic properties of graphs and related discrete structures, and be able to relate these to practical examples

SYLLABUS **Credits 6**

UNIT-I

Sets: Finite and Infinite Sets, Uncountable Infinite Sets; Functions, Relations, Properties of Binary Relations, Closure, Partial Ordering Relations; Counting - Pigeonhole Principle, Permutation and Combination; Mathematical Induction, Principle of Inclusion and Exclusion.

UNIT-II

Growth of Functions: Asymptotic Notations, Summation Formulas and Properties, Bounding Summations, Approximation by Integrals

UNIT-III

Recurrences: Recurrence Relations, Generating Functions, Linear Recurrence Relations with Constant Coefficients and their Solution, Substitution Method, Recurrence Trees, Master Theorem

UNIT-IV

Graph Theory: Basic Terminology, Models and Types, Multigraphs and Weighted Graphs, Graph Representation, Graph Isomorphism, Connectivity, Euler and Hamiltonian Paths and Circuits, Planar Graphs, Graph Coloring, Trees, Basic Terminology and Properties of Trees, Introduction to Spanning Trees

UNIT-V

Propositional Logic: Logical Connectives, Well-formed Formulas, Tautologies, Equivalences, Inference Theory

DEPARTMENT OF COMPUTER SCIENCE

AWADHESH PARATAP SINGH UNIVERSITY, REWA (M.P.)

REFERENCE BOOKS

1. C.L. Liu & Mahopatra, Elements of Discrete mathematics, 2nd Sub Edition 1985, Tata McGraw Hill
2. Rosen, Discrete Mathematics and Its Applications, Sixth Edition 2006
3. T.H. Coremen, C.E. Leiserson, R. L. Rivest, Introduction to algorithms, Prentice Hall on India (3rd edition 2009)
4. M. O. Albertson and J. P. Hutchinson, Discrete Mathematics with Algorithms 1988 John wiley Publication

DEPARTMENT OF COMPUTER SCIENCE

AWADHESH PARATAP SINGH UNIVERSITY, REWA (M.P.)

B.Sc. (HONS) COMPUTER SCIENCE IV SEM

402: MATHEMATICAL PHYSICS

Course Learning Outcomes

On successfully completing this course, the students will be able to

1. Represent a periodic function by a sum of harmonics using Fourier series and their applications in physical problems such as vibrating strings etc.
2. Obtain power series solution of differential equation of second order with variable coefficient using Frobenius method.
3. Understand properties and applications of special functions like Legendre polynomials, Bessel functions and their differential equations and apply these to various physical problems such as in quantum mechanics.
4. Learn about gamma and beta functions and their applications.
5. Solve linear partial differential equations of second order with separation of variable method

SYLLABUS **Credit 6**

UNIT-I

Fourier Series: Periodic functions, Orthogonality of sine and cosine functions, Dirichlet Conditions (Statement only), Expansion of periodic functions in a series of sine and cosine functions and determination of Fourier coefficients, Even and odd functions and their Fourier expansions (Fourier Cosine Series and Fourier Sine Series), Application, Summing of Infinite Series, Parseval's Identity and its application to summation of infinite series

UNIT-II

Frobenius Method and Special Functions: Singular Points of Second Order Linear Differential Equations and their importance, Frobenius method and its applications to differential equations: Legendre, Bessel, Hermite and Laguerre Differential Equations, Properties of Legendre Polynomials: Rodrigues Formula, Generating Function, Orthogonality, Simple recurrence relations, Expansion of function in a series of Legendre Polynomials, Bessel Functions of the First Kind: Generating Function, simple recurrence relations, Zeros of Bessel Functions (Jo(x) and J1(x)) and Orthogonality.

UNIT-III

Some Special Integrals: Beta and Gamma Functions and Relation between them, Expression of Integrals in terms of Gamma Functions.

UNIT-IV

Partial Differential Equations: Solutions to partial differential equations (2 or 3 independent variables) using separation of variables: Laplace's Equation in problems of

rectangular geometry, Solution of wave equation for vibrational modes of a stretched string, rectangular and circular membranes, Solution of 1D heat flow equation, (Wave/Heat equation not to be derived)

UNIT-V

Complex Analysis: Brief Revision of Complex Numbers and their Graphical Representation, Euler's formula, De-Moivre's theorem, Roots of Complex Numbers, Functions of Complex Variables, Analyticity and Cauchy-Riemann Equations, Examples of analytic functions, Singularities: poles, removable singularity, essential singularity, branch points, branch cut, Integration of a function of a complex variable, Cauchy-Goursat Theorem, Cauchy's Inequality, Cauchy's Integral formula, Simply and multiply connected region, Laurent and Taylor's expansion, Residues and Residue Theorem, Application of Contour Integration in solving Definite Integrals.

REFERENCES BOOKS

1. Advanced Engineering Mathematics, Erwin Kreyszig, 2008, Wiley India .
2. Advanced Mathematics for Engineers and Scientists: Schaum Outline Series, M. R Spiegel, McGraw Hill Education (2009).
3. Differential Equations, George F. Simmons, 2006, Tata McGraw-Hill.
4. Mathematical Methods for Physicists, Arfken, Weber and Harris, Elsevier
5. Applied Mathematics for Engineers and Physicists, L.A. Pipes and L.R. Harvill, Dover Publications (2014).
6. Complex Variables and Applications, J.W.Brown& R.V.Churchill, 7th Ed. 2003, Tata McGraw-Hill.

DEPARTMENT OF COMPUTER SCIENCE

AWADHESH PARATAP SINGH UNIVERSITY, REWA (M.P.)

B.Sc. (HONS) COMPUTER SCIENCE IV SEM

403: PYTHON PROGRAMMING

Course Learning Outcomes

1. Develop and execute simple Python programs.
2. Structure a Python program into functions.
3. Using Python lists, tuples to represent compound data
4. Develop Python Programs for file processing

SYLLABUS **Credit 4**

A. Theory

UNIT I

Introduction to Python, Python, Features of Python, Execution of a Python, Program, Writing Our First Python Program, Data types in Python, Python Interpreter and Interactive Mode, Values and Types: int, float, boolean, string, and list, Variables, Expressions, Statements, Tuple Assignment, Precedence of Operators, Comments, Modules and Functions, Function Definition and use, Flow of Execution, Parameters and Arguments

UNIT II

Operators in Python, Input and Output, Control Statements, Boolean Values and operators, Conditional (if), Alternative (if-else), Chained Conditional (if-elif-else), Iteration: state, while, for, break, continue, pass, Fruitful Functions: Return Values, Parameters, Local and Global Scope, Function Composition, Recursion

UNIT III

Arrays in Python, Strings and Characters, Strings: String Slices, Immutability, String Functions and Methods, String Module, Lists as Arrays, Illustrative Programs: Square Root, gcd, Exponentiation, Sum an Array of Numbers, Linear Search, Binary Search

UNIT IV

Functions, Lists and Tuples, List Operations, List Slices, List Methods, List Loop, Mutability, Aliasing, Cloning Lists, List Parameters; Tuples: Tuple Assignment, Tuple as Return Value, Dictionaries: Operations and Methods, Advanced List Processing - List Comprehension, Illustrative Programs: Selection Sort, Insertion Sort, Merge sort, Histogram

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UNIT V

Files and Exception: Text Files, Reading and Writing Files, Format Operator; Command Line Arguments, Errors and Exceptions, Handling Exceptions, Modules, Packages, Illustrative Programs: Word Count, Copy File.

TEXT BOOKS

1. Mark Lutz, Learning Python
2. Tony Gaddis, Starting Out With Python
3. Kenneth A. Lambert, Fundamentals of Python
4. James Payne, Beginning Python using Python 2.6 and Python 3

B. Practical

The students are required to verify their ability to use core programming basics and program design with functions using Python programming language. The teacher shall programs to strengthen the practical expertise of the students. The following is an indicative list of programs that can be practised

1. Write a program to demonstrate different number data types in Python.
2. Write a program to perform different Arithmetic Operations on numbers in Python.
3. Write a program to create, concatenate and print a string and accessing sub-string from a given string.
4. Write a python script to print the current date in the following format “Fri Oct 11 02:26:23 IST 2019”
5. Write a program to create, append, and remove lists in python.
6. Write a program to demonstrate working with tuples in python.
7. Write a program to demonstrate working with dictionaries in python.
8. Write a python program to find largest of three numbers.
9. Write a Python program to construct the following pattern, using a nested for loop

```
  *
* *
*
* * *
* * * *
* * * * *
* * * *
* * *
* *
*
```

10. Write a Python script that prints prime numbers less than 20.
11. Write a python program to define a module to find Fibonacci Numbers and import the module to another program.

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B.Sc. (HONS) COMPUTER SCIENCE IV SEM

404: MATLAB PROGRAMMING

Course Learning Outcomes

1. Understand the fundaments of procedural and functional programming
2. Understand Matlab data types and structures
3. Be able to set up simple real-life numerical problems such that they can be solved and visualized using basic codes in Matlab
4. Be ready to use advanced coding in Matlab in their subsequent studies

SYLLABUS **Credit 4**

UNIT-I

Introduction to MATLAB Programming- Basics of MATLAB programming, Array operations in MATLAB, Loops and execution control, Working with files: Scripts and Functions, Plotting and program output

UNIT-II

Approximations and Errors- Defining errors and precision in numerical methods, Truncation and round-off errors, Error propagation, Global and local truncation errors

UNIT-III

Linear Equations- Linear algebra in MATLAB, Gauss Elimination, LU decomposition and partial pivoting, Iterative methods: Gauss Siedel Method

UNIT-IV

Regression and Interpolation- Introduction, Linear least squares regression (including lsqcurvefit function), Functional and nonlinear regression (including lsqnonlin function), Interpolation in MATLAB using spline and pchip

UNIT-V

Nonlinear Equations- Nonlinear equations in single variable, MATLAB function fzero in single variable, Fixed-point iteration in single variable, Newton-Raphson in single variable, MATLAB function fsolve in single and multiple variables, Newton-Raphson in multiple variables

TEXT BOOKS

1. Fausett L.V.(2007) Applied Numerical Analysis Using MATLAB, 2nd Ed., Pearson Education
2. Essential MATLAB for Engineers and Scientists, 6th Edition, Brian Hahn, Daniel T. Valentine, Academic Press, Web ISBN-13: 978-0-12-805271-6

DEPARTMENT OF COMPUTER SCIENCE

AWADHESH PARATAP SINGH UNIVERSITY, REWA (M.P.)

B.Sc. (HONS) COMPUTER SCIENCE V SEM

501: DATABASE MANAGEMENT SYSTEM

Course Learning Outcomes

1. Gain knowledge of database systems and database management systems software.
2. Ability to model data in applications using conceptual modelling tools such as ER Diagrams and design data base schemas based on the model.
3. Formulate, using SQL, solutions to a broad range of query and data update problems.
4. Demonstrate an understanding of normalization theory and apply such knowledge to the normalization of a database.
5. Be acquainted with the basics of transaction processing and concurrency control.

SYLLABUS **Credit 6**

A. Theory

UNIT-I

Basic Database Concepts, Terminology, and Architecture; Types of Database Management Systems, Differences between Relational and other Database Models, Data Modelling: Relations, Schemas, Constraints, Queries, and Updates, Conceptual vs Physical Modelling, Entity Types, attributes, ER Diagrams

UNIT-II

SQL Data Definition: Specifying Tables, Data Types, Constraints; Simple SELECT, INSERT, UPDATE, DELETE Statements; Complex SELECT Queries, including Joins and Nested Queries; Actions and Triggers; Views; Altering Schemas

UNIT-III

Relational Algebra: Definition of Algebra; Relations as Sets; Operations: SELECT, PROJECT, JOIN, etc. Normalization Theory and Functional Dependencies, 2NF, 3NF, BCNF, 4NF, 5NF;

UNIT-IV

Indexing: Files, Blocks, and Records, Hashing, RAID, Replication; Single-Level and Multi-Level Indexes, B-Trees and B+-Trees, Query Processing Translation of SQL into Query Plans; Basics of Transactions, Concurrency and Recovery.

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UNIT-V

DATABASE PROGRAMMING: Embedded SQL, Dynamic SQL, JDBC, Avoiding Injection Attacks, Stored Procedures; Lightweight Data Access Layers for Python and JavaScript Applications, PHP and MySQL, Object Relational Modeling: Hibernate for Java, Active Record for Rails.

BIG DATA: Motivations; OLAP vs. OLTP, Batch Processing, MapReduce and Hadoop, Spark, Other Systems: HBase, Working with POSTGRES, REDIS, MONGO, and NEO: Setting up the same Database on Four Platforms, Basic Queries and Reporting

TEXTBOOKS

1. Elmasri's and Navathe's Fundamentals of Database Systems, Addison-Wesley

REFERENCE BOOKS

2. Data base Management Systems, Raghu Ramakrishnan, Johannes Gehrke, McGraw Hill Education
3. Data base System Concepts, A. Silberschatz, Henry. F. Korth, S. Sudarshan, McGraw Hill Education

B. Practical

Students are required to practice the concepts learnt in the theory by designing and querying a database for a chosen organization (Like Library, Transport etc). The teacher may devise appropriate weekly lab assignments to help students practice the designing, querying a database in the context of example database. Some indicative list of experiments is given below.

Experiment 1: E-R Model

Analyze the organization and identify the entities, attributes and relationships in it. Identify the primary keys for all the entities. Identify the other keys like candidate keys, partial keys, if any.

Experiment 2: Concept design with E-R Model

Relate the entities appropriately. Apply cardinalities for each relationship. Identify strong entities and weak entities (if any).

Experiment 3: Relational Model

Represent all the entities (Strong, Weak) in tabular fashion. Represent relationships in a tabular fashion.

Experiment 4: Normalization

Apply the First, Second and Third Normalization levels on the database designed for the organization

Experiment 5: Installation of Mysql and practicing DDL commands

Installation of MySql, Creating databases, How to create tables, altering the database, dropping tables and databases if not required. Try truncate, rename commands etc.

Experiment 6: Practicing DML commands on the Database created for the example organization

DML commands are used to for managing data within schema objects. Some examples:

- SELECT - retrieve data from the a database
- INSERT - insert data into a table
- UPDATE - updates existing data within a table
- DELETE - deletes all records from a table, the space for the records remain

Experiment 7: Querying

Practice queries (along with sub queries) involving ANY, ALL, IN, Exists, NOT EXISTS, UNION, INTERSECT, Constraints etc.

Experiment 8 and Experiment 9: Querying (continued…)

Practice queries using Aggregate functions (COUNT, SUM, AVG, and MAX and MIN), GROUP BY, HAVING and Creation and dropping of Views.

Experiment 10: Triggers

Work on Triggers. Creation of, insert trigger, delete trigger, update trigger. Practice triggers using the above database.

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B.Sc. (HONS) COMPUTER SCIENCE V SEM

502(A): OBJECT ORIENTED PROGRAMMING

Course Learning Outcomes

1. Learn the concepts of data, abstraction and encapsulation
2. Be able to write programs using classes and objects, packages.
3. Understand conceptually principles of Inheritance and Polymorphism and their use and program level implementation.
4. Learn exception and basic event handling mechanisms in a program
5. To learn typical object-oriented constructs of specific object oriented programming language

SYLLABUS **Credit 4**

A. Theory

UNIT-I

Basics: Introduction to Object Oriented Programming and its Basic Features, Basic Components of C++, Characteristics of Object-Oriented Language, Structure of a C++ Program, Flow Control Statements in C++, Functions - Scope of Variables, Inline Functions, Recursive Functions, Pointers to Functions, C++ Pointers, Arrays, Dynamic Memory Allocation and De-Allocation

UNIT-II

Differences Between Object Oriented and Procedure Oriented Programming, Abstraction, Overview of Object-Oriented Programming Principles, Encapsulation, C++ Classes, Objects, User Defined Types, Constructors and Destructors, this Pointer, Friend Functions, Data Abstraction, Operator Overloading, Type Conversion

UNIT-III

Class Inheritance, Base and Derived Classes, Virtual Base Class, Virtual Functions, Polymorphism, Static and Dynamic Bindings, Base and Derived Class Virtual Functions, Dynamic Binding through Virtual Functions, Pure Virtual Functions, Abstract Classes, Virtual Destructors

UNIT-IV

Stream Classes Hierarchy, Stream I/O, File Streams, Overloading the Extraction and Insertion Operators, Error Handling during File Operations, Formatted I/O.

UNIT-V

Exception Handling- Benefits of Exception Handling, Throwing an Exception, the Try Block, Catching an Exception, Exception Objects, Exception Specifications, Rethrowing an Exception, Uncaught Exceptions

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TEXT BOOKS

1. Problem solving with C++: The Object of Programming, Walter Savitch, 4th Edition, Pearson Education.
2. C++: The Complete Reference, Herbert Schildt, 4th Edition

B. Practical

Students are required to understand the object-oriented concepts using C++. They are required to practice the concepts learnt in the theory . Some of the programs to be implemented are listed as follows:

Part A

1. Number of vowels and number of characters in a string.
2. Write a function called zeros maller () that is passed with two introduce arguments by reference and set the smaller of the number to zero. Write a man() program to access this function.
3. Demonstration of array of object.
4. Using this pointer to return a value (return by reference).
5. Demonstration of virtual function.
6. Demonstration of static function.
7. Accessing a particular record in a student's file.
8. Demonstration of operator overloading.

Part B

1. Write a program to create a database for students that contains Name, Enrolment no, Department, Programme using Constructors, destructors, input and output functions ; input and output for 10 people using different methods.
2. Create a class holding information of the salaries of all the family members (husband, wife, son, and daughter). Using friend functions give the total salary of the family.

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B.Sc. (HONS) COMPUTER SCIENCE V SEM

502(B): IMAGE PROCESSING

Course Learning Outcomes

1. To familiarize the students with the image fundamentals and mathematical transforms necessary for image processing.
2. To make the students understand the image enhancement techniques
3. To make the students understand the image restoration and reconstruction procedures.
4. To familiarize the students with the image segmentation procedures.

SYLLABUS **Credits 4**

UNIT I

Digital Image Fundamentals: Elements of Visual Perception, Light, Brightness Adaption and Discrimination, Image Sensing and Acquisition, Image Sampling and Quantization, Pixels, Some Basic Relationships between Pixels, Coordinate Conventions, Imaging Geometry, Perspective Projection, Linear and Nonlinear Operations

UNIT II

Image Enhancement in the Spatial Domain: Intensity transformations, Contrast Stretching, Histogram Equalization, Correlation and Convolution, Basics of Spatial Filtering, Smoothing Filters, Sharpening Filters, Gradient and Laplacian.

UNIT III

Filtering in the Frequency domain: Hotelling Transform, Fourier Transforms and properties, FFT (Decimation in Frequency and Decimation in Time Techniques), Convolution, Correlation, 2-D sampling, Discrete Cosine Transform, Frequency domain filtering.

UNIT IV

Image Restoration and Reconstruction: Basic Framework, Interactive Restoration, Image deformation and geometric transformations, image morphing, Restoration techniques, Noise characterization, Noise restoration filters, Adaptive filters, Linear, Position invariant degradations, Estimation of Degradation functions, Restoration from projections.

UNIT V

Color Image Processing, Color Fundamentals, Color Models, Pseudocolor Image Processing, Basics of Full-Color Image Processing, Color Transformations, Smoothing and Sharpening, Color Segmentation. Morphological Image Processing, Dilation and Erosion, Opening and Closing, Extensions to Gray -Scale Images.

Image Segmentation: Detection of Discontinuities, Edge Linking and Boundary Detection, Thresholding, Region-Based Segmentation, Segmentation by Morphological Watersheds

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TEXT BOOKS

1. Digital Image Processing, Rafael C. Gonzalez and Richard E. Woods, 4th Edition, Prentice Hall

REFERENCE BOOKS

1. Anil K. Jain, Fundamentals of Digital Image Processing, Prentice Hall.
2. Stan Birchfield, Image Processing and Analysis, Cengage Learning

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B.Sc. (HONS) COMPUTER SCIENCE V SEM

502(C): DATA ANALYTICS

Course Learning Outcomes

1. This course prepares students to gather, describe, and analyze data, and use advanced statistical tools to support decision making.
2. To gather sufficient relevant data, conduct data analytics using scientific methods, and understand appropriate connections between quantitative analysis and realworld problems.
3. Understand the exact scopes and possible limitations of each method to provide constructive guidance in decision making.
4. To Use advanced techniques to conduct thorough and insightful analysis, and interpret the results correctly with detailed and useful information.
5. To make better decisions by using advanced techniques in data analytics.

SYLLABUS **Credit 4**

UNIT-I

Data Definitions and Analysis Techniques: Elements, Variables, and Data Categorization, Levels of Measurement, Data Management and Indexing

UNIT-II

Descriptive Statistics: Measures of Central Tendency, Measures of Location of Dispersions, Error Estimation and Presentation (Standard Deviation, Variance), Introduction to Probability

UNIT-III

Basic Analysis Techniques: Statistical Hypothesis Generation and Testing, Chi-Square Test, T-Test, Analysis of Variance, Correlation Analysis, Maximum Likelihood Test

UNIT-IV

Data Analysis Techniques-I: Regression Analysis, Classification Techniques, Clustering Techniques (K-Means, K-Nearest Neighborhood)

UNIT-V

Data Analysis Techniques-II: Association Rules Analysis, Decision Tree, Introduction to R Programming: Introduction to R Software Tool, Statistical Computations using R (Mean, Standard Deviation, Variance, Regression, Correlation etc.) Practice and Analysis with R and Python Programming, Sensitivity Analysis

REFERENCE BOOKS

1. Probability and statistics for Engineers and Scientists (9 Edn.), Ronald E Walppole, Raymond H Myres, Sharon L. Myres and Leying Ye, Prentice Hall Inc
2. The Elements of Statistical Learning, Data Mining, Inference, and Prediction (2nd Edn.) Travor Hastie Robert Tibshirani Jerome Friedman, Springer, 2014
3. Software for Data Analysis: Programming with R (Statistics and Computing), John M. Chambers, Springer

DEPARTMENT OF COMPUTER SCIENCE

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B.Sc. (HONS) COMPUTER SCIENCE V SEM

503: WEB PROGRAMMING

Course Learning Outcomes

1. To understand basics of the Internet and World Wide Web
2. To acquire knowledge and skills for creation of web site considering both client and server-side programming
3. To understand different web extensions and web services standards
4. To learn Rich Internet Application Technologies.
5. To understand and get acquainted with Web Analytics 2.0

UNIT-I

(Introduction to World Wide Web) -Internet Standards, Introduction to WWW and WWW Architecture, Internet Protocols, Overview of HTTP, HTTP request – response, Generations of dynamic web pages

UNIT-II

(User Interface Design) Introduction to HTML and HTML5, TML Tags, Formatting and Fonts, Commenting Code, Anchors, Backgrounds, Images, Hyperlinks, Lists, Tables, Frames, HTML Forms. The need for CSS, Introduction to CSS, Basic syntax and structure, Inline Styles, Embedding Style Sheets, Linking External Style, Backgrounds, Manipulating Text, Margins and Padding, Positioning using CSS.

UNIT-III

(Java Programming) Java Script, Introduction, Core features, Data types and Variables, Operators, Expressions, Functions, Objects, Array, Date and Math related Objects. JAVA Networking classes, TCP/IP Protocol Suite, File Transfer Protocol (FTP), Java Environment Setup for Web Applications, JavaBean, Application Builder Tool, Bean Developer Kit (BDK), The Java Beans API, Introduction to EJB

UNIT-IV

(Database) Database basics, SQL, MySQL, PostgreSQL, JDBC API, Driver Types, Two-tier and Three-tier Models, Connection Overview, Transactions, Driver Manager Overview, Statement Overview, Result Set Overview, Types of Result Sets, Concurrency Types, Prepared Statement Overview

UNIT-V

(Java Applet and JSP) Java Web Programs and Applets, Web Application, Servlet, Servlet Life Cycle, Servlet Programming, Introduction to JSP, Life Cycle of a JSP Page, Translation and Compilation, Creating Static Content, Response and Page Encoding, Creating Dynamic Content, Using Objects within JSP Pages, JSP Programming

(Dot Net Framework) Introduction to Dot Net, Dot Net framework and its architecture, CLR, Assembly, Components of Assembly, DLL hell and Assembly Versioning, Overview to C#, Introduction to ASP.net, Asp.net Programming

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REFERENCE BOOKS

1. J2EE: The complete Reference by James Keogh.
2. Java EE and HTML5 Enterprise Application Development (Oracle Press) by John Brock, Arun Gupta, Geertjan Wielenga
3. Struts: The Complete Reference, 2nd Edition by James Holmes
4. ASP.NET Unleashed by Stephen Walther, Kevin Scott Hoffman, Nate Dudek
5. Microsoft Visual C# 2013 Step by Step by John Sharp

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B.Sc. (HONS) COMPUTER SCIENCE VI SEM

601: COMPUTER NETWORK

Course Learning Outcomes

1. Understand the structure of Data Communications System and its components. Be familiarizing with different network terminologies.
2. Know the layered model approach explained in OSI and TCP/IP network models
3. Identify different types of network devices and their functions within a network.
4. Learn basic routing mechanisms, IP addressing scheme and internetworking concepts.
5. To understand major concepts involved in design of WAN, LAN and wireless networks.

SYLLABUS **Credits 6**

UNIT I

Introduction to Computer Networks and Networking Elements: Network Definition, Network Topologies, Network Classifications, Network Protocol, Layered Network Architecture, Overview of OSI Reference Model, Overview of TCP/IP Protocol Suite, Hub, Switch (Managed and Unmanaged), Routers

UNIT II

Data Communication Fundamentals and Techniques: Analog and Digital Signal, Data-Rate Limits, Digital to Digital Line Encoding Schemes, Pulse Code Modulation, Parallel and Serial Transmission, Digital to Analog Modulation-Multiplexing Techniques- FDM, TDM, Transmission Media

UNIT III

Networks Switching Techniques and Access Mechanisms: Circuit Switching, Packet Switching- Connectionless Datagram Switching, Connection Oriented Virtual Circuit Switching; Dial-Up Modems, Digital Subscriber Line, Cable TV for Data Transfer

UNIT IV

Data Link Layer Functions and Protocol: Error Detection and Error Correction Techniques, Data-Link Control- Framing and Flow Control, Error Recovery Protocols-Stop and Wait ARQ, Go-Back-N ARQ, Point to Point Protocol on Internet

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UNIT V

Multiple Access Protocol and Network Layer: CSMA/CD Protocols, Ethernet LANS; Connecting LAN and Back-Bone Networks- Repeaters, Hubs, Switches, Bridges, Router and Gateways, Networks Layer Functions and Protocols , Routing, Routing Algorithms, Network Layer Protocol of Internet - IP Protocol, Internet Control Protocols

Transport Layer and Application Layer Functions and Protocols: Transport Services- Error and Flow Control, Connection Establishment and Release- Three Way Handshake, Overview of Application Layer Protocol, Overview of DNS Protocol, Overview of WWW & HTTP Protocol

REFERENCE BOOKS

1. B. A. Forouzan: Data Communications and Networking, Fourth edition, THM Publishing Company Ltd 2007.
2. S. Tanenbaum: Computer Networks, Fourth edition, PHI Pvt. Ltd 2002

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B.Sc. (HONS) COMPUTER SCIENCE VI SEM

602(A): SYSTEM SECURITY

Course Learning Outcomes

1. Develop an understanding of information assurance as practiced in computer operating systems, distributed systems, networks and representative applications.
2. Gain familiarity with prevalent network and distributed system attacks, defences against them, and forensics to investigate the aftermath.
3. Develop a basic understanding of cryptography, how it has evolved, and some key encryption techniques used today.
4. Develop an understanding of security policies (such as authentication, integrity and confidentiality), as well as protocols to implement such policies in the form of message exchanges.

SYLLABUS **Credit 4**

UNIT-I

Cryptographic Tools- Confidentiality with Symmetric Encryption, Message Authentication and Hash Functions, Public-Key Encryption, Digital Signatures and Key Management, Random and Pseudorandom Numbers, Practical Application: Encryption of Stored Data

UNIT-II

User Authentication- Means of Authentication, Password-Based Authentication, Token-Based Authentication, Biometric Authentication, Remote User Authentication, Security Issues for User Authentication, Practical Application: An Iris Biometric System, Case Study: Security Problems for ATM Systems

Access Control- Access Control Principles, Subjects, Objects, and Access Rights, Discretionary Access Control, Example: UNIX File Access Control, Role Based Access Control, Case Study: RBAC System for a Bank

UNIT-III

Database Security-The Need for Database Security, Database Management Systems, Relational Databases, Database Access Control, Inference, Statistical Databases, Database Encryption, Cloud Security

UNIT-IV

Malicious Software-Types of Malicious Software (Malware), Propagation– Infected Content–Viruses, Propagation–Vulnerability Exploit–Worms, Propagation–Social Engineering–SPAM E-mail, Trojans, Payload–System Corruption, Payload–Attack Agent–Zombie, Bots, Payload–Information Theft– Keyloggers, Phishing, Spyware, Payload–Stealthing–Backdoors, Rootkits, Countermeasures

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UNIT-V

Denial-of-Service Attacks- Denial-of-Service Attacks, Flooding Attacks, Distributed Denial-of-Service Attacks, Application-Based Bandwidth Attacks, Reflector and Amplifier Attacks, Defences Against Denial-of-Service Attacks, Responding to a Denial-of-Service Attack.

TEXT BOOKS

1. M. Stamp, "Information Security: Principles and Practice," 2 st Edition, Wiley, ISBN: 0470626399, 2011.
2. M. E. Whitman and H. J. Mattord, "Principles of Information Security," 4 st Edition, Course Technology, ISBN: 1111138214, 2011.
3. M. Bishop, "Computer Security: Art and Science," Addison Wesley, ISBN: 0-201-44099-7, 2002.
4. G. McGraw, "Software Security: Building Security In," Addison Wesley, ISBN: 0321356705, 2006.

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B.Sc. (HONS) COMPUTER SCIENCE V SEM

602(B): COMPUTER ETHICS

Course Learning Outcomes

1. The student will be able to describe and distinguish between the various ethical theories which can be used to form the basis of solutions to moral dilemmas in computing.
2. Identify traditional and current Issues related to Computers, Information Systems, Ethics, Society and Human Values;
3. The student will be able to identify and define the components of a structured plan for solving ethical problems and, in the process, will be able to understand the basis for her/his own ethical system.
4. Given several examples of professional codes of ethics related to computing, the student will be able to compare and contrast these examples, discussing their commonalties, differences, and implications.
5. Develop skills of critical analysis and applying ethical principles to situations and dialectical thinking

SYLLABUS **Credit 4**

UNIT-I

The Need for Computer Ethics Training and Historical Milestones, Defining the Field of Computer Ethics

UNIT-II

Computer ethics codes, Sample Topics in Computer Ethics: Computer crime and computer security, Software theft and intellectual property rights, Computer hacking and the creation of viruses, Computer and information system failure, Invasion of privacy. Privacy in the Workplace and on the Internet, Social implications of artificial intelligence and expert systems, The information technology salesman issues

UNIT-III

Transparency and Virtual Ethics, Free Speech, Democracy, Information Access

UNIT-IV

Developing the Ethical Analysis Skills and Professional Values, Privacy, Accountability, Government Surveillance

UNIT-V

Boundaries of Trust, Trust Management, Wikipedia, Virtual Trust, Plagiarism in Online Environment, Intellectual Property, Net neutrality

REFERENCE BOOKS

1. Deborah, J, Nissenbaun, H, Computing, Ethics & Social Values, Englewwod Cliffs, New Jersey, Prentice Hall, 1995.
2. Spinello, R, Tavani, H, T, Readings in Cyberethics, Sudbury, MA, Jones and Bartlett Publishers, 2001.
3. Bynum, T, W; Rogerson, S, Computer Ethics and Professional Responsibility, Blackwell, 2004

DEPARTMENT OF COMPUTER SCIENCE

AWADHESH PARATAP SINGH UNIVERSITY, REWA (M.P.)

B.Sc. (HONS) COMPUTER SCIENCE VI SEM

602(C): HUMAN COMPUTER INTERFACE

Course Learning Outcomes

1. Provide an overview of the concepts relating to the design of human -computer interfaces in ways making computer-based systems comprehensive, friendly and usable.
2. Understand the theoretical dimensions of human factors involved in the acceptance of computer interfaces.
3. Understand the important aspects of implementation of human-computer interfaces.
4. Identify the various tools and techniques for interface analysis, design, and evaluation.
5. Identify the impact of usable interfaces in the acceptance and performance utilization of information systems.

SYLLABUS **Credit 4**

UNIT I

Introduction: Historical Evolution of HCI, Interactive System Design: Concept of Usability-Definition and Elaboration, HCI and Software Engineering, GUI Design and Aesthetics, Prototyping Techniques

UNIT II

Model-Based Design and Evaluation: Basic Idea, Introduction to Different Types of Models, GOMS Family of Models (KLM And CMN -GOMS), Fitts' Law and Hickhyman's Law,

UNIT III

General Development Guidelines and Principles: Shneiderman's Eight Golden Rules, Norman's Seven Principles, Norman's Model of Interaction, Nielsen's Ten Heuristics with Example of its use, Contextual Inquiry

UNIT IV

Dialog Design: Introduction to Formalism in Dialog Design, Design using FSM (Finite State Machines), State Charts and (Classical) Petri Nets in Dialog Design

DEPARTMENT OF COMPUTER SCIENCE

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UNIT V

Task Modelling and Analysis: Hierarchical Task Analysis (HTA), Engineering Task Models and Concur Task Tree (CTT), Object Oriented Modelling: Object Oriented Principles, Definition of Class and Object and their Interactions, Object Oriented Modelling for User Interface Design, Case Study Related to Mobile Application Development

REFERENCE BOOKS

1. Dix A., Finlay J.,Abowd G. D. and Beale R. Human Computer Interaction, 3 rd edition, Pearson Education, 2005.
2. Preece J., Rogers Y.,Sharp H.,Baniyon D., Holland S. and Carey T. Human Computer Interaction,Addison-Wesley, 1994.
3. B.Shneiderman, Designing the User Interface, Addison Wesley 2000 (Indian Reprint).

DEPARTMENT OF COMPUTER SCIENCE

AWADHESH PARATAP SINGH UNIVERSITY, REWA (M.P.)

B.Sc. (HONS) COMPUTER SCIENCE VI SEM

603(A): SOFTWARE ENGINEERING

Course Learning Outcomes

1. Basic knowledge and understanding of the analysis and design of complex systems.
2. Ability to apply software engineering principles and techniques.
3. To produce efficient, reliable, robust and cost-effective software solutions.
4. Ability to work as an effective member or leader of software engineering teams.
5. To manage time, processes and resources effectively by prioritising competing demands to achieve personal and team goals Identify and analyzes the common threats in each domain.

SYLLABUS **Credit 4**

UNIT I

Software Development Approaches: Introduction; Evolving Role of Software; Software Characteristics; Software Applications, Software Design Processes: Introduction, What is Meant by Software Engineering? Definitions of Software Engineering; The Serial or Linear Sequential Development Model, Iterative Development Model; The incremental Development Model

UNIT II

Software Design Principles: Introduction, System Models: Data-flow Models, Semantic Data Models, Object Models, Inheritance Models, Object Aggregation, Service Usage Models, Data Dictionaries; Software Design: The Design Process, Design Methods, Design description, Design Strategies, Design Quality, Architectural Design: System Structuring, The Repository Model, The Client–Server Model, The Abstract Machine Model, Control Models, Modular Decomposition, Domain-Specific Architectures.

UNIT III

Object Oriented Design: Introduction; Object Oriented Design: Objects, Object Classes & Inheritance, Inheritance, Object Identification, An Object -Oriented Design Example, Object Aggregation; Service Usage; Object Interface Design: Design Evolution, Function Oriented Design, Data–Flow Design; Structural Decomposition: Detailed Design.

UNIT IV

An Assessment of Process Life-Cycle Models: Introduction; Overview of the Assessment of Process; The Dimension of Time; The Need for a Business Model in Software Engineering; Classic Invalid Assumptions: First Assumption: Internal or External Drivers, Second Assumption: Software or Business Processes, Third Assumption: Processes or Projects, Fourth Assumption: Process Centered or Architecture Centered; Implications of the New Business Model; Role of the Problem -Solving Process in this Approach: Data, Problem

Definition, Tools and Capabilities, Redefining the Software Engineering Process: Round-Trip Problem-Solving Approach, Activities, Goals, Interdisciplinary Resources, Time.

UNIT V

Software Reliability: Introduction; Software Reliability Metrics, Programming for Reliability: Fault Avoidance, Fault Tolerance, Software Reuse, Software Testing Techniques: Introduction; Software Testing Fundamental; Testing Principles; White Box Testing; Control Structure Testing; Black Box Testing; Boundary Value Analysis; Testing GUIs; Testing Documentation and Help Facilities; Software Testing Strategies: Introduction; Organizing for Software Testing; Software Testing Strategy, Unit Testing: Unit Test Considerations, Top-Down Integration, Bottom-Up Integration.

REFERENCE BOOKS

1. R. G. Pressman – Software Engineering, TMH
2. Sommerville, Ian, Software Engineering, Pearson Education
3. Pankaj Jalote – An Integrated Approach to Software Engineering, Narosa Publications.
4. Pfleeger, Shari Lawrence, Software Engineering Theory and Practice, second edition. Prentice- Hall 2001.
5. Object Oriented & Classical Software Engineering (Fifth Edition), SCHACH,TMH

DEPARTMENT OF COMPUTER SCIENCE

AWADHESH PARATAP SINGH UNIVERSITY, REWA (M.P.)

B.Sc. (HONS) COMPUTER SCIENCE VI SEM

603(B): MODELLING AND SIMULATION

Course Learning Outcomes

1. Characterise systems in terms of their essential elements, purpose, parameters, constraints, performance requirements, sub-systems, interconnections and environmental context.
2. Understand the technical underpinning of modern computer simulation software.
3. System problem modelling and solving through the relationship between theoretical, mathematical, and computational modelling for predicting and optimizing performance and objective.
4. Develop solutions and extract results from the information generated in the context of the information systems
5. Interpret the model and apply the results to resolve critical issues in a real world environment.

SYLLABUS **Credit 4**

UNIT-I

Systems and environment: Concept of model and model building, model classification and representation, Use of simulation as a tool, steps in simulation study.

UNIT-II

Continuous-time and Discrete-time systems: Laplace transform, transfer functions, statespace models, order of systems, z-transform, feedback systems, stability, observability, controllability. Statistical Models in Simulation: Common discrete and continuous distributions, Poisson process, empirical distributions

UNIT-III

Random Numbers: Properties of random numbers, generation of pseudo random numbers, techniques of random number generation, tests for randomness, random variate generation using inverse transformation, direct transformation, convolution method, acceptance-rejection

UNIT-IV

Design and Analysis of simulation experiments: Data collection, identifying distributions with data, parameter estimation, goodness of fit tests, selecting input models without data, multivariate an time series input models, verification and validation of models, static and dynamic simulation output analysis, steady -state simulation, terminating simulation,

confidence interval estimation, Output analysis for steady state simulation, variance reduction techniques

UNIT-V

Queuing Models: Characteristics of queuing systems, notation, transient and steady state behaviour, performance, network of queues, Large Scale systems: Model reduction, hierarchical control, decentralized control, structural properties of large-scale systems.

REFERENCE BOOKS

1. Shailendra Jain, Modeling and Simulation using MATLAB - Simulink, 2ed, Kindle edition

DEPARTMENT OF COMPUTER SCIENCE

AWADHESH PARATAP SINGH UNIVERSITY, REWA (M.P.)

B.Sc. (HONS) COMPUTER SCIENCE VI SEM

603(C): GNU IMAGE MANIPULATION PROGRAM (GIMP)

Course Learning Outcomes

1. To familiarize the students with the underlying concepts of digital images.
2. To make the students know how to enhance images and prepare them for printing and publishing.
3. To make the students know how to Capturing and Creating Images.
4. To make the students know how to Working with Text.
5. Understand Moving and Copying images,Rotating and flipping images.

SYLLABUS **Credit 4**

A. Theory

UNIT-I

Imaging Concepts and Graphic Formats: Pixel, Resolution, File Size, Image Compression, Raster & Vector Images, Color Model.

UNIT-II

Capturing and Creating Images: Saving Images, Scanning Images, Familiarization with GIMP Interface.

UNIT-III

Settings: Foreground and Background Colors, Grid Properties.

UNIT-IV

Image Manipulations: Resizing images, Cropping images, Moving and Copying images, Rotating and flipping images.

UNIT-V

Working with Text: Creating and editing text, Formatting Text, Applying text wraps, Tools: Drawing tools, Painting tools.

REFERENCE BOOKS

1. Kay Richter, GIMP 2.8- Buch (e-book)
2. Olivier Lecarme and Karine Delvare, The Book of GIMP, A complete Guide to Nearly Everything, Kindle Edition

B. Practical

Students are required to implement a project based on learned concepts.

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B.Sc. (HONS) COMPUTER SCIENCE VII SEM

701: OPERATING SYSTEM

Course Learning Outcomes

1. Describe the important computer system resources and the role of operating system in their management policies and algorithms.
2. To understand various functions, structures and history of operating systems andshould be able to specify objectives of modern operating systems and describe how operating systems have evolved over time.
3. Understanding of design issues associated with operating systems.
4. Understand various process management concepts including scheduling, synchronization, and deadlocks.
5. To understand issues related to file system interface and implementation, disk management.

SYLLABUS **Credit 6**

UNIT-I

(Introduction to Operating System) What is Operating System? History and Evolution of OS, Basic OS functions, Resource Abstraction, Types of Operating Systems– Multiprogramming Systems, Batch Systems, Time Sharing Systems, Operating Systems for Personal Computers, Workstations and Hand-held Devices, Process Control & Real time Systems.

(Introduction to Android Operating System) Introduction to Android Operating System, Android Development Framework, Android Application Architecture, Android Process Management and File System, Small Application Development using Android Development Framework.

UNIT-II

(Operating System Organization and Process Characterization) Processor and User Modes, Kernels, System Calls and System Programs, System View of the Process and Resources, Process Abstraction, Process Hierarchy, Threads, Threading Issues, Thread Libraries; Process Scheduling, Non-Pre-emptive and Preemptive Scheduling Algorithms.

UNIT-III

Process Management (Deadlock) Deadlock, Deadlock Characterization, Necessary and Sufficient Conditions for Deadlock, Deadlock Handling Approaches: Deadlock Prevention, Deadlock Avoidance and Deadlock Detection and Recovery.

UNIT-IV

(Inter Process Communication and Synchronization) Concurrent and Dependent Processes, Critical Section, Semaphores, Methods for Inter-process Communication; Process Synchronization, Classical Process Synchronization Problems: Producer-Consumer, Reader-Writer.

UNIT-V

(Memory Management) Physical and Virtual Address Space; Memory Allocation Strategies– Fixed and -Variable Partitions, Paging, Segmentation, Virtual Memory (File and I/O Management, OS security) Directory Structure, File Operations, File Allocation Methods, Device Management, Pipes, Buffer, Shared Memory, Security Policy Mechanism, Protection, Authentication and Internal Access Authorization

REFERENCE BOOKS

1. A Silberschatz, P.B. Galvin, G. Gagne, Operating Systems Concepts, 8th Edition, John Wiley Publications 2008.
2. A.S. Tanenbaum, Modern Operating Systems, 3rd Edition, Pearson Education 2007.
3. G. Nutt, Operating Systems: A Modern Perspective, 2nd Edition Pearson Education 1997.
4. W. Stallings, Operating Systems, Internals & Design Principles 2008 5th Edition, Prentice Hall of India.
5. M. Milenkovic, Operating Systems- Concepts and design, Tata McGraw Hill 1992.

DEPARTMENT OF COMPUTER SCIENCE

AWADHESH PARATAP SINGH UNIVERSITY, REWA (M.P.)

B.Sc. (HONS) COMPUTER SCIENCE VII SEM

702(A): CLOUD COMPUTING

Course Learning Outcomes

1. Analyze the trade-offs between deploying applications in the cloud and over the local infrastructure.
2. Deploy applications over commercial cloud computing infrastructures such as Amazon Web Services, Windows Azure, and Google AppEngine.
3. Program data intensive parallel applications in the cloud.
4. Analyze the performance, scalability, and availability of the underlying cloud technologies and software.
5. Solve a real-world problem using cloud computing through group collaboration.

SYLLABUS **Credit 4**

A. Theory

Unit-I

Introduction to cloud computing

Definition, characteristics, components, Cloud service provider, the role of networks in Cloud computing, Cloud deployment models- private, public & hybrid, Cloud service models, multitenancy, Cloud economics and benefits, Cloud computing platforms - IaaS: Amazon EC2, PaaS: Google App Engine, Microsoft Azure, SaaS.

Unit-II

Virtualization

Virtualization concepts , Server virtualization, Storage virtualization, Storage services, Network virtualization, Service virtualization, Virtualization management, Virtualization technologies and architectures, virtual machine, Measurement and profiling of virtualized applications. Hypervisors: KVM, Xen, VMware hypervisors and their features.

Unit-III

Data in cloud computing

Relational databases, Cloud file systems: GFS and HDFS, BigTable, HBase and Dynamo, MapReduce and extensions: Parallel computing, the map-Reduce model, Parallel efficiency of MapReduce, Relational operations using Map-Reduce, Enterprise batch processing using MapReduce.

Unit-IV

Cloud security

Cloud security fundamentals, Vulnerability assessment tool for cloud, Privacy and Security in cloud, Cloud computing security architecture: General Issues, Trusted Cloud computing, Secure Execution Environments and Communications, Micro - architectures; Identity Management and Access control, Autonomic security, Security challenges : Virtualization

security management - virtual threats, VM Security Recommendations, VM - Specific Security techniques, Secure Execution Environments and Communications in cloud.

Unit-V

Issues in cloud computing

Implementing real time application over cloud platform, Issues in Inter-cloud environments, QOS Issues in Cloud, Dependability, data migration, streaming in Cloud, Quality of Service (QoS) monitoring in a Cloud computing environment, Cloud Middleware, Mobile Cloud Computing. Inter Cloud issues. A grid of clouds, Sky computing, load balancing, resource optimization, resource dynamic reconfiguration, Monitoring in Cloud

TEXT BOOK:

1. Enterprise Cloud Computing by Gautam Shroff, Cambridge publication

REFERENCE BOOK:

1. Cloud Security by Ronald Krutz and Russell Dean Vines, Wiley-India
2. Dr. Kumar Saurabh,"Cloud Computing", Wiley Publication

B. Practical

The students shall explore development of web applications in cloud. Practically Design and develop processes involved in creating a cloud based application and programming using Hadoop

Indicative List of Experiments

1. Install Virtual box/VMware Workstation with different flavours of linux or windows OS with virtualization support
2. Install a C compiler in the virtual machine created using virtual box and execute Simple Programs
3. Install Google App Engine. Create hello world app and other simple web applications using python/java.
4. Simulate a cloud scenario using CloudSim and run a scheduling algorithm that is not present in CloudSim.
5. Experiment a procedure to transfer the files from one virtual machine to another virtual machine.
6. Experiment a procedure to launch virtual machine using trystack (Online Openstack Demo Version)
7. Install Hadoop single node cluster and run simple applications like word count.

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AWADHESH PARATAP SINGH UNIVERSITY, REWA (M.P.)

B.Sc. (HONS) COMPUTER SCIENCE VII SEM

702(B) SYSTEM PROGRAMMING

Course Learning Outcomes

The general objective of this course is to introduce students' basic concepts, techniques and skills for systems programming. Specific objectives include:

1. Understand basic concepts in systems programming.
2. Understand basic concepts of microprocessors.
3. Understand the concept of virtual machine.
4. Develop skills to write programs using system services.

SYLLABUS **Credit 4**

UNIT I ASSEMBLER

Introduction: Introduction to Systems Software and machine architecture, Review of Computer Architecture, Machine Instructions and Programs, Assemblers –Basic Assembler Functions – Assembler Features – Assembler Design Options.

UNIT II LOADERS AND LINKERS

Loaders and Linkers: Basic Loader Functions, Machine-Dependent Loader Features, Machine-Independent Loader Features, Loader Design Options,Dynamic Linking and Loading, Object files, Contents of an object file, designing an object format, Null object formats, Code sections, Relocation ,Symbols and Relocation, Relocatable -a.out- ELF.

UNIT III MACROPROCESSORS AND EMULATORS

Macro processors: Basic Macro Processor Functions, Machine-Independent, Macro Processor Features, Macro Processor Design Options, Introduction to Virtual Machines (VM), Emulation, basic Interpretation, Threaded Interpretation, Interpreting a complex instruction set – binary translation.

UNIT IV VIRTUAL MACHINES

Virtual Machines: Pascal P-Code, VM Object-Oriented VMs, Java VM Architecture – Common Language Infrastructure, Dynamic Class Loading.

UNIT IV VIRTUAL MACHINES

Virtual Machines: Pascal P-Code, VM Object-Oriented VMs, Java VM Architecture – Common Language Infrastructure, Dynamic Class Loading.

UNIT V ADVANCED FEATURES

Instruction Set Issues, Profiling, Migration, Grids , Code optimizations, Garbage Collection, Examples of real world implementations of system software.

TEXT BOOKS:

1. Leland L. Beck, "System Software", 3rd ed., Pearson Education, 1997.
2. John R. Levine, "Linkers & Loaders", Morgan Kauffman, 2003. 3. James E Smith and Ravi Nair, "Virtual Machines", Elsevier, 2005.
3. Srimanta Pal, " Systems Programming " , Oxford University Press, 2011. 2. John J.Donovan, " "Systems Programming", Tata McGraw-Hill, 1991

DEPARTMENT OF COMPUTER SCIENCE

AWADHESH PARATAP SINGH UNIVERSITY, REWA (M.P.)

B.Sc. (HONS) COMPUTER SCIENCE VII SEM

702(C): ARTIFICIAL INTELLIGENCE

Course Learning Outcomes

1. Explain what constitutes "Artificial" Intelligence and how to identify systems with Artificial Intelligence.
2. Identify problems that are amenable to solution by AI methods, and which AI methods may be suited to solving a given problem.
3. Formalise a given problem in the language/framework of different AI methods (e.g., as a search problem, as a constraint satisfaction problem, as a planning problem, etc).
4. Implement basic AI algorithms (e.g., standard search or constraint propagation algorithms).
5. Design and perform an empirical evaluation of different algorithms on a problem formalization, and state the conclusions that the evaluation supports.

SYLLABUS

A. Theory **4 credits**

UNIT-I

Introduction to Artificial Intelligence: Definition of AI, Turing Test, Brief History of AI, Problem Solving and Search: Problem Formulation; Search Space, States vs. Nodes, Tree Search: Breadth-First, Uniform Cost, Depth-First, Depth-Limited, Iterative Deepening; Graph Search.

Informed Search: Greedy Search, A* Search; Heuristic Function; Admissibility and Consistency, Deriving Heuristics via Problem Relaxation. Local Search: Hill-Climbing, Simulated Annealing; Genetic Algorithms; Local Search in Continuous Spaces.

UNIT-II

Playing Games: Game Tree, Utility Function; Optimal Strategies, Minimax Algorithm, Alpha-Beta Pruning; Games with an Element of Chance. Beyond Classical Search: Searching with Nondeterministic Actions; Searching with Partial Observations, Online Search Agents; Dealing with Unknown Environments.

UNIT-III

Knowledge Representation and Reasoning: Ontologies, Foundations of Knowledge Representation and Reasoning, Representing and Reasoning about Objects, Relations, Events, Actions, Time, and Space; Predicate Logic, Situation Calculus, Description Logics, Reasoning with Defaults, Reasoning about Knowledge, Sample Applications.

UNIT IV

Representing and Reasoning with Uncertain Knowledge: Probability, Connection to Logic, Independence, Bayes Rule, Bayesian Networks, Probabilistic Inference, and Sample Applications, Planning: The STRIPS Language, Forward Planning, Backward Planning, Planning Heuristics, Partial-Order Planning, Planning using Propositional Logic, Planning vs. Scheduling

UNIT-V

Constraint Satisfaction Problems (CSPs): Basic Definitions; Finite vs. Infinite vs. Continuous Domains, Constraint Graphs, Relationship With Propositional Satisfiability, Conjunctive Queries, Linear Integer Programming, and Diophantine Equations, NP-Completeness of CSP, Extension to Quantified Constraint Satisfaction (QCSP), Constraint Satisfaction as a Search Problem, Backtracking Search, Variable and Value Ordering Heuristic, Degree Heuristic; Least-Constraining Value Heuristic, Forward Checking, Constraint Propagation; Dependency-Directed Backtracking

TEXT BOOKS

1. Elaine Rich, Kevin Knight, Shivashankar B Nair, Artificial Intelligence, Third Edition, McGraw Hill Edition.

REFERENCE BOOKS

2. Russell Stuart Jonathan and Norvig Peter, Artificial Intelligence: A Modern Approach, 3rd Edition, Prentice Hall, 2010

B. Practical

The students are expected to explore the foundational skills on AI techniques acquired in theory in solving problems and using sample data sets and various tools prepare themselves for careers in AI industry. The following is an indicative list of assignme nts for the semester. However students should be encouraged to take-up mini-project using the techniques and tools explored in the lab to understand the true potential

1. Using simple Hill-climbing compute an approximate solution to the travelling salesperson problem.
2. Using Naïve bayes method learn a text classifier using training data and using test set evaluate the quality of the classifier.
3. Implement gradient descent and backpropagation in Python.
4. Using Scikit learn for Logistic regression, Support Vector Machines, Building Neural Networks.
5. Using inbuilt Tensor Flow functionality to build a Neural Network and train on MNIST Dataset for classification.
6. Installation of Prolog and practicing queries using Prolog.

DEPARTMENT OF COMPUTER SCIENCE

AWADHESH PARATAP SINGH UNIVERSITY, REWA (M.P.)

B.Sc. (HONS) COMPUTER SCIENCE VII SEM

702(D): INTERNET OF THINGS

Course Learning Outcomes

1. To learn and implement use of Devices in IoT technology.
2. To learn the different IoT Technologies like Micro-controller, Wireless communication like Blue Tooth, GPRS, Wi-Fi and Storage and embedded systems
3. To understand how to program on embedded and mobile platforms including different Microcontrollers like ESP8266, Raspberry Pi, Arduino and Android programming
4. To understand how to make sensor data available on the Internet (data acquisition) and understand how to analyze and visualize sensor data
5. To understand, analysis and evaluate different protocols used in IoT.

UNIT-I

(Introduction to IoT, Sensors and Actuators) Introduction to IoT: Definition, Characteristics, Applications, Evolution, Enablers, Connectivity Layers, Addressing, Networking and Connectivity Issues, Network Configurations, Multi-Homing, Sensing: Sensors and Transducers, Classification, Different Types of Sensors, Errors, Actuation: Basics, Actuator Types- Electrical, Mechanical Soft Actuators

UNIT-II

(Introduction to Networking, Communication Protocols and Machine-to-Machine Communication) Basics of Networking, Communication Protocols, Sensor Network, Machine to Machine Communication (IoT Components, Inter-Dependencies, SoA, Gateways, Comparison Between IoT & Web, Difference Protocols, Complexity of Networks, Wireless Networks, Scalability, Protocol Classification, MQTT & SMQTT, IEEE 802.15.4, Zigbee)

UNIT-III

(Arduino Programming) Interoperability in IoT, Introduction to Arduino Programming, Integration Of Sensors And Actuators With Arduino, (Python Programming and Raspberry Pi) Introduction to Python Programming, Introduction to Raspberry Pi, Implementation of IoT with Raspberry Pi, Implementation of IoT with Raspberry Pi

UNIT-IV

(Data Analytics and Cloud Computing) Data Handling and Analytics, Cloud Computing Fundamentals, Cloud Computing Service Model, Cloud Computing Service Management and Security, Sensor-Cloud Architecture, View and Dataflow

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UNIT-V

(FOG Computing and Case Studies) FOG Computing: Introduction, Architecture, Need, Applications and Challenges, Industrial IoT, Case Studies: Agriculture, Healthcare, Activity Monitoring

REFERENCE BOOKS

1. The Internet of Things: Enabling Technologies, Platforms, and Use Cases", by Pethuru Raj and Anupama C. Raman (CRC Press).
2. Internet of Things: A Hands-on Approach", by A Bahga and Vijay Madisetti (Universities Press)

DEPARTMENT OF COMPUTER SCIENCE

AWADHESH PARATAP SINGH UNIVERSITY, REWA (M.P.)

B.Sc. (HONS) COMPUTER SCIENCE VII SEM

703: RESEARCH METHODOLOGY

Course Learning Outcomes

1. Students should understand a general definition of research design.
2. Students should know why educational research is undertaken, and the audiencesthat profit from research studies.
3. Students should be able to identify the overall process of designing a research study from its inception to its report.
4. Students should be familiar with ethical issues in educational research, including those issues that arise in using quantitative and qualitative research.
5. Students should know the primary characteristics of quantitative research and qualitative research.

SYLLABUS **Credit 4**

UNIT-I

Foundations of Research: Meaning, Objectives, Motivation, Utility, Concept of theory, empiricism, deductive and inductive theory, Characteristics of scientific method, Understanding the language of research – Concept, Construct, Definition, Variable, Research Process, Research in Computer Science, Journals & Publication in Computer Science

UNIT-II

Problem Identification & Formulation: Research Question, Investigation Question, Measurement Issues, Representing Mathematical Relationship, Ontology, State, Time and Behaviours, Space and Shape, Compositional Modelling, Hypothesis, Qualities of a good Hypothesis –Null Hypothesis & Alternative, Hypothesis, Hypothesis Testing, Logic & Importance

UNIT-III

Research Design: Concept and Importance in Research, Features of a good research design, Exploratory Research Design, concept, types and uses, Descriptive Research Designs, concept, types and uses, Experimental Design: Concept of Independent & Dependent variables.

UNNI-IV

Qualitative and Quantitative Research: Qualitative research – Quantitative research – Concept of measurement, causality, generalization, replication, merging the two approaches,

Measurement: Concept of measurement– what is measured? Problems in measurement in research validity and Reliability, Levels of measurement - Nominal, Ordinal, Interval, Ratio

UNIT-V

Basis of Computer Science Research**:** Introduction to Formal Models and Computability: Turing Machine & Computability, Undecidability, Diagonalization and Self-Reference, Reductions, **Thesis Writing:** Planning the thesis, Writing the thesis, Thesis structure, Writing up schedule, The Oral examination and Viva Voce. Writing Papers and the Review Process: Preparing and presenting your paper. The conference review process, making use of the referees' reports, the journal review process, Group exercise in reviewing research papers, Use of Encyclopaedias, Research Guides, Handbook etc., Academic Databases for Computer Science Discipline.

BOOKS

1. Business Research Methods – Donald Cooper & Pamela Schindler, TMGH, 9th edition
9. Business Research Methods – Alan Bryman & Emma Bell, Oxford University Press.
10. Research Methodology – C.R.Kothari
11. The Computer Science and Engineering Handbook by Allen B. Tucker, jr. CRC Press

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AWADHESH PARATAP SINGH UNIVERSITY, REWA (M.P.)

B.Sc. (HONS) COMPUTER SCIENCE VIII SEM

801: THEORY OF COMPUTATION (TOC)

Course Learning Outcomes

1. To provide a formal connection between algorithmic problem solving and the theory of languages and automata and develop them into a mathematical (abstract) view towards algorithmic design and in general computation itself.
2. The course should in addition clarify the practical view towards the applications of these ideas in the engineering part as well.
3. Become proficient in key topics of theory of computation, and to have the opportunity to explore the current topics in this area.
4. Understand the Properties of Context Free Languages.

PREREQUISITE

Students should have a background in discrete mathematics, data structures, and programming languages.

SYLLABUS **Credit 6**

A. THEORY

UNIT-I

Automata: Introduction to Formal Proof, Additional Forms of Proof, Inductive Proofs, Finite Automata (FA), Deterministic Finite Automata (DFA), Non-Deterministic Finite Automata (NFA), Finite Automata with Epsilon Transitions

UNIT-II

Regular Expressions and Languages: Regular Expression, FA and Regular Expressions, Proving Languages not to be Regular, Closure Properties of Regular Languages, Equivalence and Minimization of Automata

UNIT-III

Context Free Grammars and Languages: Context Free Grammar (CFG), Parse Trees , Ambiguity in Grammars and Languages, Definition of The Pushdown Automata, Languages of a Pushdown Automata, Equivalence of Pushdown Automata and CFG Deterministic Pushdown Automata.

UNIT-IV

Properties of Context Free Languages: Normal Forms for CFG, Pumping Lemma for CFL, Closure Properties of CFL, Turing Machines, Programming Techniques for TM, Variations of TM, Non Universal TM, Universal TM.

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UNIT-V

Undecidability: A Language that is not Recursively Enumerable (RE), an Undecidable Problem that is RE, Undecidable Problems about Turing Machine, Post's Correspondence Problem, The Classes P and NP.

REFERENCE BOOKS

1. J.E. Hopcroft, R. Motwani and J.D. Ullman, "Introduction to Automata Theory, Languages and Computations", second Edition, Pearson Education, 2007.
2. H.R. Lewis and C.H. Papadimitriou, "Elements of the theory of Computation", Second Edition, Pearson Education, 2003.
3. Thomas A. Sudkamp," An Introduction to the Theory of Computer Science, Languages and Machines", Third Edition, Pearson Education., 2007.
4. J. Martin, "Introduction to Languages and the Theory of computation, Third Edition, TataMc Graw Hill, 2007.

B. Practical

The students are expected to understand the Hierarchy of formal languages with reference to their varying degrees of complexity in recognising them. Programs can be designed after designing suitable automata to recognize the following formal languages. Given an input the recognizer shall output a Yes/No answer depending on whether the string is part of the language or not.

1. Language of Binary strings which ends with the pattern 101.
2. Language of Binary strings such that the third symbol from the end is a Zero
3. Language of parenthesised expressions with matching left and right parenthesis
4. Language of Binary strings with equal number of Zeros and Ones
5. Language generated by the grammar $\{a^n b^n c^n \mid n^3\ 1\}$
6. Language $\{ a^p \mid p \text{ is prime}\}$

DEPARTMENT OF COMPUTER SCIENCE

AWADHESH PARATAP SINGH UNIVERSITY, REWA (M.P.)

B.Sc. (HONS) COMPUTER SCIENCE VIII SEM

802: QUANTUM MECHANICS

Course learning outcome:

This course will enable the student to get familiar with quantum mechanics formulation.

1. After an exposition of inadequacies of classical mechanics in explaining microscopic phenomena, quantum theory formulation is introduced through Schrodinger equation.
2. The interpretation of wave function of quantum particle and probabilistic nature of its location and subtler points of quantum phenomena are exposed to the student.
3. Through understanding the behavior of quantum particle encountering a i) barrier, ii) potential, the student gets exposed to solving non-relativistic hydrogen atom, for its spectrum and eigenfunctions.
4. Study of influence of electric and magnetic fields on atoms will help in understanding
5. Stark effect and Zeeman Effect respectively. The experiments using Sci-lab will enable the student to appreciate nuances involved inthe theory.

Syllabus **Credit 6**

UNIT-I

Time dependent Schrodinger equation- Time dependent Schrodinger equation and dynamical evolution of a quantum state, Properties of Wave Function, Interpretation of Wave Function Probability and probability current densities in three dimensions, Conditions for Physical Acceptability of Wave Functions, Normalization, Linearity and Superposition Principles, Eigenvalues and Eigenfunctions, Position, momentum and Energy operators, commutator of position and momentum operators, Expectation values of position and momentum, Wave Function of a Free Particle

UNIT-II

Time independent Schrodinger equation- Hamiltonian, stationary states and energy eigenvalues, expansion of an arbitrary wavefunction as a linear combination of energy eigenfunctions, General solution of the time dependent Schrodinger equation in terms of linear combinations of stationary states; Application to spread of Gaussian wave-packet for a free particle in one dimension; wave packets, Fourier transforms and momentum space wavefunction, Position-momentum uncertainty principle

UNIT-III

General discussion of bound states in an arbitrary potential- continuity of wave function, boundary condition and emergence of discrete energy levels, application to one dimensional problem-square well potential, Quantum mechanics of simple harmonic oscillator-energy

levels and energy eigenfunctions using Frobenius method, Hermite polynomials, ground state, zero point energy & uncertainty principle

UNIT-IV

Quantum theory of hydrogen-like atoms: time independent Schrodinger equation in spherical polar coordinates, separation of variables for second order partial differential equation, angular momentum operator & quantum numbers, Radial wavefunctions from Frobenius method, shapes of the probability densities for ground and first excited states, Orbital angular momentum quantum numbers l and m, s, p, dshells.

UNIT-V

Atoms in Electric and Magnetic Fields: Electron angular momentum, Angular momentum quantization, Electron Spin and Spin Angular Momentum, Larmor's Theorem, Spin Magnetic Moment, Stern-Gerlach Experiment. Normal Zeeman Effect: Electron Magnetic Moment and Magnetic Energy.

Many electron atoms: Pauli's Exclusion Principle, Symmetric and Antisymmetric Wave Functions, Spin orbit coupling, Spectral Notations for Atomic States, Total angular momentum, Spin-orbit coupling in atoms-L-S and J-J couplings.

REFERENCE BOOKS

1. A Text book of Quantum Mechanics, P.M.Mathews and K.Venkatesan, 2nd Ed., 2010, McGraw Hill
2. Quantum Mechanics, Robert Eisberg and Robert Resnick, 2nd Edn., 2002, Wiley.
3. Quantum Mechanics, Leonard I. Schiff, 3rd Edn. 2010, Tata McGraw Hill.
4. Quantum Mechanics for Scientists & Engineers, D.A.B. Miller, 2008, Cambridge University Press
5. Quantum Mechanics, Eugen Merzbacher, 2004, John Wiley and Sons, Inc.
6. Introduction to Quantum Mechanics, D.J. Griffith, 2nd Ed. 2005, Pearson Education

AWADHESH PRATAP SINGH UNIVERSITY

REWA (M.P.) 486003

CBCS CURRICULAM & SYLLABUS

MASTER OF COMPUTER SCIENCE (M.Sc.)

(UGC Approved)

Course Code: 08

www.apsurewa.ac.in

Approved by Board of studies dated 21-09-2020

DEPARTMENT OF COMPUTER SCIENCE A.P.S. UNIVERSITY, REWA (M.P.)SYLLABUS FOR M.SC. COMPUTER SCIENCE
(w.e.f. SESSION 2020-2021)

Semester I

Paper Code	Subject Code	Subject Name	Course Type	Credits	Theory Marks	Internal Marks	Practical Marks	Total Marks
1081	**MSCS-101**	Discrete Mathematics	CC	4	60	40	0	100
1082	**MSCS-102**	Computer System Architecture	CC	4	60	40	0	100
10831 10832	**MSCS-103**	**Elective I:: (Any one of thefollowing considering departmental constraints)** a) Data Structure Using C b) Web Technology	DCE	4	60	40	0	100
10841 10842	**MSCS-104**	**Elective II:: (Any one of thefollowing considering departmental constraints)** a) Numerical Methods b) E-Commerce and E-Governance	DCE	4	60	40	0	100
1085	**MSCS-105**	DBMS *	GE	4	60	40	0	100
1086	**MSCS-106**	S/W Lab-I MSCS 102 & 103	LAB	2	0	40	60	100
1087	**MSCS-107**	S/W Lab-II MSCS104 & 105	LAB	2		40	60	100
1088	**MSCS-108**	Comprehensive Viva	VIVA	4				100
		Semester Total Marks and Credits		**28**				**800**

Semester II

Paper Code	Subject Code	Subject Name	Course Type	Credits	Theory Marks	Internal Marks	Practical Marks	Total Marks
2081	**MSCS-201**	System Software	CC	4	60	40	0	100
2082	**MSCS-202**	Software Engineering	CC	4	60	40	0	100

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20831 **20832**	**MSCS-203**	**Elective III:: (Any one of thefollowing considering departmental constraints)** a) Object Oriented Programming b) Programming in Python	D C E	4	60	40	0	100
20841 **20842**	**MSCS-204**	**Elective VI:: (Any one of thefollowing considering departmental constraints)** a) Computer Network b) Big Data Analysis	D C E	4	60	40	0	100
2085	**MSCS-205**	Advanced Programming Language *	G E	4	60	40	0	100
2086	**MSCS-206**	S/W Lab-I MSCS 203	L A B	2		60	40	100
2087	**MSCS-207**	S/W Lab-I MSCS 205	L A B	2		60	40	100
2088	**MSCS-208**	Comprehensive Viva	VI V A	4				100
		Semester Total Credits and Marks		**28**				**800**

CC: Core Course GE: Generic Elective DCE: Discipline Centric Elective

* Student may choose this course as a Generic Elective or may choose a Generic Elective Course Offered in other UTDs at the same levelor may choose a course offered by MOOCs through SWAYAM

ons: 1. For passing the subject examination minimum 40% marks must be separately scored in Theory Paper, Practical Examsand Internal Evaluation for the subject.

2. Please refer concerned regulation for details

Semester III

Paper Code	Subject Code	Subject Name	Course Type	Credits	Theory Marks	Internal Marks	Practical Marks	Total Marks
3081	**MSCS-301**	Operating System	CC	4	60	40	0	100
3082	**MSCS-302**	Computer Graphics & Multimedia	CC	4	60	40	0	100
30831 **30832**	**MSCS-303**	**Elective V:: (Any one of thefollowing considering departmental constraints)** a) Theory of Computation b) AI & Machine Learning	DCE	4	60	40	0	100
30841 **30842**	**MSCS-304**	**Elective VI:: (Any one of thefollowing considering departmental constraints)** a) Advanced Computer Architecture b) Information & Network Security	DCE	4	60	40	0	100
3085	**MSCS-305**	Java Programming*	GE	4	60	40	0	100
3086	**MSCS-306**	S/W Lab-I MSCS 302	LAB	2		60	40	100
3087	**MSCS-307**	S/W Lab-I MSCS 305	LAB	2		60	40	100
3088	**MSCS-308**	Comprehensive Viva	VIVA	4				100
		Semester Total Credits and Marks		**28**				**800**

Semester IV

Paper Code	Subject Code	Subject Name	Course Type	Credits	Theory Marks	Internal Marks	Practical Marks	Total Marks
4081	**MSCS401**	Major Project/ Dissertation External Evaluation	CC	12				300

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4082	**MSC S402**	Major Project/ Dissertation Internal Evaluation	C C	8				200
4083	**MSC S403**	Comprehensive Viva	Viva	4				100
		Total		**24**				**600**

CC: Core Course GE: Generic Elective DCE: Discipline Centric Elective

* Student may choose this course as a Generic Elective or may choose a Generic Elective Course Offered in other UTDs at the same levelor may choose a course offered by MOOCs through SWAYAM

Instructions:

1. For passing the subject examination minimum 40% marks must be separately scored in Theory Paper, Practical Exams and Internal Evaluation for the subject.
2. For passing the semester, minimum aggregate marks must be 45% in the semester.

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Programme Outcomes

PO-1 Critical Thinking: Take informed actions after identifying the assumptions that frame our thinking and actions, check out the degree to which these assumptions are accurate and valid, and look at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.

PO-2 Effective Communication: Speak, read, write and listen clearly in personand through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media and technology.

PO-3 Social Interaction: Elicit views of others, mediate disagreements and help reach conclusions in group settings.

PO-4 Effective Citizenship: Demonstrate empathetic social concern and equity-centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.

PO-5 Ethics: Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.

PO-6 Environment and Sustainability: Understand the issues of environmental contexts and sustainable development.

PO-7 Self-directed and Life-long Learning: Acquire the ability to engage in independent and life-long learning in the broadest context of socio-technological changes.

Programme Specific Outcomes

PSOs.1 Demonstrate understanding of the principles and concepts of the computer systems to develop efficient computing system.

PSOs.2 Analyze, design, develop, implement and test computer systems for providing solutions for computing problems.

PSOs.3 Enhancing skills and learning new computing technologies for attaining professional excellence and research.

PSOs.4 Design and develop computer programs/computer-based systems in the areas related to algorithms, networking, web design and data analytics of varying complexity.

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PAPER (MCS-101) - DISCRETE MATHEMATICS

Course Objectives:

- Understand Different Types of Discrete Structures
- Express a Logic Sentence in Terms of Predicates, Quantifiers, and Logical Connectives
- Solve Problems Using the Principle of Inclusion-Exclusion.
- Understand Recursive Definitions;
- Understanding the computer problems by graph and trees concept

Course Outcomes:

- Analyze Properties of Algebraic Structures Such as Groups, Rings and Fields.
- Apply the Operations of Sets and use Venn Diagrams to Solve Applied Problems;
- Use and Analyze Recursive Definitions
- Understand, Explain and Apply the Basic Principles of Sets and Operations in Sets to Solve theProblems
- Analyze Modern Problems in Computer Science and solve them Using Graphs and Trees.

Unit-wise Syllabus:

UNIT I

Mathematical Logic and Set theory: Introduction. The theory of Inference for the Statement Calculus, The Predicate Calculus, Inference Theory of the predicate Calculus. Set Theory. Introduction, Basic Concepts of Set Theory, Elementary representation of Discrete Structures: Relations and Ordering: Properties of Binary Relations in a set, Relation Matrix and the Graph of a Relation, Composition of Binary Relation, Partial Ordering, Functions: Composition, Characteristics, Natural Number.

UNIT II

Algebraic Structures: Introduction: Algebraic Systems: Examples and General Properties: Definition and Examples, Some Simple Algebraic Systems and General Properties, Semi groups and Monoids: Definition and Examples, Homomorphism of Semi group and Monoids, Sub semi groups and Sub Monoids, Grammars and languages: Discussion of Grammars, Formal Definition of a Language, Nations of Syntax Analysis Polish Expressions and Their Compilation, Groups: Definitions and Examples. Subgroups and Homomorphism. Co-sets and Lagrange's Theorem, Normal subgroups, Algebraic Systems with Two Binary Operations,

UNIT-III

Lattices and Boolean algebra: Introduction: Lattices as Partially Ordered Sets: Definition and Example. Some Properties of Lattices, Lattices as Algebraic Systems. Sub lattices, Direct Product and Homomorphism, Some Special Lattices, Boolean algebra, Definition and Examples, Sub algebra, Direct Product and Homomorphism Boolean Functions Boolean Forms and Free Boolean Algebra, Values of Boolean Expressions and Boolean Functions, Representation of Boolean Functions, Minimization of Boolean Function, Design Examples Using Boolean Algebra.

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UNIT -IV

Graph Theory: Introduction Basic Concepts of Graph Theory: Basic Definitions, paths, Reachability and Connectedness, Tree and fundamental Circuits: Some Properties of Trees, Pendent Vertices in a tree, Distance and Centers in a tree, Rooted and Binary Trees, Spanning tree, Fundamental Circuits. Matrix Representation of Graphs: Incidence Matrix, Circuit Matrix, An application to a Switching network, path Matrix and Adjacency Matrix

Text-Books;

1. Trembley J.P. & Manohar R: Discrete Mathematical Structure with Application to ComputerScience, TMH
2. S Lipchutz: "Finite Mathematics", Schaum Series, MGH.

Reference Books:

1. C.L Liu- Elements of Discrete Mathematics- McGraw Hill.
2. K.H. Rosen, Discrete Mathematics and Applications, Fifth Edition 2003, Tatamcgraw Hill.
3. W.K. Grassmann and J.P. Trembnlay, Logic and Discrete Mathematics, a Computer Science
4. Ronald Graham, Donald Knuth and Oren Patashik- Concrete Mathematics: a Foundation forComputer Science Ronald Graham,
5. Donald Knuth and Oren Patashik- Concrete Mathematics: a Foundation for Computer Science-Addison-Wesley
6. Judith L. Gersting -Mathematical Structures for Computer Science,-Computer Science Press.
7. K. a. Ross, Ch. R. B. Wright, Discrete Mathematics, Prentice Hall Inc., 1992 (Or Pwn Warszawa1996).

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Paper (MSCS-102) Computer System Architecture

Course Objectives:

- Understand Data Representation for Digital Logic
- Understand the Basic Blocks of Digital Logic
- Understand the Fundamental Organization of a Digital Computer
- Design Simple Combination & Sequential Circuits
- Examine the Basics of General Programming
- Learn the Micro programmed Controls
- Learn the Memory and I/O Organization.

Course Outcomes:

- Understand and Represent Data in Different Binary Formats
- Design Simplify and evaluate Boolean Equations and Circuits
- Explain and Analyse Basic Building Blocks of Digital Electronics and Computer
- Design and Analyse Simple Combination & Sequential Circuits
- Analyse the Basic Computer Organisation and Programming

Unit-wise Syllabus:

UNIT I

Basic Computer Organization: Block diagram, Evolution of computers Systems. Classification of computers Data representation in computers, Binary. Octal and Hexadecimal numbering systems and their inter conversion, Binary codes - BCD. EBCDIC Gray. Parity, Error correction code. Concepts of Boolean algebra: Basic Postulates. Canonical from Minimization Techniques, Karnaugh Map. Logic gets. Flip- Flops (RS, D, JK, T)'

UNIT-ll

Basic Building Blocks of Computers: Registers (Shift Register), Counters (Binary, Up, Down, Ripple, Register transfer, Bus and Memory transfer, Arithmetic, shift and logic Micro-operations, CPU: introduction, general register organization, addressing modes, Memory organization - Memory hierarchy, Main memory, Auxiliary memory. Associative memory. Cache memory, Virtual memory, Data transfer: Modes of transfer. Asynchronous and Synchronous Data transfer. DMA

UNIT-III

Internal architecture of 8086/8088 Microprocessor: Software model of 8086/88. Memory Address Space and Data Organization, Data type, Segment registers and Memory Segmentation. Instruction pointer, Data registers , Pointer and Index registers, Status register, The Stack, I/O Address Space, Addressing modes of the 8086/88. Converting Assembly Language instructions to Machine Code, TheIBM PC and its DEBUG program.

UNIT -IV

Introduction to 8086/88 Programming: The instruction set of the 8086/88. Data transfer. Arithmetic,Logic, Shift and Rotate Instructions, Flag Control instructions. Compare instruction, Jump Instructions.

Subroutines and subroutine handling instruction. The loop and loop-handling instructions. Strings andString handling instructions. Interrupts in 8086. Introduction to DOS/BIOS interrupt programming

Text Books:

1. M. Moris Manno: Computer System Architecture, PHI
2. Walter A. Trieble and Abtar Singh: 8088 and 8086 microprocessors: Programming, interfacingsoftware, hardware and applications.PHI

Reference Books:

1. John P. Hayes: Computer Architecture and Organization' MGH
2. Andrew S. Tannenbaum: StructuredcomputerOrganization' PHI
3. Albert Paul Malvion: Digitalprinciples T'MH
4. B Ram. Microprocessor & Microcomputer dhanpat Rai& Sons

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PAPER (MSCS-103 A) DATA STRUCTURE USING C

Course Objectives:

- To Make the Student Learn a C Programming Language.
- To Learn Problem Solving Techniques using C.
- To Teach the Student to Write Programs in C and to Solve the Problems.
- To Teach the Concepts of C Programming Like Control Structures Functions Learn About arraysStructures and Union etc.
- Learn Basic Data Structures Such as Linked Lists Stacks and Queues Tree and Graph.
- Learn Algorithm for Solving Problems Like Sorting Searching Insertion and Deletion of Data
- Understand the Complexity of Various Algorithms.
- Introduce Various Techniques for Representation of the Data in in Memory.

Course Outcomes:

- Analyze and Solve Complex and Real Life Problems by Developing Application Programs usingC Programming Language.
- Understand and explain Basic Data Structures Such as Linked Lists Stacks and Queues Tree andGraph.
- Select and apply Appropriate Data Structures to define the particular Problem statement.
- Implement Operations Like Searching/Sorting Insertion and Deletion Traversing on Various DataStructures.
- Determine and Analyze the Complexity of Given Algorithms

Unit-wise Syllabus:

UNIT-I

Programming Part I: Basics of C programming, Structure of a simple C program. Simple I/O functions, Data tvpes in C, operators &their precedence, Control Structures if-else statements. Switch statement. Loops while. do-while and for loop functions: User-defined functions, returning a value from a function. Local and global variables, automatic, Static Register and External Storage class Parameters: Type, Declarations of a function, functions with more than one parameters, recursion, Arrays: arrays (upto 2 Dimensions), Declaration and initialization, the break structured, string and character arrays. operations on arrays, The C preprocessors.

UNIT- II

Programming Part II: String and string functions Pointers, the concept of pointers, the address and correction operators, passing pointers as parameters. Dynamic memory allocation, Arrays and pointers, Passing by value and reference, Address arithmetic Pointer to pointers, Structures: initializing a structure, Types of structures. arrays within structures, structures within structures. Structures and functions. Files

in C, modes for files. functions used infiles (putchar, getchar, getc, putc. fopen, fclose, fscan, fprint, fseek. ftell. fread and (write), error handling in files.

UNIT- III

Data Structure part l: Introduction: Algorithm analysis for time and space requirements, stacks; operations on stacks applications of stacks, recursion. polish expressions and their manipulations, Queue; operationson queues, priority queues, linked storage representation, linked linear lists. Operations on linked list, circular linked list, doubly linked lists. Application of linked lists, Polynomial manipulation, error precision. fixed block storage allocation, dynamic storage management, first fit and best fit, storage allocation, garbage collection, compaction.

UNIT- IV

Data Structure part II : Definitions and concepts of general trees and binary trees, representation of binary tree. representation of general tree, binary tree traversal. binary trees. operation on binary trees. application of trees, manipulation of arithmetic's, expressions, binary search trees. evaluation of binary search trees. Graphs and their representation, matrix representation, list structure Breadth first search, Depth first search, spanning trees. application of graphs, topological sorting. sorting techniques selection sort. bubble sort, merge sort, tree sort, partition exchange sort. radix sort. heap sort ,searching techniques: Linear search. binary search. hash table method, hashing function .

Text Books:

1. Gotrified Progranuning with C
2. E Balagurusamy: Progranuning with C
3. Horowitz &Sahni: Fundamentals of Data Structures, Comp. Sc. Press
4. Tanenbaum A.S.: Data Structures using C, PHl

Reference books

1. Rajaraman Introduction to C. PHI
2. Y Kanetkar Let us C, BPB
3. S. Lipschutz Schaum s outline series. Data Structures. MGH
4. J.P Trembley &P.G. Slorenson: An Introduction to Data Structures, MGH
5. OE Knuth. The Art of Computer Programming, Addision Wesley R Ci Dromey- How to solve itby computer

DEPARTMENT OF COMPUTER SCIENCE A.P.S. UNIVERSITY, REWA (M.P.)
SYLLABUS FOR M.SC. COMPUTER SCIENCE
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PAPER (MSCS-103 B) WEB TECHNOLOGY

Course Objectives:

- Learn How to Design and Develop a Web Page Using HTML and CSS
- Learn How to Link Pages So that they Create a Web Site.
- Design and Develop a Web Site Using Text Images Links Lists and Tables for Navigation andLayout.
- Style Your Page Using CSS Internal Style Sheets and External Style Sheets.
- Learn to use Java Script & XML in Web Design.
- Learn How to use Database in Web Design.

Course Outcome:

- ListtheVariousHTMLTagsandusethemtodeveloptheUserFriendlyWebPages.
- Define the CSS with its Types and use them to provide the Styles to the Web Pages at VariousLevels.
- DeveloptheModernWebPagesusingtheHTMLandCSSFeatureswithdifferentlayoutsas per Need ofApplications..
- Use Server Side Scripting with PHP to Generate the Web Pages dynamically using the DatabaseConnectivity.
- Develop the Modern Web Applications using the Client and Server Side Technologies and theWeb Design Fundamentals.

Unit-wise Syllabus :

UNIT-I

Introduction to Web Web Designing and Website Planning :concept of WWW Internet and WWW HTTP Protocol : Request and Response Web Browser and Web Servers Website Hosting-Free Vs. Paid Linux Vs. Windows Hosting Concepts & use of Database & Mail Servers Associated with Web Sites Featuresof Web 2.0 Concepts of Effective Web Design Web Design Issues Including Browser Bandwidth and Cache Display Resolution Look and Feel of the Website Page Layout and Linking User Centric Design Sitemap Planning and Publishing Website Designing Effective Navigation. Website Hosting Issues C panel and FTP.

UNIT-II

Web Development with HTML : Basics of HTML Formatting and Fonts Commenting Code Color Hyperlink Lists Tables Images Forms Meta Tags Character Entities Frames and Frame Sets Browser Architecture and Web Site Structure. Overview and Features of HTML5 use of HTML Code Editor& WYSIWYG Editor. Cascading Style Sheets (CSS): Style Sheets : Need for CSS Introduction to CSS Basic Syntax and Structure Using CSS Background Images Colors and Properties Manipulating Texts Using Fonts Borders and Boxes Margins Padding Lists Positioning Using CSS CSS2 Overview and Features of CSS3

UNIT-III

Technologies for Web Applications Javascript & XML: Javascript : Client Side Scripting with Javascript Variables Functions Conditions Loops and Repetition Pop Up Boxes Advance Javascript: Javascript and Objects Javascript Own Objects the Dom and Web Browser Environments Manipulation Using Dom Forms and Validations DHTML : Combining HTML, CSS and Javascript Events and Buttons. XML : Introduction of XML Validation of XML Documents DTD Ways to use XML, XML for Data Files Html Vs XML Embedding XML into HTML Documents Converting XML to HTML for Display Displaying XML Using CSS and XSL Rewriting HTML as XML Relationship Between HTML SGML and XML Web Personalization Semantic Web Semantic Web Services. Transforming XML Using XSL and XSLT

UNIT-IV

Web Design with PHP: Introduction and Basic Syntax of PHP Decision and Looping with Examples PHP and HTML Arrays Functions Browser Control and Detection String Form Processing Files Advance Features: Cookies and Sessions Object Oriented Programming with PHP. Introduction to Database Driven Websites with PHP: PHP and MYSQL: Basic Commands with PHP Examples Connection to Server Creating Database Selecting a Database Listing Database Listing Table Names Creating a Table Inserting Data Altering Tables Queries Deleting Database Deleting Data and Tables PHP My admin and Database Bugs.

Reference Books:

1. Roger S. Pressman David Lowe “Web Engineering” Tata McGraw Hill Publication 2007
2. Achyut S Godbole and Atul Kahate “Web Technologies” Tata McGraw Hill
3. Gopalan N P Akilandeswari “Web Technology: a Developer S Perspective” PHI
4. Chris Bates Web Programming: Building Internet Applications Wiley
5. C. Xavier “Web Technology & Design” Tata McGraw Hill.
6. Ivan Bay Ross “HTML DHTML Java Script Perl CGI” BPB.
7. Ralph Moseley and M.T. Savaliya- Developing Web Applications Wiley-India
8. Web Technologies Black Book Dreamtech Press
9. HTML5 Black Book Dreamtech Press
10. Joel Sklar- Web Design Cengage Learning
11. Harwani- Developing Web Applications in PHP and Ajax Mcgrawhill
12. P.J. Deitel & H.M. Deitel- Internet and WorldWideWeb How to Program Pearson

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SYLLABUS FOR M.SC. COMPUTER SCIENCE
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PAPER (MCS-104 A) – NUMERICAL METHODS

Course Objectives:

- To Make the Student's Aware of Need of Numerical Methods.
- Cover the Classical Fundamental Topics in Numerical Methods: Approximation Numerical.
- Integration Numerical Linear Algebra Solution of Nonlinear Algebraic Systems and Solution ofOrdinary Differential Equations.
- To Make Students Aware of Numerical Analysis Software and Computer Facilities.

Course Outcomes:

- Understand and analyze the real problems and formulate them into linear and non-linearEquations.
- Gain the knowledge of various Optimization Techniques for finding the solutions of Non-Linearand Linear Equations.
- Optimize the solutions by iteratively carrying out Error Analysis for Arithmetic Operations.
- Understand and explain the Propagation of Errors with the help of Complex Numerical
- Understand the usage of Interpolation techniques for Numerical Differentiation and

Unit-wise Syllabus:

UNIT-I

Statistical Methods: Introduction, Sampling, Frequency Distribution, Measures of central tendency, Measures of dispersion, discrete probability distribution: Significance of probability, Discrete, Binomial, Poisson and Normal Distribution, Curve fitting, Regression & Correlation: Linear least square fit, Nonlinear fit, Polynomial fit, coefficient of correlation, multiple, partial & rank Correlation. Tests of significance: chi square, T-test & f-Test

UNIT -II

Numerical methods 1: Solution of polynomial and Linear Equations: Introduction properties & Evaluation of polynomial Equation, Iterative methods for roots of Equations Bisection method. False position method , Newton- Raphson method for complex root, rate of Convergence , Muller method, fixed point method, Solution of simultaneous equation solution by notation method. Gauss elimination method pivotal Condensation, Gauss Seidel Method, Gauss Jordan method Matrix Method Gauss Jordan Matrix Inversion, Eigen Value & Eigen Vectors

UNIT -III

Numerical methods 2: Interpolation & Numerical Differentiation: Introduction, Linear interpolation, polynomial interpolation, difference Table, Gregory- Newton interpolation, Newton divided difference interpolation, Lagrange's interpolation (Backward and Forward) Errors in differences Hermite interpolation, Piecewise and spline interpolation Numerical differentiation by polynomial fit, higher order derivatives, Errors in Numerical differentiation

UNIT -IV

Numerical Methods3: Numerical Integration & Solution of Differential Equation: Numerical integration Introduction , Trapezoidal rule, Simpson's 1/3 rule, Newton's three eighth rule, GuassionQuadrature , Solution by Euler's method, Taylor series, Predictor- corrector method, Runge-Kutta method, Numerical solution of partial differential equation, parabolic partial differential equation, Elliptical differential equation, Laplace equation, Poisson equation , iterative methods.

Text Books

1. E. Balaguruswamy Computer Oriented Statistical & Numerical methods, Macmillan
2. E.V.Krishnamurthy: Numerical algorithms, computations in Sc, and Engg., Addison WesleyPublishing Company

Reference Books

1. Jain M.K. Lyengar S.R.K. &Jain R.K. Numerical Methods for Scientific & EngineeringComputation EWP
1. 2.Desai. Fortran Programming & Numerical Methods. EWP

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PAPER (MCS-104 B) – E-COMMERCE AND E-GOVERNANCE

Course Objectives:

- To Develop Skills in Understanding Strategic Issues Related to E- Commerce and E- Governance
- To Develop a Broad Knowledge of E-Governance and E-Commerce Activities in India
- To Develop Knowledge of How the Government May Contribute in Moving the CountryTowards E-Commerce and E-Governance

Course Outcome:

- Explain and demonstrate E-Governance Initiatives at the National Level in India
- Make Classification of E-Commerce and E- Governance
- Students Able to Think Critically and Analytically to New Successful Business Ideas.
- Understand the Electronic Payment Systems
- Understand the Challenges and Approach to Security of E-Government

Unit-wise Syllabus :

UNIT-I

Introduction to E-Commerce: Definition, History of E-Commerce, E-Business Models B2B, B2C, C2C, C2B, Environment of E-Commerce, Dimensions of E-Commerce, Ethical Issues, Electronic Data Interchange, Value Chain and Supply Chain, E-Commerce Marketing, E-Commerce Strategy, E- Commerce Infrastructure, Advantages and Disadvantages of E-Commerce.

UNIT- II

Electronic Payment Systems: Payment Gateways, Payment Cards, Credit Cards, Debit Cards, Smart Cards, E-Credit Accounts, E-Money, Marketing on the Web, Categories of E-Commerce, Edi, Marketing Strategies, Advertising on the Web, Customer Service and Support, Internet Banking, Introduction to M- Commerce, Case Study: E-Commerce in Passenger Air Transport, Element of E-Commerce, Issues of E- Commerce

UNIT- III

E-Government, Theoretical Background of E-Governance, Issues in E -Governance Applications, Evolution of E-Governance, its Scope and Content, Benefits and Reasons for the Introduction of E- Governance, E-Governance Models - Broadcasting, Critical Flow, Comparative Analysis, Mobilization and Lobbying, Interactive Services / G2C,C2G

UNIT- IV

E-Readiness, E-Government Readiness, E- Framework, Step & Issues, Application of Data Warehousing and Data Mining in E-Government, Case Studies: NICNET-Role of Nationwide Networking in E-Governance, E-Seva. Origins in India E-Governance Projects in India Measures toBe Considered Before Going for E-Governance, Work plan and Infrastructure E-Government Systems Security: Challenges and Approach to Security of E-Government, Security Concern in E-

Commerce, Security for Server Computers, Communication Channel Security, Security for Client Computers. E-Security Network and Web Site Risk for E-Business, Information Technology ACT 2000 and its Highlights Related to E-Commerce, E-Security, Firewalls, Electronic Market / E- Shop, Introduction to Security, Types of Securities, Security Tools, Network Security.

Text Books

1. Gary P. Schneider, "E-Commerce", Cengage Learning India.
2. C.S.R. Prabhu, "E-Governence: Concept and Case Study", PHI Learning Private Limited.
3. P. Tjoseph, S.J.,"E-Commerce an Indian Perspective", Prentice-Hall of India.
4. V. Rajaraamn, "Essentials of E-Commerce Technology", PHI Learning Private Limited.
5. Amir Manzoor " E-Commerce: an Introduction", Lambert.

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PAPER (MCS-105) – DBMS (DATA BASE MANAGEMENT SYSTEMS)

Course Objectives:

- Understand the Fundamentals of Data Models and Conceptualize a Database System Using ERDiagram.
- Make a Study of Relational Database Design.
- Know About Data Storage Techniques and Query Processing.
- Impart Knowledge in Transaction Processing Concurrency Control Techniques and RecoveryProcedures.
- To Understand MySQL Database Management System.

Course Outcome:

- Understand and describe the basic concepts and terminology of Database Management System.
- Analyze and Design the database of applications using ER modeling and Normalization.
- Demonstrate the database schema data modeling and normalization process with the help ofexample.
- Implement the database design using appropriate database tools.
- Describe the transaction processing system locking techniques and data recovery.

Unit-wise Syllabus:

UNIT -I

Basic Concept: An Introduction to database System, Basic Data System Terminology, Purpose of DBMS, Data Independence, An Architecture of DBMS: Schema. Subschema, Mapping , Physical & Logical Data, Basic File System, File Organization: Sequential, Index Sequential, Hosting, B- Tree based index. File Organization based on Dynamic Hashing with immediate splitting, Model of Real Word, Details of E-R Model.

UNIT -II

Three Data Models: An Overview of three Main Data Models:Hierarchical Model. Network Model, Relational Model and their inter comparison Concept of Relational Algebra: Basic Operation like Union, Intersection, and Difference. Product join, The relational Calculus: Domain & Tuple Calculus, relational Database Design: Integrity Constraints, Functional Dependency Single Value and Multi Value Functional dependency. Normal Forms: 1, 2, 3 Boycee Codd, & 4 Normal forms: Join Dependency.

UNIT -III

Query Processing & Database Software: Query Interpretation, Equivalence of Expression, Estimation of Query Processing Cost. Query Optimization by Algebraic Manipulation, Join Algorithms, Types of Data Base Languages. Procedural and Non- procedural Language, Relational Commercial Query Languages, QBE, SQL: Introduction , Basic Structure, the Power of SQL (Creation, Insertion, Deletion, Indexing & Modification of Database in SQL), query optimization strategies

UNIT -IV

Management Considerations & Future Trends: Security & Integrity: Introduction, Access Control, Crypto Systems, Statistical Database Security, S Concurrency Control: Transaction, Database System Architecture, Serializability, Locking, Database Recovery: Kinds of Failure, Recovery Techniques, Object, An Overview of Oriented Model, Distributed database: Structure, Tradeoffs, Design, Client Server Database, Knowledge Databases.

Text Books:

1. Henry F Korth & A Silbershatz, Data Base System Concepts, MGH
2. Arun K. Majumdar & P.B hattacharya: Data Base Management, System TMH

Reference Books:

1. Jeffrey O, Ullman: Principles of Database Systems, Galgotia Pub. Co. Ltd
2. Bipin C, Desai: An Introduction to database System Galgotia Pub, Co, LTD
3. James Martin: Principle of Database Management, PHI
4. James Martin: Computer Database organization, PHI

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PAPER (MCS-201) -SYSTEM SOFTWARE

Course Objectives:

- To introduce student the fundamental model of the processing of high level language programsfor execution on computer system.
- To explain the basic operations that are performed from the time a computer is turned on until auser is able to execute programs.
- To understand and implement Assembler, Loader, Linkers, Macros & Compilers.
- To introduce students the process management and information management via differentsoftware tools.

Course Outcome:

- Understand different components of system software.
- Understand intermediate code generation in context of language designing.
- Recognize operating system functions such as memory management as pertaining to run timestorage management.

Unit-wise Syllabus:

UNIT I

Introduction to System Software: The Simplified instructional Computer (SlC): Machine structure (Memory. Register, Data formats.Instruction format, Addressing modes, instruction set. Input/output) Assemblers: Basic Assembler Function (A Simple S IC assembler tables and logic) Machine-dependent Assembler feature (instructionFormats and addressing modes, Program relocation) Machine- independents assembler, features (laterals. Symbol –defining statements, Expression, program blocks, control sections and program linking) . Assembler Design options(Two-pass assembler with overlays Structure one-pass assembler s Multi –pass Assemblers) Implementation Examples.

UNIT II

Loaders and Linkers: Basic Loader Functions. Machine dependent loader features (Relocation, Program Linking, Table and Logic a Linking Loader) , Machine-independent Loader features (Automatic library search, loader upturns, Overlay program), Loader Design option (Linkage editors, Dynamic Linking, Bootstrap Loaders), Text editors Overview of the editing process, User interface editor Structure.

UNIT III

Macro Processors: Basic Macro Processor Functions (Macro definition and expansion, Macro Processor table and logic), Machine Independent Macro Processor Features (Concatenation of macro parameters. Generation of Union sets conditional macro expansion, Keyboard macro parameters), Macro processor Design options recursive macro expansion/ General-purpose macro processors, Macro processing within language Interactive debugging systems, ‘debugging function and capabilities, Relationship with other the system. User-interface criteria)

Approved by Board of studies dated 21-09-2020

UNIT IV

Compilers: Basic Compiler Functions (Grammars, Lexical analysis, Syntactic analysis, Code generation), Machine-Dependent compiler Features (Intermediate form of the program. Machine- dependent code optimization, Machine-Independent compiler Features (Storage allocation, Structured Variables, Machine-Independent code optimization, Block-structure Languages), Compiler Design options (division into passes, Interpreters, P-code compilers), Implementation examples.

Text Books:

1. Leland L, Beck: System Software (An Introduction to systems programming), Addison WesleyPublishing Company
2. Alfred Jeffrey Ullman: Principles of Compiler Design, Narosa Publishing Home, new Delhi

Reference Books:

1. D, M Dhamdhare Systems Programming & Operating Systems, THM

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PAPER (MCS-202) SOFTWARE ENGINEERING

Course Objectives:

- Understand Learn and Apply the Theoretical and Practical Knowledge of Software
- Development Such as Software Development Paradigms Process Models Tools and Techniques.
- Understand and Learn the Process of Software Requirements Identification Analysis Review andLearn Recording Requirements in the IEEE Format of the SRS Document.
- Understand the Various Types and Levels of Software Testing and Basic Approaches of TestCase Designing.
- Gain the Knowledge of the Various Models of Software Quality Estimation Quality Assuranceand Control.

Course Outcomes:

- Identify Analyze Review and Validate the Requirement of Software Components and
- System and Also Prepare Software Requirement Specification (SRS) Document Using RelevantStandards Tools and Methodologies.
- Scheduling and Risk Management for Developing Qualitative and Economic Software.
- Architecture Programmer Tester Quality Assurance and Control officer Project Manager andLeaders.
- Apply Coding Standards & Guidelines and Quality Norms in Coding of Software Systems to Satisfy the Requirements and Quality.

Unit-wise Syllabus :

UNIT I

Introduction: The product and the process, program vs software products, Emergence of software engineering, software development life cycle models, classical waterfall, iterative waterfall, prototyping evolution, spiral & RAP model, comparison of various lfe cycle models, project management process, process management process.

UNIT II

Software Requirement Analysis & Specification (SRAS): Need for software requirement specification, requirement process, requirement analysis, requirement specification, planning a software project, cost

estimation. Project scheduling, staffing & personnel planning, software configuration management, plans: Quality assurance plan, risk management.

UNIT III

Software Design: Criteria for Software design, software design & design principle, module level coupling and Cohesion, design notation & specifications, design methodology verification design, Basic concepts, design methodology & metrics, object oriented VS function oriented design, detailed design.

UNIT IV

Coding and Testing: Standard guideline for coding, programming practice, testing fundamentals, unit testing, verification vs validation, black box & white box testing, functional testing, structural testing, object oriented program testing, software reliability & quality assurance, CASE, software maintenance

Text Books:

1. Pankaj Jalote: An Integral Approach to Software Engineering, Narosa
2. Rogers Pressman. Software Engineering, a practitioner's approach, MGH

Reference Books:

1. 1 Rajib Mall: Fundamental of Software Engineering, PHI
2. 2 Richard Farley: Software Engineering Concept, THM

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PAPER (MCS- 203 A)- OBJECT ORIENTED PROGRAMMING

Course Objectives:

- To Understand how C++ Improves C with Object-Oriented Features.
- To Learn how to Write Inline Functions for Efficiency and Performance.
- To Learn the Syntax and Semantics of the C++ Programming Language.
- To Learn how to Design C++ Classes for Code Reuse.
- To Learn how to Implement Copy Constructors and Class Member Functions.
- To Learn how to Overload Functions and Operators in C++.
- To Learn how Containment and Inheritance Promote Code Reuse in C++.

Course Outcomes:

- Explain Concepts and Advantages of Object Oriented Programming.
- Apply and implement the concepts of the Object-Oriented paradigms to analyze design anddevelop the solutions of real world problems using the Principles of information Hiding Localization and Modularity.
- Design Develop and maintain the small applications system utility for societal and academicproblems using reusability concepts in team spirit.
- Demonstrate the Advanced Features of C++ Specifically Stream I/O Templates and OperatorOver loading and Overriding.
- Understand how to Use Exception Handling in C++ Programs.

Unit-wise Syllabus:

UNIT I

Introduction to OOP: Procedural, Structured and Object Oriented PROGRAMMING (OOP), Basic concepts of OOP: Object, Classes, Inheritance, Polymorphism, Reusability, Benefits & application ofOOP, C++ program, basic data type , user defined data types, reference variable, operators, structures, union and enum, Functions : prototypes, default arguments, const arguments in functions, Inline functions, call by reference, function overloading, Friend and virtual Functions.

UNIT II

Classes and objects: Declaring a class, defining an object, data hiding and encapsulation, public and private data member & functions, constructors & destructors, parameterized constructors, multiple constructor in a class, copy constructors, array of object, object as function, arguments, returning object, the this pointer, memory allocation for objects, operator overloading-unary and binary operators, type conversions, pointers to functions.

UNIT III

Inheritance: Inheritance and derivation, single, multilevel, multiple, hierarchical & hybrid inheritance, constructors in multiple inheritance, private and protected inheritances, overriding functions, virtual

methods, ambiguity resolution, pure virtual functions, virtual functions and & destructors, object slicing, member classes: nesting of classes.

UNIT IV

Streams: C++ streams, stream classes, unformatted & formatted I/O operations, member functions of c-In, manipulators, managing output with manipulators, user defined manipulators with arguments, Files: Classes for file stream operations file I/O with streams, file modes, binary versus text files, binary I/O random access, error handling during file operations, command line arguments, elementary database management, Templates & Exception handling

Text Books:

1. E, Balagurusamy, Object Oriented Programming with C++, TMH
2. Jesse Liberty, Teach Your self ANSI C++ Tec media
3. Robert Lafore, Object Oriented Programming in Turbo C++, Galgotia Publications

Reference Books:

1. Stroustrup, The C++ Programming Language, Addison Wesley
2. Herbert Schild, C++ Complete Reference, THM
3. Yashwant Kanatkar, Let us C++ ,BPD

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PAPER (MCS- 203 B)- PROGRAMMING IN PYTHON

Course Objectives:

- To Introduce Python Programming Language as Multipurpose Programming Language withFeatures and Applications.
- To Learn Installing Python and Introducing Cross Multiplatform Usage of Python.
- To Practice Basic Language Features of Python.
- To Implement Oops Concepts Using Python.
- To Work with Files in Python

Course Expected Outcome:

- Install and use Python on Various Platform.
- Understand and Explain the features of Python language
- Design and Develop Python applications for data analysis using object-oriented concept .
- Build package and modules in Python with reusability and exception Aspect
- Write programs for Reading and Writing files in Python.

Unit-wise Syllabus :

UNIT I

Environment Setup of Python Application Area, Interactive Mode and Script Mode Data Types, Mutable and Immutable Variables, Expressions and Statements, Variables and Keywords, Operators and Operands in Python, Expressions and Statements; Taking Input (Using Raw_Input( ) and Input( ) and Displaying Output. Functions: Importing Modules, Invoking Built in Functions, Functions from Math Module, Functions from Random Module. Function from Date Time Module, Functions from Re-module Composition Defining Functions, Invoking Functions, Scope, Passing Parameters, Scope of Variables, Void Functions and Functions Returning Values, Recursion Conditional and Looping Construct, use of Compound Expression in Conditional and Looping Construct

UNIT II

Strings: String Operators, Comparing Strings Using Relational Operators; String Functions & Methods, Regular Expressions and Pattern Matching Lists: Concept of Mutable Lists, Creating, Initializing and Accessing the Elements, Traversing, Appending, Updating and Deleting Elements, Composition, Lists as Arguments, List Operations, List Functions and Methods Dictionaries: Concept of Key-Value Pair, Creating, Initializing and Accessing the Elements in a Dictionary, Traversing, Appending, Updating and Deleting Elements. Dictionary Functions and Methods Tuples: Immutable Concept, Creating, Initializing and Accessing Elements in a Tuple, Tuple Assignment, Tuple Slices, Tuple Indexing, Tuple Functions.

UNIT III

Concept of Object Oriented Programming: Data Hiding, Data Encapsulation, Class and Object, Polymorphism, Inheritance, Advantages of Object Oriented Programming Over Earlier Programming

Methodologies Classes: Defining Classes (Attributes, Methods), Creating Instance Objects, Accessing Attributes and Methods, Using Built in Class Attributes (Diet, Doc, Name, Module, Bases), Constructor (Init(), Del() and Str()) Methods in a Class, Private Attributes (Limited Support), Importance of "Self" (Acts as a Pointer to Current Calling Object) Operator Overloading with Methods

UNIT IV

Inheritance: Concept of Base Class and Derived Class: Single, Multilevel and multiple Inheritance Overriding Methods, Using Super() in Derived Class to Invoke Init() Or Overridden Methods of Parent Class Data File: Need for Non-Bold for Data File, Types of Data File-Text and Binary, Opening and Closing Files- Open(), Close(), Access Modes (Output, Input, Default), File Object, Access_Modes, Reading and Writing a File Read(), Readline(), Readlines(), Write(), Writeliness File Positions (Seek(), Tell()), Renaming and Deleting a File, Flush(),Implementation of Basic File Operations on Text and Binary File in Python.

Reference Books :

1. Mark Lutz Learning Python, 5th Edition o'reilly Publication
2. Fabrizio Romano Learning Python - Download Link – Https://Www.Packtpub.Com/Packt/FreeEbook/Learning-Python
3. Mark Lutz Learning Python (Fourth Edition) –Download Link Http://Freebook. Qiniudn.Com/Learning%20python,%204th%20edition.Pdf
4. Https://Docs.Python.Org/3/Tutorial/Index.Html

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PAPER (MCS- 204 A) - COMPUTER NETWORK

Course Objectives:

- Build an Understanding of the Fundamental Concepts of Computer Networking.
- Familiarize the Student with the Basic Taxonomy and Terminology of the Computer
- Networking Area.
- Introduce the Student to Advanced Networking Concepts Preparing the Student for EntryAdvanced Courses in Computer Networking.

Course Outcome:

- Demonstrate the Basic Concepts of Networking Principles Routing Algorithms, IP Addressingand Working of Networking Devices.
- Demonstrate the Significance Purpose and application of Networking Protocols and Standards.
- Analyze the Requirements for a Given Organizational Structure and Select the Most AppropriateNetworking Architecture and Technologies.
- Design the Network Diagram and Solve the Networking Problems of the Organizations withConsideration of Human and Environment.
- Install and Configure the Networking Devices.

Unit-wise Syllabus:

UNIT I

Introduction to Networks:

Basics of Data Communications LAN, MAN. WAN. Various LAN Topologies, OSI Reference Model, TCP/IP Reference Model, Comparison of OSI and TCP/IP Reference Models, Physical Layer: Inter- Comparison of various communication media, Hardware and Software requirements for networking, Wireless communication: Radio& microwave Communication, Satellites: Geostationary Satellites, Lo w Orbit .Satellites, overview of VSAT, Broadband ISDN.

UNIT II

Data Link Layer: Data Link Layer Design Issues: Services Provided to Network Layer, Framing Error Control, Flow Control, Error Correction Codes. Error Detection Codes, Elementary Data Link Protocols – An unrestricted simplex Protocol, simplex s top-and-wail -protocol ,Simplex protocol for a noisy channel
,Sliding Windows Protocols - One bit sliding window protocol ,protocol using Go Back n Protocol using selective repeat.

UNIT III

Medium Access Sub- layer and the Network Layer: Multiple Access Methods - ALOHA, CSMA Protocols, Limited-Content ion Protocols, IEEE STNDARD FOR LANs AND MANS. Standard for Ethernet, Token Bus, Token Ring, Comparison of three, Bridges From 802.xt o 802.y. – The Network

Layer: Routing Algorithms: Shortest Path, Routing, Flooding, Flow Based, Routing, Hierarchical Routing, Broad Cast – Routing General Principles of Congestion control, Flow Specification, Internetworking, Tunneling Fragmentation IP, Protocols. IP Addresses

UNIT IV

The Transport and Application Layers: Elements of Transport Protocols: Addressing, establishing connection, Releasing connection flow control and buffering, multiplexing, crash recovery, internet Transport Protocols: TCP service model TCP protocol, TCP connection management, TCP congestion control, UDP, Network Security: Traditional cryptography, two fundamental Cryptographic principles. Secret key algorithms, public key, DNS- Domain name systems, SNMP. Electronic mail, World Wide Web

Text Books:

1. A. S. Tanenbaum : Computer Networks, PHI

Reference Books:

1. James Martin: Computer Networks& Distributed processing, PHI
2. Uyless Black: Computer Networks, PHI

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PAPER (MCS- 204 B) – BIG DATA ANALYSIS

Course Objectives:

- Familiarize the Students with Most Important Information Technologies used in Manipulating, Storing, andAnalyzing Big Data.
- This Course Gives Students all Around Learning of the Big Data Framework using Hadoop and Spark,Including Yarn, HDFS and Map reduce
- It Provide an Overview of Approaches Facilitating Data Analytics on Huge Datasets.

Course Outcome:

- Ability to identify the characteristics of datasets and compare the trivial data and big data for variousapplications.
- Demonstrate an ability to use Hadoop framework to efficiently store retrieve and process Big Data forAnalytics.
- Implement several Data Intensive tasks using the Map Reduce Paradigm

Unit-wise Syllabus :

UNIT I
Big Data- Introduction, Traditional vs. Big Data Business Approach, Big Data Analytics, Advantages, Applications, Distributed & Parallel Computing for Big Data, Components in Big Data Architecture, Virtualization Approaches.

UNIT II
Hadoop- Introduction, Features, Advantages, Versions, Key Considerations of Hadoop, RdbmsVsHadoop, Hadoop Ecosystem, HDFS - Architecture, Features, Commands, Processing Data withHadoop, Hadoop Yarn.

UNIT III
Mapreduce Framework, Features, Uses, Working onMapreduce, Mapreduce Input and Output Operations, Exploring Map and Reduce Functions, Mapreduce Optimization Technique, HBASE Introduction, Architecture, HBASE in Hadoop Applications.

UNIT IV
Processing Data withMapreduce, Task Execution & Environment – Installation of Eclipse, Hadoop, Java Development Kit and Linux Ubuntu OS, Mapreduce Program Steps to Obtain Word Count, Functionality of Input Format- Inputsplit, Recordreader, Fileinputformat, Output Process of Fileoutputformat – Outputformat, Recordwriter, Role of Combiner, Partitioner, Debugging Mapreduce.

Reference Books:

1. Rob Kitchin The Data Revolution: Big Data Open Data Data Infrastructures And Their ConsequencesSAGE Publications Ltd
2. Croll and B. Yoskovitz Lean Analytics: Use Data to Build a Better Startup Faster o'reilly
3. Mayer-Schönberger and K. Cukier Big Data: A Revolution That Will Transform How We Live Work andThink

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PAPER (MCS- 205) – ADVANCED PROGRAMMING LANGUAGE

Course Objectives:

- Identify the Basics of .Net Framework, Architecture and User Programs
- Do GUI Programming Using Vb.Net and C#
- Examine the Challenges Involved in .Net Framework Programming
- Do Event Driven Programming Projects
- Learn the ADO.Net Database Usages in Website Creation
- Empower the Websites with use of Xml.

Course Outcome:

- Understand and explore various Features of .Net Framework
- Analyze, Design and Developthe GUIbased Applications softwareusing Vb.Net and C#
- Design, Develop and Implement Complete software Projects using Vb.Net and C# withconsideration of Environment in team spirit.
- Analyze the requirement, design and develop Dynamic and Static Websites and Web applicationsusing .Net technology.
- Integrate and Apply Different Components Including Database, XMLwith Proper Choice ofLanguages Mapping

Unit-wise Syllabus :

UNIT I

Introduction to .Net, .Net Framework Features & Architecture, CL, Common Type System, MSIL, Assemblies: Types of Assemblies, Class Libraries. Event Drive Programming, Methods and Events Related with Mouse and Keyboard. Programming into Visual Studio, Types of Project in .Net, IDE of VB.Net- Menu Bar, Toolbar, Project Explorer, Toolbox, Properties Window, Form Designer, Form Layout, Immediate Window, ASP& HTML Forms

UNIT II

The VB.Net Language- Variables, Declaring Variables, Data Types, Scope & Lifetime of a Variable, Arrays, Types of Array, Control Array, Subroutine, Functions, Passing Argument to Functions, Optional Argument, Returning Value from Function. Control Flow Statements: Conditional Statement, Loop Statement. Forms: Loading, Showing and Hiding Forms, Working with Multiple Forms, Controlling one Form within Another, Overview of C#, Structure of C# Program, C# in .Net.

UNIT III

GUI Programing with Windows Form with Properties, Methods and Events: Text Box Control, Label Control, Button Control, Listbox, Combo Box, Checked Box, Picture Box, Radio Button, Pannel, Scroll Bar, Timer Control, Adding Controls At Runtime, Common Dialog Control: File, Save, Print, Help. Designing Menus, MDI Forms, Overview of Dynamic Web Page, Asp.Net Controls, Applications, Web Servers, Web Form Controls, Server Controls, Client Controls Adding Controls to a Web Form, Form Validation Controls: Client Side Validation, Server Side Validation

UNIT IV

ADO, .Net Architecture, Create Connection, Accessing Data Using Data Adapters and Datasets, Using Command & Data Reader, Data Bind Controls, Displaying Data in Data Grid. Data Form Wizard,

Processing SQL& Access Database Using Ado.Net Object Model, Connection Object, Command Object, Add, Delete, Move & Update Records to Dataset, Executing Queries, Basics of XML, XML in ADO, Web Service Description Language, Building & Consuming a Web Service. Web Application Deployment, Caching.

Reference Books

1. Steven HolznerVB.Net Programming-Black Book-Dreamtech Publications
2. Evangelos Petroutsos Mastering VB.Net - BPB Publications
3. Mathew Macdonald-The Complete Reference Asp.Net-TMH
4. Professional ASP.Net- Wrox Publication
5. Stephen Walther Active Server Pages 2.0 (Unleashed) -Techmedia
6. Eric a. Smith Asp 3 Programming Bible: IDG Books
7. C# Programming-Wrox Publication
8. Matt Telles-C# Programming Black Book-Dreamtech Publication

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PAPER (MCS- 301) - OPERATING SYSTEM

Course Objectives:

- Understand the Services provided by Operating System.
- Understand the Working and Organization of Process and its Scheduling and Synchronization.
- Understand Different Approaches of Memory Management Techniques.
- Understand the Structure and Organization of the File System.

Course Outcomes:

- Identify and describe the Services Provided by Operating Systems.
- Understand and Solve the Problems Involving Process Control Mutual Exclusion
- Synchronization and Deadlock.
- Apply Various Approaches of Memory Management
- Analyze Various Operating System Approaches in Linux and Windows

Unit-wise Syllabus:

UNIT I

Fundamental Concepts of Operating Systems: Overview of Process Management, Memory Management File Management, Device Management, operating system services, Evolution of operating systems - Serial processing, Batch Processing, Multi- Programming, Types of Operating systems- Batch operating system, Time- sharing operating systems, Real- time operating systems, Distributed operating system, Process Management: Process concept, Scheduling concepts, CPU scheduling, Scheduling algorithm, Multiple processor scheduling.

UNIT II

Inter Process Synchronization: Concurrent processer, the critical section problem, the Critical Region and Conditional Critical Region problem, Inter process synchronization, Inter process communication, Deadlock occurrence, Deadlock characterization, Deadlock prevention, Deadlock avoidance, Deadlock detection and recovery.

UNIT III

Memory Management Single Process Monitor, Static Partitioned memory allocation, Swapping, Relocation, Dynamic Partitioned Memory allocation, Compaction, Multiple fence register, Segmentation
– Address translation, Descriptors scheduling paging, Page allocation, Virtual memory, Instruction interrupt ability, Management of virtual memory, Page replacement, Replacement algorithms, Comparison of various memory management techniques with reference to Protection and Sharability.

UNIT IV

File and Device Management: File System organization, File operations, Access methods, Directory structure organization, File protection- Goals of protection, Access matrix model of protection, Dynamic

protection Structure, Security encryption, Device management: Dedicated, Shared and Virtual devices, Sequential Access and Direct Access Devices, Channel and Control Units, I/O buffering, I/O schedulers, Spooling system.

Text Book

1. Peterson & Siberschatz: Operating system concepts, Sybex

Reference Book

1. Senart E. Madnik and J.J. Donovan: Operating Systems, McGraw Kill,
2. Milan Melankvic: Operating Systems, Concept and Design, McGraw Hill
3. Lister Andrew: Fundamentals of Operating Systems, Macmilan pub. Co.
4. Delteri An Introduction to Operating Systems. Addition Wesley.

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PAPER (MCS- 302) - COMPUTER GRAPHICS AND MULTIMEDIA

Course Objectives:

- The objective is to introduce the use of the components of graphics and will be familiar with building approach of algorithms related to them and comprehend the basic principles of 2- dimensional and 3-dimensional computer graphics, an understanding of how to scan, convert the basic geometrical primitives, how to transform the shapes to fit them as per the picture definition
- Provide an understanding of mapping the world coordinates to device coordinates.
- To Provide Students with the Basic Understanding of Multimedia Systems and its Components and Provide the Information about the Standard Tools and Techniques used in Development of Multimedia Components for Productions
- To Create Simple Multimedia Applications and Products for using Standalone Networked or Web Based Computers.

Course Outcomes:

- Student will be able to implement the basic concepts and learn the various algorithms to scan, convert the basic geometrical primitives, transformations, area filling, clipping, viewing,
- Develop Understanding of Technical Aspect of Multimedia Systems. Also To Understand and explain the storage mechanism and applicability of Various File Formats for Audio Video and Text Media.
- Develop the Various Multimedia Systems Applicable in Real Time.
- Create a Multimedia Component Using Various Tools and Techniques.
- Apply the Guidelines and Standards of Multimedia Systems and to analyze the performance of Multimedia System.

Unit-Wise Syllabus :

UNIT I

Overview of Graphics Systems and 2D Transformation: Display Devices, Hardcopy devices, Interactive Input Devices, Display processors, Graphics Software, Output primitives: Points and line drawing algorithms Circle generating algorithms Basic Transformations, Matrix Representations and Homogeneous Coordinates, Composite Transformations, Reflections, Shear, Raster methods for transformations, Windowing and Clipping: Windowing concepts, Clipping algorithms, Window – to – Viewport transformation,

UNIT II

3D Transformation, Viewing and Modeling: Three Dimensional Transformations: Basic transformations, Rotation about an arbitrary axis, Reflections, shears, Transformations of coordinate system, Projections, Viewing Transformations, Software representations, hardware implementation, Hidden surface & Hidden line removal: Classifications, Back Free removal. Depth Buffer method, Scan line method, Hidden line elimination, Curved surfaces, Shading and color model: Modeling light intensities, Displaying light intensities, Surface shading methods, Color models: Modeling methods: Basic concept, Master coordinates and modeling transformation structured, Display files, symbol operations.

UNIT III

Overview of Multimedia: Introduction, Application of multimedia, terminology, multimedia enabling technologies in digital representation, Hardware & structure requirement, multimedia standard, And hypertext: History, nature, Links navigation & structure. The nature of sound, digitizing sound, processing sound, compression format MIDI, Combining, source & picture, Video & image processing: Digitizing video, video standards video compression, digital video editing and post production, streamed video and video conferencing.

UNIT IV

Animation: Captured animation and image sequences, digital cel and sprite animation, key frame animation, 3D animation, Combining media: synchronization based presentation: SMIL(synchronize multimedia integration language), synchronize presentation (HTML + TIME) accessibility, knowledge base multimedia, future direction, ECMA Script syntax outline, Multimedia and network: networks and transport protocols, multicasting, application protocols for multimedia: HTTP caching; Quality of service, server side computation.

Text Books:

1. D. Hearn and Baker: Computer Graphics, Prentics Hall of india Pvt, Ted.
2. Harrington: Computer Graphics, MGH

Reference Books:

1. Newman and R.F. Sprouli: Principles on Interactive Computer Graphics. MGH
2. K. Glloi: Interactive Computer Graphics. PHI
3. A. Piastock and G. Kalley: Theory and Problems of Computer Graphics.MGH MultimediaSystem: Joh F. Kloegel Buford

DEPARTMENT OF COMPUTER SCIENCE A.P.S. UNIVERSITY, REWA (M.P.)
SYLLABUS FOR M.SC. COMPUTER SCIENCE
(SESSION 2020-2021)

PAPER (MCS- 303 A) - THEORY OF COMPUTATION

Course Objectives:

- To give understanding of several formal mathematical models of computation
- Learn and Understand FSA, DFA, NDFA, Turing Machine, Regular Expression, Push DownAutomaton.
- Learn and Understand Properties of Languages, Grammars and Automata and they are able todescribe how they relate it to formal languages.
- Gain knowledge of Computing and Mathematics to Solve Problems. And they will understandwhat is possible and what is not possible with computers.

Course Outcomes

- The student will be able to analyze and compare different computational models.
- Demonstrates Models, Turing Machine, Regular Expression, Push down Automaton.
- Apply and Prove properties of Languages, Grammars and Automata.
- Apply Knowledge of Computing and Mathematics to Solve Problem
- Apply Mathematical Foundations, Algorithmic Principles and Computer Science Theory to theModeling.

.

Unit-wise Syllabus:

UNIT -I

Automata Theory: Alphabets, strings languages, recursive definitions, regular expressions, problems on regular expressions, finite automata, transition table, transition diagram, transition graphs, different example of transition graphs, kleen's theorem , proof of kleen's theorem with variety of problem's Nondeterministic, Problem's conversion from Nondeterministic Finite Automata(NFA) to Deterministic Finite Automata (DFA), Finite automata with output, Moore machine, Mealy Machine, decidability.

UNIT -II

Pushdown Automata Theory 1: Context- Fee Grammars: Various examples' including syntax and semantics, productions (grammatical rules), Backus normal form, Parse tree, Regular grammar's Definition, Theorems & examples, Chomsky normal form, pushdown automata, various examples

UNIT-III

Pushdown Automata Theory 2: Context- Free Language: Definition, Theorem, Examples, Non-Context – Free Languages, Intersection & Complement: Theorem and Definitions, Parsing: Top-Down Parsing, Backtracking, Pushdown Transducers, Decidability.

UNIT-IV

Turing Theory: Turning machine: Definition, theorem & examples, Post Machine: Definition Theoremand examples, Minsk's theorem: Definition, theorem & examples.

Text Book:

1. I.A. Cohen: Introduction to Computer theory, John Wiely.
2. Hopcroft H,E. and Ullman J.D.: Introduction to automata theory Languages and Computation,Narosa publishing house, New-Delhi.

Reference Book:

1. Derick Wood: Theory of Computation, Harpers row publisher New York, 1987
2. Lewis H.R. & Papadimitriou C.H.: Elements of the theory of Computation, PHI, 1981
3. M.L. Minisky: Computations, finite infinite machines, Prentice Hall, 1967

DEPARTMENT OF COMPUTER SCIENCE A.P.S. UNIVERSITY, REWA (M.P.)
SYLLABUS FOR M.SC. COMPUTER SCIENCE
(SESSION 2020-2021)

PAPER (MCS- 303 B) – AI & MACHINE LEARNING

Course Objectives:

- To Understand the Concepts of Artificial Intelligence and Machine Learning.
- To Gain Knowledge of Supervised and Unsupervised Learning
- Understand the Design of Learning Systems.
- Understand the Design of Expert Systems.

Course Outcomes:

- Demonstrate and Apply Artificial Intelligence Techniques, Various Types of Production Systems,and Characteristics of Production Systems.
- Design Neural Networks Architecture and Implement Functions and Various AlgorithmsInvolved.
- Fuzzy Logic, Various Fuzzy Systems and their Functions.
- Genetic Algorithms, its Applications and Advances
- Able to Analyse and Design Expert Systems through Learning the Machine

Unit-wise Syllabus :

UNIT-I

AI Introduction, The AI problems, AI technique, Characteristics of AI Applications, Current Trends in AI. Machine Learning: Machine Learning Overview, Design of a Learning system, Types of machine learning, Applications of machine learning, Variables and probabilities - Probability Theory, Probability distributions

UNIT-II

Problem Solving, General Problem Solving, Production Systems, Control Strategies Forward and Backward Chaining, Searching :Searching for Solutions, Uniformed Search Strategies – Breadth First Search, Depth First Search. Heuristic Search, Greedy Best First Search, Knowledge Representations Mapping & Issues

UNIT-III

Soft Computing: Introduction to Soft Computing, Soft Computing vs. Hard Computing, Various Types of Soft Computing Techniques, Applications of Soft Computing. Basic Concepts of Neural Network, Human Brain- Biological Neural Network, Evolution of Artificial Neural Network, Structure and Function of a Single Neuron, Difference Between ANN and Human Brain, Characteristics and Applications of ANN, Learning Methods, Activation Function, Neural Network Architecture.

UNIT-IV

Supervised Learning and Unsupervised Learning, Competitive LearningNetworks – Kohonen Self- Organizing Networks, Introduction to expert system and application of expert systems, case studies, MYCIN Fuzzy Logic: Fuzzy Set Theory, Crisp Set, Fuzzy Set, Operations on Fuzzy Sets: Compliment, Intersections, Unions, Product, Difference, Properties of Fuzzy set, Genetic Algorithm: Fundamentals, Basic Concepts, Working Principle, Encoding, Fitness Function, Reproduction.

Reference Books:

1. Elaine Rich and Kevin Knight "Artificial Intelligence" - Tata McGraw Hill.
2. Dan W. Patterson "Introduction to Artificial Intelligence and Expert Systems", Prentice India.
3. Nils J. Nilson "Principles of Artificial Intelligence", Narosa Publishing House
4. Christopher Bishop, "Pattern Recognition and Machine Learning", Springer
5. Kevin P. Murphy, "Machine Learning: A Probabilistic Perspective", MIT Press
6. EthemAlpaydin, "Introduction to Machine Learning", MIT Press
7. Tom Mitchell, "Machine Learning", McGraw-Hill
8. Stephen Marsland, "Machine Learning - An Algorithmic Perspective", Chapman and Hall/CRC Press
9. S, Rajasekaran& G.A. VijayalakshmiPai, Neural Networks, Fuzzy Logic & Genetic Algorithms,Synthesis & Applications, PHI publication.
10. S.N. Sivanandam&S.N.Deepa, Principles of Soft Computing, Wiley Publications.

DEPARTMENT OF COMPUTER SCIENCE A.P.S. UNIVERSITY, REWA (M.P.)
SYLLABUS FOR M.SC. COMPUTER SCIENCE
(SESSION 2020-2021)

PAPER (MCS- 304 A) - ADVANCED COMPUTER ARCHITECTURE

Course Objectives:

- To provide a comprehensive knowledge of scalable and parallel computer architectures.
- To understand how to achieve better performance with increased system resources.
- To learn how system resources are scaled by the number of processors used, the memory capacity enlarged, the access latency tolerated, the I/O bandwidth required, the performance leveldesired.

Course Outcomes:

- Understand different processor architectures and system-level design processes.
- Understand the principles of I/O in computer systems, including viable mechanisms for I/O andsecondary storage organization.
- Understand different processor architectures and system-level design processes.
- Understand how to achieve better performance with increased system resources.

Unit-wise Syllabus:

UNIT I

Parallel Processing: Reduced instruction set Computers- CISC characteristics RISC characteristics, overlapping register windows, The Berkley RISC system. Introduction to Parallel Processing- Evolution of Computer system, parallelism in Uniprocessor systems, parallel computer structure, architectural classification schemes, parallel processing Application (Business & scientific).

UNIT II

Principles of Pipelining and Vector Processing: Principal of linear pipelining , classification of pipeline processor, General pipeline & Reservation Tables, Interleaved memory organization, Instruction & Arithmetic pipelines: - Design of pipelined Instruction Units, Arithmetic pipelines Design Examples, Multifunction and array pipeline, Principles of designing pipelined processor, Vector processing- Vector Operations, Matrix Multiplication , Memory Interleaving, Super Computers.

UNIT III

Array Processors: Structures and Algorithms for array processor (SIMD Array processor, Marking and Data Routing mechanisms, Inter –PE communication) SIMD Interconnection Networks (Static Versus Dynamic. Network, Mesh-Connected Lilac network, cube inter connection network) parallel algorithms for Array processors (SIMD matrix Multiplication, parallel sorting on Array processors)

UNIT IV

Multiprocessor Architecture and programming: Functional Structures (Lossely coupled Multiprocessors, Tightly coupled Multiprocessors, Processor characteristic for Multiprocessing), Inter connection, Networks Time shared common bus, Multiport Memory, Crossbar Switch, Multistage Switching Network, Hyper Cube System, Inter Processor Arbitration (system bus, serial arbitration procedure, parallel arbitration logic, dynamic arbitration algorithms), Inter processor communication and synchronization,. Cache coherence, Conditions for incoherence solution to cache coherence problem,

Parallel memory organizations (Interleaved memory configurations), Multiprocessor Operating Systems(classification of Multiprocessor operating systems).

Text Books:

1. Kai Hwang & Faye A, Prigs: Computers Architecture and parallel processing, MGH
2. M, Morris Mano: Computer System Architecture, PHI

Reference Book:

1. Andrew S. Tannenbaum: Structured Computer Organization, PHI
2. Hohn P. Hayes: Computer System Architecture and Organization, MGH

DEPARTMENT OF COMPUTER SCIENCE A.P.S. UNIVERSITY, REWA (M.P.)
SYLLABUS FOR M.SC. COMPUTER SCIENCE
(SESSION 2020-2021)

PAPER (MCS- 304 B) – INFORMATION & NETWORK SECURITY

Course Objectives:

- Aware and Understand the Challenges and Scope of Information Security. Gain the Knowledgeof Basic Security Concepts.
- Learn and Understand the Importance of Cryptographic Algorithms and Their Uses.
- Learn and Understand Access Control Mechanism Used for User Authentication andAuthorization. Understand and Practice the Sockets Layer (SSL).

Course Outcome:

- Explain the Principlesof Cryptography and Cryptanalysis Including Symmetric and AsymmetricEncryption, Hashing, and Digital Signatures.
- Explain the Fundamental Notions of Threat, Vulnerability, Attack and Countermeasure.
- Be able to Identify the Security Goals of an Information System, Point Out Contradictory Goalsand Suggest Compromises.
- Identify and Classify Particular Examples of Attacks.
- Implement the Various Security Algorithms.

Unit-wise Syllabus :

UNIT-I

Introduction: Security Concepts:-Confidentiality, Integrity, and Availability,Threats, Risks, Sources of Threats, Attacks Classification, Cryptography, Confusion Vs. Diffusion, Stream Ciphers Vs. Block Ciphers, Classical Cryptography, Objectives of Cryptography, Secret-Key and Public-Key Cryptography, Cryptanalysis, RC5, Blowfish.

UNIT- II

Block Ciphers Block Cipher Principles, Feistel Networks, S-Boxes and P Boxes, Block Cipher, Des, Elementary Number Theory, Prime Numbers, Factoring, Modular Arithmetic , GCD, Modular Square Roots, Key Exchange: Diffie-Hellman, Public-Key Encryption: RSA, Entity Authentication: Passwords, Challenge-Response Algorithms, Digital Signature, Digital Certificates, X509 Certificates, SSL, HTTPS, and IPSEC.

UNIT- III

Introduction to Hash Function : Message Digest: MD5 and SHA-1, Attacks on Hash Functions., MD Family, SHA Family, Trapdoor Functions, Digital Signatures, Overview of GPG, Seahorse, Frontends– Kleopatra, Enigmail.

UNIT- IV

Network Issues, Public- Key Infrastructure (PKI), Kerberos, Encryption Using Non-Cryptographic Tools (VI,Zip), Authentication Principles and Methods, Passwords, Two-Factor Authentication, Steganography, Penetration Testing and Ethical Hacking.

Reference Books

1. William Stallings, Cryptography and Network Security, PHI.
2. Bruce Schneier- the Mathematics of Encryption- American Mathematical Society
3. Atulkahate, "Cryptography and Network Security", TMH.
4. Calabrese, Info Security Intelligence-Cryptography Principles Appl- Cengage Learn.
5. Krawetz- Intro to Network Security, Cengage Learning.
6. Bruce Schneier, Applied Cryptography, John Wiley and Sons Mark Stamp,

DEPARTMENT OF COMPUTER SCIENCE A.P.S. UNIVERSITY, REWA (M.P.)
SYLLABUS FOR M.SC. COMPUTER SCIENCE
(SESSION 2020-2021)

Paper (MCS- 305) –Java Programming

Course Objectives:

- Introduce and Learn the Usage of the Java SDK Environment to Create Debug and Run JavaPrograms.
- Understand Fundamentals of Java Programming Such as Character Set Variables Data Types andControl Structures Array Class and Methods etc.
- Understand the Concepts of OOPs and Learn Implementation of them in Java by DefiningClasses Invoking Methods using Class Libraries.
- Introduce Strings Vectors Interfaces Packages and Threads Handling in Java.
- Gain the Knowledge of Java Applets AWT Swings Servelet.
- Learn and Understand the GUI Application Web Applications N-Tier Architecture.

Course Outcomes:

- Explain and apply the Object Oriented Concepts for Solving Real Problem.
- Use the Java SDK Environment to Create Debug and Run Simple Java Programs.
- Apply Java Technology to Develop the Small Applications Utilities and Web Applications.
- Apply Event Management and Layout Managers Using AWT Swing JDBC and Servlet forDeveloping the Software for Various Problems.
- Understandings of the Basic Knowledge of File Handling Database ConnectivityJava Servelet and Web Application.

Unit-wise Syllabus:

UNIT- I

Introduction: C,C++ Java a comparison, Structure of simple Java Program, Java tokens, Statements, Java Virtual machine, Command line arguments, Programming style, Constants & variables, Type casting; Various Operators in Java, Conversions in expressions, Operator, precedence and associatively. Decision making and branching: The if Statement, the switch statement, the? Operators, the while statement, the do statement. The for statement, jumps in loops, labeled loops, classes, objects and, methods, Constructors, method overloading, static members, nesting of methods.

UNIT-II

Inheritance: Overriding methods, final variables and methods, final classes, abstract methods and classes. Arrays and ve3ctors: arrays, vectors, wrapper classes, conversion from and to primitive classes, interfaces, packages, Multithreaded programming: creating threads, extending the thread class, stopping and blocking thread, life cycle of a thread, using thread methods, thread exceptions, thread priority , synchronization, the runnable interface, managing errors and exceptions, File : I/O exceptions, creation of files, concatenating & buffering files

UNIT-III

Event: event Source, event listener, overview of event classes(action event, adjustment event, item event, focus event, text event, mouse event), handling keyboard event. Abstract Window Tool: windows fundamental, creating Frame window, handling event in frame window, displaying information within

window, label, button, checkbox and text field controls, String: string constructor, operations on string, strung searching, overview of java library (math class, system class) Overview of collections.

UNIT-IV

String and Applets: Interface Components with swing: Swing buttons, text Input, making choices, using radio and checkbox, scroll bars, Applets: Applet Basics, life cycle of an Applet, applet initializations and termination, simple applet display method, status window, passing parameter to applet,

Text Books:

1. E. Balagurusamy, "Programming with Java a Primer" TMH ISBN-13: 978-0-07-061713-12. Isbn-10: 0-07-061713-9.
3. Patrick Naughton and Herbert Schildt "Java: the Complete Reference" TMH Publication ISBN 0-07-463769-X.
4. Yashavant kanetkar "Let us Java" BPB Publications.
5. Ivan Bayross "Web Enabled Commercial Application Development Using HTML DHTML
4. Javascript Perl CGI" BPB Publications
5. Cay Horstmann "Big Java" Wiley Publication
6. Peter Norton "Java Programming" Techmedia Publications.
7. Joseph Weber "Using Java 1.2" PHI Isbn-81-203-1558-8.

AWADHESH PRATAP SINGH UNIVERSITY

REWA (M.P.) 486003

CBCS

CURRICULAM & SYLLABUS

MASTER OF TECHNOLOGY IN COMPUTER SCIENCE
(M.Tech.(Computer Science))

(UGC Approved)

Course Code: 222

www.apsurewa.ac.in

Approved by Board of studies dated 21-09-2020

Awadhesh Pratap Singh Vishwavidyalaya,Rewa(M.P.)

Scheme of Examination for M.Tech.(Computer Science)

First Semester-M.Tech.(Computer Science)

S. No.	Subject Code	Subject Name	Course Type	Periods Per Week			Credits	Maximum Marks (Theory)	Internal Marks	Practical Marks	Total Marks
				L	T	P		End Sem. Exam	Tests (Two)/ assignment/Quiz/Presentation	End Sem. Practical/ Viva	
1	MTECH CS 101	Advanced Computational Mathematics	CC	3	1	-	4	60	40	-	100
2	MTECH CS 102	Advanced Data Structures and Algorithm	CC	3	1	-	4	60	40	-	100
3	MTECH CS 103	Advanced Computer Architecture	CC	3	1	-	4	60	40	-	100
4	MTECH CS 104	Advanced Compter Networking	CC	3	1	-	4	60	40	-	100
5	MTECH CS 105	Object Oriented Technology *	GE	3	1	-	4	60	40	-	100
6	MTECH CS 106	Lab-I MTECHCS-103,MTECHCS-105	CC	-	-	6	2	-	40	60	100
7	MTECH CS 107	Lab-II MTECHCS-102,MTECHCS-104	CC	-	-	6	2	-	40	60	100
8	MTECH CS 108	Comprehensive Viva	VIVA				4			100	100
		Total		**15**	**5**	**12**	**28**	**300**	**280**	**220**	**800**

L:Lecture, T:Tutorial, P:Practical, CC:Core Course, GE:Generic Elective, DCE: Discipline Centric Elective

* Student may choose this course as a Generic Elective or may choose a Generic Elective course offered in other UTDs at the same level or may choose a course offered by MOOCs through SWAYAM.

Instructions:

1. For passing the subject examination minimum 40% marks must be separately scored in Theory Paper, Practical Exams and Internal Evaluation for the subject.
2. For passing the semester, minimum aggregate marks must be 45% in the semester.

R.K. Ratare   Shrivastava

Prof-in-charge
M.Phil. Computer Science
Deptt. of Computer Science

Awadhesh Pratap Singh Vishwavidyalaya,Rewa(M.P.)

Scheme of Examination for M.Tech.(Computer Science)

Second semester-M.Tech.(Computer Science)

S. No.	Subject Code	Subject Name	Course Type	Periods Per Week			Credits	Maximum Marks (Theory)	Internal Marks	Practical Marks	Total Marks
				L	T	P		End Sem. Exam	Tests (Two)/ assignment/Quiz/Presentation	End Sem. Practical/ Viva	
1	MTECH CS 201	Knowledge Representation	CC	3	1	-	4	60	40	-	100
2	MTECH CS 202	Advanced Operating Systems	CC	3	1	-	4	60	40	-	100
3	MTECH CS 203	Data Mining and Warehousing	CC	3	1	-	4	60	40	-	100
4	MTECH CS 204	Elective I	DCE	3	1	-	4	60	40	-	100
5	MTECH CS 205	Advanced Database Management Systems *	GE	3	1	-	4	60	40	-	100
6	MTECH CS 206	Lab-I MTECHCS-203,MTECHCS-205	CC	-	-	6	2	-	40	60	100
7	MTECH CS 207	Lab-II MTECHCS-202,MTECHCS-204	CC	-	-	6	2	-	40	60	100
8	MTECH CS 208	Comprehensive Viva	VIVA				4			100	100
		Total		**15**	**5**	**12**	**28**	**300**	**280**	**220**	**800**

L:Lecture, T:Tutorial, P:Practical, CC:Core Course, GE:Generic Elective, DCE: Discipline Centric Elective

Elective- I(MTECHCS 204)

(a) Software Testing & Quality Assurance

(b)Enterprise Resource Planning

(c)Web Technology & Java Security

* Student may choose this course as a Generic Elective or may choose a Generic Elective course offered in other UTDs at the same level or may choose a course offered by MOOCs through SWAYAM.

Instructions:

1. For passing the subject examination minimum 40% marks must be separately scored in Theory Paper, Practical Exams and Internal Evaluation for the subject.
2. For passing the semester, minimum aggregate marks must be 45% in the semester.

Prof-in-charge
M.Phil. Computer Science
Deptt. of Computer Science

Awadhesh Pratap Singh Vishwavidyalaya,Rewa(M.P.)

Scheme of Examination for M.Tech.(Computer Science)

Third Semester-M.Tech.(Computer Science)

S. No.	Subject Code	Subject Name	Course Type	Periods Per Week			Credits	Maximum Marks (Theory)	Internal Marks	Practical Marks	Total Marks
				L	T	P		End Sem. Exam	Tests (Two)/ assignment/Quiz/Presentation	End Sem. Practical/ Viva	
1	MTECH CS 301	Elective I	DCE	3	1	-	4	60	40	-	100
2	MTECH CS 302	Elective II	DCE	3	1	-	4	60	40	-	100
3	MTECH CS 303	Dissertation Part-I (Literature Review/Problem Formulation/Synopsis/ Seminar)	CC			8	8		80	120	200
4	MTECH CS 304	Internet of Things (IoT) *	GE	3	1		4	60	40		100
5	MTECH CS 305	Comprensive Viva	VIVA				4			100	100
		Total		**9**	**3**	**8**	**24**	**180**	**200**	**220**	**600**

L:Lecture, T:Tutorial, P:Practical, CC:Core Course, GE:Generic Elective, DCE: Discipline Centric Elective

Elective- I(MTECHCS 301)

(a)Cloud Computing

(b)Legal Aspects of Information security

Elective- II(MTECHCS 302)

(a) Network Security

(b)Mobile & Wireless Systems

(c)Software Reuse &Customization

* Student may choose this course as a Generic Elective or may choose a Generic Elective course offered in other UTDs at the same level or may choose a course offered by MOOCs through SWAYAM.

Instructions:

1. For passing the subject examination minimum 40% marks must be separately scored in Theory Paper, Practical Exams and Internal Evaluation for the subject.
2. For passing the semester, minimum aggregate marks must be 45% in the semester.

Awadhesh Pratap Singh Vishwavidyalaya,Rewa(M.P.)

Scheme of Examination for M.Tech.(Computer Science)

Fourth Semester-M.Tech.(Computer Science)

S. No.	Subject Code	Subject Name	Course Type	Periods Per Week			Credits	Maximum Marks (Theory)	Internal Marks	Practical Marks	Total Marks
				L	T	P		End Sem. Exam	Practical Records/ assignment/Quiz/Presentation	End Sem. Practical/ Viva	
1	MTECH CS 401	Dissertation Part-II	CC	-	-	20	20	-	200	300	500
2	MTECH CS 402	Data Science *	GE	3	1		4	60	40		100
		Total		**3**	**1**	**20**	**24**	**60**	**240**	**300**	**600**

L:Lecture, T:Tutorial, P:Practical, CC:Core Course, GE:Generic Elective, DCE: Discipline Centric Elective

* Student may choose this course as a Generic Elective or may choose a Generic Elective course offered in other UTDs at the same level or may choose a course offered by MOOCs through SWAYAM.

Instructions:

1. For passing the subject examination minimum 40% marks must be separately scored in Theory Paper, Practical Exams and Internal Evaluation for the subject.
2. For passing the semester, minimum aggregate marks must be 45% in the semester.

R.K. Ratale

Prof-in-charge
M.Phil. Computer Science
Deptt. of Computer Science

Programme Outcomes

PO 1- Critical Thinking: Take informed actions after identifying the assumptions that frame our thinking and actions, check out the degree to which these assumptions are accurate and valid, and look at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.

PO 2- Effective Communication: Speak, read, write and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media and technology.

PO 3- Social Interaction: Elicit views of others, mediate disagreements and help reach conclusions in group settings.

PO 4- Effective Citizenship: Demonstrate empathetic social concern and equity-centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.

PO-5 Ethics: Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.

PO-6 Environment and Sustainability: Understand the issues of environmental contexts and sustainable development.

PO-7 Self-directed and Life-long Learning: Acquire the ability to engage in independent and life-long learning in the broadest context of socio-technological changes.

Programme Specific Outcomes

PSOs.1 The ability to understand, analyze, and develop computer programs in the areas related to algorithms, system software, web design and networking for efficient design of computer based systems.

PSOs.2 Students will be able to analyze system by sampling and investigating hard data. Also students will be able to identifying, forecasting/comparing cost and or benefits for system under study.

PSOs.3 Analyze, design, develop, implement and test computer systems for providing solutions for computing problems.

PSOs.4 Enhancing skills and learning new computing technologies for attaining professional excellence and research.

Department of Computer Science, A.P.S. University, Rewa (M.P.)
Syllabus for M.Tech. Computer Science- First Semester
(Session 2020-21)
Paper (MTECHCS- 101): Advanced Computational Mathematics

Course Outcome

COs.1 The idea of partial differentiation and types of partial differential equations and vector operations.

COs.2 The idea of classification of second partial differential equations, wave, heat equation and transmission lines.

COs.3 The basic ideas of statistics including measures of central tendency, correlation, regression and their properties.

COs.4 The ideas of probability and random variables and various discrete and continuous probability distributions and their properties.

COs.5 The statistical methods of studying data samples, hypothesis testing and statistical quality control, control charts and their properties.

Unit wise Syllabus :

Time: 3 hours **Max. Marks: 60**
Min. Marks: 24

UNIT I

Linear Algebra: Linear transformation, vector spaces, Hermite polynomial, Elementary concepts of Modular mathematics.

UNIT II

Solution of Partial Differential Equation (PDE) by separation of variable method, numerical solution of PDE (Laplace, Poisson's, Parabolic) using finite difference methods, Elementary properties of FT, DFT, WFT, Wavelet transform.

UNIT III

Probability, Compound probability and discrete random variable. Binomial Normal and Poisson's distributions, Sampling distribution, elementary concept of estimation and theory of hypothesis.

UNIT V

Stochastic process, Markov process transition probability transition probability matrix, just and higher order Markov process, Application of Eigen value problems in Markov Process, Markov chain. Queuing system, transient and steady state, traffic intensity, distribution queuing system, concepts of queuing models (M/M/1: Infinity/ Infinity/ FCFS), (M/M/1: N/ Infinity/ FC FS), (M/M/S: Infinity/ Infinity/ FC FS)

UNIT IV

Operations of fuzzy sets, fuzzy arithmetic & relations, fuzzy relation equations, fuzzy logics. MATLAB introduction, programming in MATLAB scripts, functions and their application.

Text Books:

1. Advance Engineering Mathematics by Ervin Kreszig, Wiley Easten Edd.
2. Fuzzy Logic in Engineering by T. J. Ross

Reference Books:

1. Higher Engineering Mathematics by B.V. Ramana, Tata Mc Hill.
2. Applied Numerical Methods with MATLAB by Steven C Chapra, TMH.
3. Advance Engg Mathematics, O' Neil, Cengage (Thomson)
4. Introduction of Numerical Analysis by Forberg
5. Numerical Solution of Differential Equation by M. K. Jain
6. Numerical Mathematical Analysis By James B. Scarborogh
7. Fourier Transforms by J. N. Sheddon

Department of Computer Science, A.P.S. University, Rewa (M.P.)
Syllabus for M.Tech. Computer Science- First Semester
(Session 2020-21)
Paper (MTECHCS- 102): Advanced Data Structures and Algorithm

Course Outcome

COs.1	Choose appropriate data structure as applied to specified problem definition.
COs.2	Handle operations like searching, insertion, deletion, traversing mechanism etc. on various data structures
COs.3	Handle operations on tree, graph and various running time complexity of algorithms .
COs.4	Analyze and Solve Complex and Real Life Problems by Developing Application Programs usingC Programming Language.
COs.5	Understand the Complexity of Various Algorithms.

Unit wise Syllabus :

Time: 3 hours **Max. Marks: 60**
Min. Marks: 24

UNIT I

Introduction: Asymptotic Notation, Recurrences, Algorithm Analysis – ADT -List (Singly, Doubly and Circular), Design Techniques - Divide and Conquer– Merge Sort, Quick Sort, Searching, Heap Sort. Sorting in Linear time- counting sort, Radix sort.

UNIT II

Basic Data Structures: Stacks and Queues, ADT, Implementation and Applications, Trees – General, Binary, Binary Search tree, Red-Black tree, B-Trees – Implementations - Tree Traversals.

UNIT III

Advanced Data Structures: Data structure for disjoint Set, Implementation, Basic operations on disjoint set Priority Queue, Implementation, Graphs, Directed Graphs, Shortest Path Problem, Undirected Graph, Spanning Trees and Graph Traversals. All pair shortest path problem.

UNIT IV

Searching, Bubble Sort, Insertion Sort, Dynamic Programming – Matrix Chain multiplication, Longest Common Subsequence, Greedy Algorithm- Huffman Code, Knapsack Problem, Backtracking.

UNIT V

Polynomials and the FFT: Representing polynomials, The DFT and FFT, Efficient FFT implementations, RSA cryptosystem NP-Completeness: Polynomial time, Polynomial-time verification, NP-completeness and reducibility, NP-completeness proofs, NP-complete problems

Text Books:

1. Thomas H. Coremen, Rivest , Stein ,"Introduction to Algorithms", PHI
2. . Horowitz, Sahni, Rajasekaran, "Computer Algorithms", Galgotia,

Reference Books :

1. Thomas H. Coremen, Rivest , Stein ,"Introduction to Algorithms", PHI
2. Aho, Hopcroft, Ullman, "Data Structures and Algorithms", Pearson Education P

3. Drozdek, Data Structures and algorithm in Jawa, Cengage (Thomson)
4. Gilberg, Data structures Using C++, Cengage

Department of Computer Science, A.P.S. University, Rewa (M.P.)
Syllabus for M.Tech. Computer Science- First Semester
(Session 2020-21)
Paper (MTECHCS- 103): Advanced Computer Architecture

Course Outcome

COs.1 Study of the basic structure and operation of a digital computer system.

COs.2 Implementation of control unit techniques and the concept of Pipelining.

COs.3 Understanding the parallel algorithms, hierarchical memory system, cache memories and virtual memory.

COs.4 Understanding the different ways of communicating with I/O devices and standard I/O interfaces.

COs.5 Understand how to achieve better performance with increased system resources.

Unit wise Syllabus :

Time: 3 hours **Max. Marks: 60**
Min. Marks: 24

UNIT I

Processors Arrays, Multiprocessors and Multicomputer, Processor Organization: Mess Network, Binary Tree Network, Hypercube Network, Flynn's Taxonomy.

UNIT II

Pipelining, Vector Processors, Data and control hazards and method to resolve them, SIMD multiprocessor structures.

UNIT III

Interconnection networks, Parallel Algorithms for array processors, Search algorithms, MIMD multiprocessor systems, PRAM Model, PRAM algorithm-Prefix Sums, List Banking, Preorder Tree Traversal, Merging two shortest lists, Graph Colouring, Reducing the number of processors

UNIT IV

Mapping and Scheduling, Mapping data to processors on processor arrays and multi computer: Ring into 2-D Mesh,2-D Mesh into 2-D Mesh, Complete Binary Tree into 2-D Mesh,

UNIT V

Dynamic load balancing in multicomputer systems, Static Scheduling on UMA multiprocessors: Deterministic Models, Graham's List scheduling Algorithms, Nondeterministic models, Deadlock.

Text Books:

1.Parallel Computing Theory and Practice, Michael J. Quinn
2.Computer Architecture and Parallel Processing- Hwang And Briggs, TMH

Reference Books:

1. Advance Computer Architecture, parthsarthy, Cengage (Thomson)
2. Computer Architecture and Organization- John Hays, Mc.Graw-Hill.

3. Advanced Computer Architecture – Kai Hwang , TMH.
4. Efficient Parallel Algorithms- Alan Gibbons, Cambridge University Press.

Department of Computer Science, A.P.S. University, Rewa (M.P.)
Syllabus for M.Tech. Computer Science- First Semester
(Session 2020-21)
Paper (MTECHCS- 104): Advanced Computer Networking

Course Outcome

COs.1 To apply the concepts of layered architecture in assessing the placement of network devices, protocols and services.

COs.2 To compare the services provided by the UDP/TCP transport layer protocols and explain the mechanisms used to provide a reliable data transport service on an unreliable IP network.

COs.3 Analyze the Requirements for a Given Organizational Structure and Select the Most AppropriateNetworking Architecture and Technologies.

COs.4 Design the Network Diagram and Solve the Networking Problems of the Organizations withConsideration of Human and Environment.

COs.5 Familiarize the Student with the Basic Taxonomy and Terminology of the Computer Networking Area.

Unit wise Syllabus :

Time: 3 hours **Max. Marks: 60**
Min. Marks: 24

UNIT I

Review of Networking and O.S. Fundamentals, ISO-OSI Model, different layers and their functions, LAN, MAN, WAN, Communication media & principles IEEE standards etc.

UNIT II

Internetworking with TCP/IP, Basic concepts, Principles, Protocols and Architecture, Address handling Internet protocols and protocol layering. DNS, Applications: TELNET, RLOIGN, FTP, TFTP, NFS, SMTP, POPL, IMAP, MIME, HTTP, STTP, DHCP, VOIP, SNMP.

UNIT III

Introduction to Router, Configuring a Router, Interior & Exterior Routing, RIP, Distance Vector Routing, OSPF, BGP, Uni-cast, Multicast and Broadcast. Multicast routing protocols: DVMRP, MOSPF, CBT, PIM, MBONE, EIGRP, CIDR, Multicast Trees, Comparative study of IPv6 and IPv4.

UNIT IV

VPN addressing and routing, VPN Host management, ATM Concepts, Services Architecture, Equipment's and Implementation

UNIT V

Introduction to wireless transmission and medium access control, wireless LAN: IEEE 802.11, Hiper LAN, Bluetooth Mobile Network and Transport layer, WAP, GSM and CDMA: Network architecture and management.

Text Books:

1. Internetworking with TCP/IP: Comer.
2. Data communication and Networking: Forouzan McGraw-Hill Publications

Reference Books:

1. Computer Networks: Tanenbaum.

2. Data Communications, Computer Networks and Open Systems: Hallsall.
3. Data Communications, Stalling.
4. Mobile Communication: Schiller, Pearson Education
5. Computer Communications and network Technology, Gallo, Cengage (Thomson)
6. Wireless and Mobile Network Architecture: Yi Bing Lin, Wiley

Department of Computer Science, A.P.S. University, Rewa (M.P.)
Syllabus for M.Tech. Computer Science- First Semester
(Session 2020-21)
Paper (MTECHCS- 105): Object Oriented Technology

Course Outcome

COs.1 Implementing Object Oriented programming concepts using basic syntax of control structures, strings and functions for developing skills of logic building activity.

COs.2 Identifying classes, objects, members of a class and the relationships among them needed for finding the solution to specific problems.

COs.3 Apply and implement the concepts of the Object-Oriented paradigms to analyze design and develop the solutions of real world problems using the Principles of information Hiding Localization and Modularity.

COs.4 Design Develop and maintain the small applications system utility for societal and academic problems using reusability concepts in team spirit.

COs.5 Apply and implement the concepts of the Object-Oriented paradigms to analyze design and develop the solutions of real world problems using the Principles of information Hiding Localization and Modularity.

Unit wise Syllabus :

Time: 3 hours **Max. Marks: 60**
Min. Marks: 24

UNIT I

0verview of object oriented concepts: Need for object oriented programming, modelling, class modelling-object and class concept, link, association, generalization and inheritance, aggregation, abstract classes.

UNIT II

State modelling-Events, states, transitions and conditions state diagram, Advance state modelling, nested state diagrams, concurrency A sample state model.

UNIT III

Interaction modelling-Use case model, sequence model, activity models, advance interaction modelling

UNIT IV

Object oriented programming: An overview of C++ programming, loops and decisions, structures and functions, objects and classes, constructor and destructor, operator overloading, Inheritance, virtual function, files and stream.

UNIT V

Object oriented Databases: Relational v/s object oriented databases, the architecture of OO databases, Query languages for OO databases.

Text Books:

1. Object Oriented Modeling and Design with UML, Michael R Blaha , James R Rumbaugh
2. OOP in C++ by Lafore, Galgotia Pub.

Reference Books :

1. Object Oriented Analysis and Design, Satzinger, Cengage (Thomson)
2. Object Oriented S/W Development by Mc. Gregor & Sykes DA, Van Nostrand.
3. The C++ Programming Language by Stroustrup B, Addison Wesely
4. Introduction to OOP by Witt KV, Galgotia Pub.
5. Object Data Management by Cattel R., Addison Wesely
6. Modern Data Base System by Kim W, ACM Press, Addison Wesely
7. OOP by Blaschek G, Springer Verlag

Department of Computer Science, A.P.S. University, Rewa (M.P.)
Syllabus for M.Tech. Computer Science-Second Semester
(Session 2020-21)
Paper (MTECHCS- 201): Knowledge Representation

Course Outcome

COs.1 Demonstrate fundamental understanding of the knowledge representation and its foundations.

COs.2 Apply basic principles of AI in solutions that require problem solving, inference, perception, knowledge representation, and learning.

COs.3 Understand the knowledge of Purposes, contexts, and Agents**.**

COs.4 Able to describe Knowledge soup.

COs.5 Able to demonstrate Knowledge Acquisition and Sharing**.**

Unit wise Syllabus :

Time: 3 hours **Max. Marks: 60**

Min. Marks: 24

UNIT-I

Introduction to Logic, Representing knowledge in Logic, Ontology: sets, collection, types and categories Space and Time.

Unit-II

Knowledge Engineering: Representing structure in frame, Rules and Data, Natural Language Semantics Level of Representation, Processes: Time, Events and situation, concurrent Processes, computations.

Unit-III

Purposes, contexts, and Agents**:** purpose, syntax of contexts, semantics of contexts, First order reasoning in context, Agents, First Order Logic.

Unit-IV

Knowledge Soup: Limitation of Logic, Fuzzy Logic, Nonmonotonic Logic, Theories models and the world semiotics.

Unit-V

Knowledge Acquisition and Sharing **:** Sharing Ontologies ,Conceptual Schema, Accomodating multiple Paradigms , Language Pattern. Tools for Knowledge Acquisition.

Text Books:

1. Knowledge Representation,John F. Sowa,Vikash Publishing House.

References:

1. Handbook of Knowledge Representation, Frank van Harmelen , Vladimir , B. Porter Elsevier Science

Department of Computer Science, A.P.S. University, Rewa (M.P.)
Syllabus for M.Tech. Computer Science-Second Semester
(Session 2020-21)
Paper (MTECHCS- 202): Advanced Operating Systems

Course Outcome

COs.1 The structure of OS and basic architectural components involved in OS design.

COs.2 The various device and resource management techniques for timesharing and distributed systems.

COs.3 Ability to analyse various scheduling and synchronisation techniques.

COs.4 Understand and Solve the Problems Involving Process Control Mutual Exclusion Synchronization and Deadlock.

COs.5 Understand the Working and Organization of Process and its Scheduling and Synchronization.

Unit wise Syllabus :

Time: 3 hours **Max. Marks: 60**
Min. Marks: 24

Unit I

Overview, Functions of an Operating System, Design Approaches, Types of Advanced Operating Systems. Synchronization Mechanisms, Concept of a Process, Concurrent Processes, Critical Section Problem, Other Critical Section Problems, Language Mechanisms for Synchronization

Unit II

Process Deadlocks, Models of Deadlock, Models of Resources ,A graph theoretic model of a System State, Necessary and Sufficient conditions for a Deadlock, Systems with Single unit requests, Systems with only consumable resources, Systems with reusable resources.

Unit III

Distributed Operating Systems, Introduction, System Architecture Types, Issues in Distributed Operating Systems, Communication Networks, Communication Primitives,

Unit IV

Limitations of a distributed system, Lamport's logical clocks, Vector Clocks, Causal ordering of messages, Global state, Cuts of a distributed Computation, Termination detection.

Unit V

Distributed Mutual Exclusion, Classification of Mutual ExclusionAlgorithms, Preliminaries, Non token based algorithms, Lamport's algorithm, Token based algorithms, Suzuki Kasami's Broadcast algorithm, Singhal's heuristic algorithm, Raymond's tree based algorithm, Comparative performance analysis.

Text Books:

1.M. Singhal, N. Shivaratri, Advanced Concepts in Operating Systems, Tata McGraw- Hill, 2008.

Refernce Books

1. W. Stallings, Operating Systems - Internals and Design Principles, Prentice Hall, 2008.
2. W. Stallings, Operating Systems, Macmillian Publishing, 2008.

Department of Computer Science, A.P.S. University, Rewa (M.P.)
Syllabus for M.Tech. Computer Science-Second Semester
(Session 2020-21)
Paper (MTECHCS- 203): Data mining and Warehousing

Course Outcome

COs.1 Use of appropriate data mining tools like classification, clustering or Frequent Pattern mining on large data sets.

COs.2 Understand warehousing architectures and tools for systematically organizing large database and use their data to make strategic decisions.

COs.3 Understand KDD process for finding interesting pattern from warehouse.

COs.4 Apply the techniques of clustering, classification, association finding, featureselection and visualisation on real world data.

COs.5 Determine whether a real world problem has a data mining solution.

Unit wise Syllabus :

Time: 3 hours **Max. Marks: 60**
Min. Marks: 24

Unit I

Data Mining : Introduction, Relational Databases, Data Warehouses, Transactional databases, Advanced database Systems and Application, Data Mining Functionalities, Classification of Data Mining Systems, Major Issues in Data Mining.

Unit II

Data Warehouse : Introduction, A Multidimensional data Model, Data Warehouse Architecture, Data Warehouse Implementation, Data Cube Technology, From Data warehousing to Data Mining.

Unit III

Data Processing : Data Cleaning, Data Integration and Transformation, Data Reduction, Discretization and concept Hierarchy Generation.

Data Mining Primitives, Languages and System Architecture: Data Mining Primitives, DMQL, Architectures of Data Mining Systems.

Unit IV

Concept Description : Data Generalization & Summarization – Based Characterization, Analytical Characterization, Mining class Comparisons, Mining Descriptive Statistical Measures in Large Databases.

Unit V

Mining Association Rules in Large Databases : Association Rule Mining, Single – Dimensional Boolean Association Rules, Multilevel Association Rules from Transaction Databases, Multi-Dimensional Association Rules from Relational Databases, From Association Mining to Correlation Analysis, Constraint – Based Association Mining, Classification & Prediction, Issues Regarding Classification & Prediction, Cluster Analysis, Mining Complex Types of Data.

Text Books :

1. Jiawei Han & Micheline Kamber - Data Mining Concepts & Techniques
   Publisher Harcout India. Private Linited.

Reference Books:

1) G.K. Gupta – Introduction to Data Mining with case Studies, PHI, New Delhi – 2006.
2) A. Berson & S.J. Smith – Data Warehousing Data Mining, COLAP, TMH, New Delhi – 2004
3) H.M. Dunham & S. Sridhar – Data Mining, Pearson Education, New Delhi, 2006.

Department of Computer Science, A.P.S. University, Rewa (M.P.)
Syllabus for M.Tech. Computer Science-Second Semester
(Session 2020-21)
Paper (MTECHCS- 204(A)): Software Testing & Quality Assurance

Course Outcome

COs.1 Various software application domains and different process models.

COs.2 To handle various software testing tools with quality management.

COs.3 Converting requirements model into the design model and using software and interface design and engineering principles.

COs.4 Analyze the techniques in both structure and behaviour of the software.

COs.5 Various test processes and continuous Quality improvement.

Unit wise Syllabus :

Time: 3 hours **Max. Marks: 60**

Min. Marks: 24

Unit I

Need of testing, Basic concepts – errors, faults, defects, failures, test bed, unit testing, integration testing system, system testing, regression testing, alpha, beta and acceptance testing, functional testing, performance testing, recovery testing, white box testing, black box testing, verification and validation.

Unit II

Test Management

Testing Life Cycle – Roles and activities, Test Planning – forming a test team, develop test plan review, Test Cases design strategies black box approach: random testing, equivalence class partitioning andboundary value analysis. white box approach: test adequacy criteria, coverage and control flow graphs,paths, loop testing, mutation testing. Test execution: build test data, life cycle of defect, defect tracking, defect detection stages, defect detection stages, defect types, defect severity, defect analysis and prevention.

Unit III

Software Metrics

Scope of software metrics, Classifying software measures, Measurement basics – representational theory, scales, meaningfulness, What to measure – GOM technique, Control flow structure, product quality metrics – MTTF, defect density, customer problems, customer satisfaction, function point, Metrics for software maintenance, In-process quality metrics.

Unit IV

Quality Assurance

Quality concepts – quality, quality control, quality assurance, cost of quality Software quality assurance – SQA activities, software reviews, inspections, audits, Software reviews, inspections, audits, Software reliability Quality Attributes: correctness, reliability, usability, integrity, portability, maintainability, interoperability. Ishikawa's Seven Basic Tools

Unit V

Quality Standards

Basic concept of – ISO 9000 & 9001, CMM, six sigma.

CMM – Following KPAs : requirements management (RM), software project tracking and oversight (SPTO), software configuration management (SCM), organization process definition (OPD), software product engineering (SPE), peer reviews (PR), quantitative process management (QPM), defect prevention(DP), process change management

Text Books :

1.Software Testing and Quality Assurance Kshiras agarnaik,Priyadarshi Tripathi,john wiley &sons

References:

1. Pankaj Jalote, “An Integrated Approach to Software Engineering”, 3/e Narosa Publishing House

Department of Computer Science, A.P.S. University, Rewa (M.P.)
Syllabus for M.Tech. Computer Science-Second Semester
(Session 2020-21)
Paper (MTECHCS- 204(B)): Enterprise Resource Planning

Course Outcome

COs.1 Managing of ERP projects.

COs.2 Demonstrate an understanding of the importance of data mining and the principles of business intelligence.

COs.3 Design the ERP implementation strategies.

COs.4 Analyze the strategic options for ERP identification and adoption.

COs.5 Create reengineered business processes for successful ERP implementation.

Unit wise Syllabus :

Time: 3 hours **Max. Marks: 60**

Min. Marks: 24

UNIT I

Enterprise Resources Planning: Evolution of ERP-MRP and MRP II - problems of system islands need for system integration and interface-early ERP Packages-ERP products and Markets - opportunities and problems in ERP selection and implementation; ERP implementation identifying RP benefits team formation-Consultant intervention-Selection ERP-Process of ERP implementation.

UNIT II

Managing changes in IT organisation -Preparing IT infrastructure-Measuring benefits of ERP-Integrating with other systems: The emergence of reengineering concept- concept of business process rethinking of processes identification of re-engineering need-preparing for re-engineering -implementing change-change management-BPR & ERP;

UNIT III

Supply Chain Management: The concept of value chain differentiation between ERP and SCM- SCM for customer focus-nee and specificity of SCM. SCM scenario in India-products and markets of Sehl-issue in selection and implementation of SCM solution -CRM solutions;

UNIT IV

E- Business: Introduction to 1-Net technologies-Evolution of E-Commerce, EDI and E-Business - business opportunities basic and advanced business models on internet- internet banking and related technologies- security and privacy issues- technologies for E-Business. Future and Growth of E-Business's.

UNIT V

ERP & E-Commerce, Future Directives- in ERP, ERP and Internet, Critical success and failure factors, Integrating ERP into organizational culture.

Text Books:

1.Langenalter, A. Gary, *Enterprise Resources Planning and Beyond*. St. Lucie Press, USA.

2. Mahadeo Jaiswal and Ganesh Vanapalli, *Textbook of Enterprise Resource Planning*.

References:

1. Alexis Leon, “ERP Demystified”, Tata McGraw Hill
2. Rahul V. Altekar “Enterprisewide Resource Planning”, Tata McGraw Hill,
3. Vinod Kumar Garg and Venkitakrishnan N K, “Enterprise Resource Planning – Concepts and Practice”, PHI
4. Joseph A Brady, Ellen F Monk, Bret Wagner, “Concepts in Enterprise Resource Planning”, Thompson Course Technology
5. Mary Summer, “Enterprise Resource Planning”- Pearson Education

Department of Computer Science, A.P.S. University, Rewa (M.P.)
Syllabus for M.Tech. Computer Science-Second Semester
(Session 2020-21)
Paper (MTECHCS- 204(C)): Web Technology & Java Security

Course Outcome

COs.1 To understand the security issues associated with various applications and associated data, various threats and be able to identify the key components of cyber security network architecture, apply cyber security architecture principles.

COs.2 Design and development of .Net and java applications using JSP.

COs.3 Students will be able to write a server side java application called JSP to catch form data sent from client and store it on database.

COs.4 Students will be able to connect a Java Program to a DBMS and perform insert,update and delete operations on DBMS table.

COs.5 Students will be able to write a well formed/valid XML document.

Unit wise Syllabus :

Time: 3 hours **Max. Marks: 60**

Min. Marks: 24

Unit I

Internet & Web: Introduction of Internet and Web, Internet protocols and applications,Web Design &Development: Key issues and challenges. HTML : Building web pages with HTML tags , Frames, DHTML. Hosting Website & Security: Hosting a Website and it's Security issues, cyber laws.

Unit II

HTML Editors & Tools: Use of different HTML editors and tools like Microsoft Front Page , Dreamweaver etc. Graphical and Animation Tools: Use of Different graphical and animation tools like Abode Photoshop ,Gif Animator, Macromedia flash etc .

Unit III

Interactivity: Forms, Creating interactive & dynamic web pages . Comparison of ASP, PHP and JSP technologies. Active Server Pages : Interactivity with database using ASP, ASP request & response objects, ASP Server Objects.

Unit IV

Web Technologies: Latest trends & technologies in Web industry. Java for web : Overview of Java beans , Java Servlets , Java applets , Java Script . ASP.NET , E-Commerce, Web engineering , Semantic web .VB Script, Microsoft Visual Interdev IDE , Overview of Visual Basic & VB.NET.

Unit V

Introduction to active server pages (ASP),ASP.NET, java server pages (JSP), JSP application design, tomcat server, JSP objects, declaring variables, and methods, debugging, sharing data between JSP pages, Session, Application: data base action , development of java beans in JSP, introduction to COM/DCOM.

Text Book:

1. Achyut S Godbole and Atul Kahate, "Web Technologies", Tata McGraw Hill
2. C. Xavier, "Web Technology & Design ", Tata McGraw Hill.
3. Ann Navarro, " Effective Web Design", BPB publications.
4. Raj Kamal, "Internet & Web Design", Tata McGraw Hill
5. Raj Kamal, "Internet and Web Technologies", TMH
6. E Stephen,Will Train, "HTML 4.0", BPB publication

7. ASP 3 Programming , Eric A. Smith , IDG Books India. Active Server Pages by Heith Morneau, Vikas Publishing House
8. Active Server Pages by Heith Morneau, Vikas Publishing House
9. B. Reselman et al, “Using Visual Basic 6”, PHI
10. E. Petroutsos, “Mastering Visual Basic 6.0”, BPB.

Reference Books:

1. VK Jain, “Advanced programming in web design”,Cyber tech publications
2. Rick Dranell, “HTML4 unleashed”, Techmedia Publication.
3. TM Ramachandran , “Internet & Web development”, Dhruv publications
4. James L Mohler and Jon Duff, “Designing interactive web sites”,Delmar Thomson learning .
5. Ivan Bay Ross, “HTML,DHTML,Java script,Perl CGI” , BPB
6. Java-2 The complete Reference by Patrick Naughton and Herbertz Schildt, TMH.

Department of Computer Science, A.P.S. University, Rewa (M.P.)
Syllabus for M.Tech. Computer Science-Second Semester
(Session 2020-21)
Paper (MTECHCS- 205): Advanced Database Management Systems

Course Outcome

COs.1 Understand the database concepts, technology and practice ER diagrams for real time applications using DBMS.

COs.2 Analyze and apply the different normalization Techniques.

COs.3 Access the basic issues of transaction processing and concurrency control.

COs.4 Understand the basics of query processing, object-oriented, distributed databases.

COs.5 Understand the fundamentals of relational database systems including: data model and database architectures.

Unit wise Syllabus :

Time: 3 hours **Max. Marks: 60**

Min. Marks: 24

Unit I

Introduction, Client Server Architecture, E-R Diagram and Keys

Overview of database Management System; Various views of data, data Models, Introduction to Database Languages. Advantages of DBMS over file processing systems, Responsibility of Database Administrator, Introduction to Client/Server architecture, three levels architecture of Database Systems, ER Diagram (Entity Relationship), mapping Constraints, Keys, Reduction of E-R diagram into tables.

Unit II

File Organization and Relational Model and Calculus:

Sequential Files, index sequential files, direct files, Hashing, B-trees Index files.Relational Model, Relational Algebra & various operations, Relational and Tuple calculus.

Unit III

Introduction to Query Languages:

QLB, QBE, Structured query language – with special reference of (SQL of ORACLE), integrity constraints, functional dependencies & Normalization – (up to 4th Normal forms), BCNF (Boyce – code normal forms)

Unit IV

Object Oriented Database:

Concept of the object, Names and Identity, Implementation of object identifiers, object class and instantiation, inheritance, object database**.**

Unit V

Introduction to Distributed Data processing, parallel Databases, data mining & data warehousing, network model & hierarchical model, Introduction to transaction, properties of transaction and life cycle of transaction, Introduction to Concurrency control and Recovery systems., need of concurrency control and recovery system, problems in concurrent transactions.

Text Books:

1. Database System Concepts by A. Silberschatz, H.F. Korth and S. Sudarshan, 3rd edition, 1997, McGraw-Hill, International Edition.
2.Introduction to Database Management system by Bipin Desai, 1991, Galgotia Pub.

Reference Books:

1..Fundamentals of Database Systems by R. Elmasri and S.B. Navathe, 3rd edition, 2000,

2. Addision-Wesley, Low Priced Edition.
3. 2. An Introduction to Database Systems by C.J. Date, 7th edition, Addison-Wesley, Low
4. Priced Edition, 2000.
5. 3. Database Management and Design by G.W. Hansen and J.V. Hansen, 2nd edition,
6. 1999, Prentice-Hall of India, Eastern Economy Edition.
7. 4. Database Management Systems by A.K. Majumdar and P. Bhattacharyya, 5th edition,
8. 1999, Tata McGraw-Hill Publishing.
9. 5. A Guide to the SQL Standard, Date, C. and Darwen,H. 3rd edition, Reading, MA:

Department of Computer Science, A.P.S. University, Rewa (M.P.)
Syllabus for M.Tech. Computer Science-Third Semester
(Session 2020-21)
Paper (MTECHCS- 301(A)): Cloud Computing

Course Outcome

COs.1 Enable students to appreciate the importance of Cloud Computing and assess the need of resources for a given scenario

COs.2 The program prepares the young professional for Understand how the different IT services can be provided with the help of Windows Azure, AWS, Google Cloud.

COs.3 To develop skills on Cloud Computing.

COs.4 Analyze the problems and solutions to cloud application problems.

COs.5 Apply principles of best practice in cloud application design and management.

Unit wise Syllabus :

Time: 3 hours **Max. Marks: 60**
Min. Marks: 24

Unit I

Cloud Computing Fundamental: Cloud Computing definition, private, public and hybrid cloud. Cloud types; IaaS, PaaS, SaaS. Benefits and challenges of cloud computing, public vs private clouds, role of virtualization in enabling the cloud; Business Agility: Benefits and challenges to Cloud architecture. Application availability, performance, security and disaster recovery; next generation Cloud Applications.

Unit II

Cloud Applications: Technologies and the processes required when deploying web services; Deploying a web service from inside and outside a cloud architecture, advantages and disadvantages

Unit III

Cloud Services Management: Reliability, availability and security of services deployed from the cloud. Performance and scalability of services, tools and technologies used to manage cloud services deployment; Cloud Economics: Cloud Computing infrastructures available for implementing cloud based services. Economics of choosing a Cloud platform for an organization, based on application requirements, economic constraints and business needs (e.g Amazon, Microsoft and Google, Salesforce.com, Ubuntu and Red hat)

Unit IV

Application Development: Service creation environments to develop cloud based applications. Development environments for service development; Amazon, Azure, Google App.

Unit V

Best Practice Cloud IT Model : Analysis of Case Studies when deciding to adopt cloud computing architecture. How to decide if the cloud is right for your requirements. Cloud based service, applications and development platform deployment so as to improve the total cost of ownership (TCO)

Text Books:

1.Gautam Shroff, Enterprise Cloud Computing Technology Architecture Applications
[ISBN: 978-0521137355]

References:

1. Toby Velte, Anthony Velte, Robert Elsenpeter, Cloud Computing, A Practical Approach [ISBN:0071626948]
2. Dimitris N. Chorafas, Cloud Computing Strategies [ISBN: 1439834539]

Department of Computer Science, A.P.S. University, Rewa (M.P.)
Syllabus for M.Tech. Computer Science-Third Semester
(Session 2020-21)
Paper (MTECHCS- 301(B)): Legal Aspects of Information Security

Course Outcome

COs.1 To have the awareness about information security standards, cyber crimes, Cyber Laws, Intellectual Property rights and various laws related to software's and semiconductors.

COs.2 Students will be able to devices how threats to an organization are divorced, analyzed, and dealt with.

COs.3 Evaluate network security threats and countermeasures.

COs.4 Formulate information security governance and related legal and regulatory issues.

COs.5 Skills to use lagal terminology in the context of cyber security.

Department of Computer Science, A.P.S. University, Rewa (M.P.)
Syllabus for M.Tech. Computer Science- Third Semester
(Session 2020-21)
Paper (MTECHCS- 301(B)): Legal Aspects of Information Security

Time: 3 hours **Max. Marks: 60**
Min. Marks: 24

UNIT I

Information Security Overview

Information Security, Confidentiality, Integrity, Availability, Common Information Security Concepts: Vulnerability, Threats, Risks, Safeguards, Common Information Security Concerns, Mechanisms that ensure Information Security.

Privacy Overview

Privacy, How Privacy Different from Information Security, Sources of Privacy Law, Threats to Personal Data Privacy in Information Security, Workplace Privacy, General Principals for Privacy Protection in Information Security, The American Legal System.

UNIT II

Security and Privacy of Consumer Financial Information: Different types of Financial Institutions, Consumer Financial Information, Who regulates financial Institutions, Federal Financial Institutions Examination Council (FFIEC), The Gramm- Leach- Bliley Act, Payment card Industry Standards.

UNIT III

Security and Privacy of Information Belonging to Children and Educational Records: Challenges in protecting children on the Internet, Children's Online Privacy Protection Act, Children's Internet Protection Act (CIPA), Family Educational Rights and Privacy.

UNIT IV

Intellectual Property Law: Patent, Difference between Patents and Trade Secrets, Trade Marks, Copyright, Protecting Copyrights Online- The Digital Millennium Copyright Act (DMCA)

UNIT V

Computer Forensics and Investigations: Computer Forensic and role of a Computer Forensic Examiner, Collecting, Handling and using digital Evidence, Legal Issues involving Digital Evidence.

Text Books:

1. Legal Issues in Information Security, by Joanna Lyn Grama Jones & Bartlett Learning

Prof. in-charge
M.P.
Dept. Computer Science

Department of Computer Science, A.P.S. University, Rewa (M.P.)
Syllabus for M.Tech. Computer Science-Third Semester
(Session 2020-21)
Paper (MTECHCS- 302(A)): Network Security

Course Outcome

COs.1 Understand the concepts of Network security and cryptography protocols.

COs.2 Slightly mapped as students will be able to understand the Network attacks and Cryptographic algorithms.

COs.3 Students will get to know about the maths behind the cryptographic algorithm which can contribute to the basic engineering knowledge.

COs.4 Demonstrate various network security applications, IPSec, Firewall,IDS, Web Security and Email Security.

COs.5 Analyze the vulnurabilities in any computing system and be able to design a security solution.

Unit wise Syllabus :

Time: 3 hours **Max. Marks: 60**

Min. Marks: 24

UNIT 1

Conventional Encryption: Conventional Encryption Model, Steganography, Classical Encryption Techniques, Simplified DES, Block Cipher Principles, The Data Encryption Standard, The Strength of DES , Differential and Linear Cryptanalysis, Block Cipher Design Principles, Block Cipher Modes of operation, Conventional Encryption algorithms

UNIT II

Public Key Encryption And Hash Functions ,Public Key Cryptography , Principles of Public Key Cryptosystems , The RSA Algorithm , Key Management, Diffie Hellman Key Exchange , Elliptic Curve Cryptography.

UNIT III

Message Authentication and Hash Functions, Authentication Requirements, Authentication Functions, Message Authentication Codes, Hash Functions, Security of Hash Functions, Hash And Mac Algorithms.

UNIT IV

MD5 Message Digest Algorithm, Secure Hash Algorithm (SHA-I) , RIPEMD , HMAC Digital Signatures and Authentication Protocols Digital Signatures , Authentication Protocols -Digital Signature Standard

UNIT V

Authentication Applications, IP Security, Web Security Intruders, Viruses and Worms, Intruders, Viruses and Related Threats, Firewalls, Firewall Design Principles, Trusted Systems.

Text Books:

1.William Stallings, "Cryptography and Network Security",Third Edition, Pearson Ed

Reference Books:

1. Atul Kahate, " Cryptography and Network Security," TMH
2. Introduction to network security, Krawetz, Cengage.

Department of Computer Science, A.P.S. University, Rewa (M.P.)
Syllabus for M.Tech. Computer Science-Third Semester
(Session 2020-21)
Paper (MTECHCS- 302(B)): Mobile and Wireless Systems

Course Outcome

COs.1 Understand the concepts of mobile communication, signal propogation, modulation, medium access control.

COs.2 Learn concepts of telecommunication systems, satellite systems, broadcast systems.

COs.3 Understand wireless LAN, mobile network layer, adhoc networks, mobile transport layer.

COs.4 Understand and analyse various supports for mobility such as file systems, www, WAP, i-mode, SyncML.

Department of Computer Science, A.P.S. University, Rewa (M.P.)
Syllabus for M.Tech. Computer Science- Third Semester
(Session 2020-21)
Paper (MTECHCS- 302(B)): Mobile & Wireless Systems

Time: 3 hours | **Max. Marks: 60** | **Min. Marks: 24**

UNIT I

Wireless Communication System
Wireless network generations, Mobile Radio standards- AMPS, IS- 95, GSM, UMTS, CDMA 2000, Mobile Wireless Systems: Cordless Telephone system and Cellular telephone system, Fixed Wireless Networks: Wireless Local Loop (WLL) & Local Multipoint Distribution System (LMDS).
Mobile Phone Unit: Block diagram, working, features of transmitter and receiver section, Frequency Synthesizer, Control unit and Logic Unit of Mobile phone, sensors, speakers, camera, touch screen, motion sensors and other common sensors.

UNIT II

Fundamentals of Cellular System
Cellular concept Fundamentals: Cell, cell structure, Cluster, Reuse factor, minimum reuse distance, basic cellular system: mobile station, base station, Traffic channel (Forward and Reverse), Control channel (Forward and Reverse), Frequency reuse, channel assignment strategies.
Handoff Strategies: Concept of handoff, Types of Handoffs: Hard, Soft, Queued, Delayed, MAHO (Mobile Assisted Handoff), Proper and Improper Handoff, Umbrella cell approach.

UNIT III

Interference and System Capacity: Co-Channel interference, Adjacent Channel Interference, Channel Planning for wireless systems.

Improving Coverage and Capacity in Cellular Systems: Cell splitting, Sectoring, Microcell Zone concept, Repeaters for range extension.

Digital Cellular Mobile Standards: Global System for Mobile Communication (GSM): Features and services, GSM radio aspects, GSM architecture, GSM channel types, Security aspects. Signalling System No. 7 (SS7): Network Services Part (NSP), Message Transfer Part (MTP).

UNIT V

Advance Wireless Standards

Need for 3G and 4G technology, IMT-2000 global standards: Vision, Compatibility, service and spectrum requirements.

UMTS/W- CDMA standards: Features, architecture, UMTS Air-interface specification, security procedure. Next generation Mobile Standards: Features of 4G &4G LTE, VoLTE, 4.5G, 5G.

UNIT IV

Bluetooth Technology: Features, Architecture, frequency band, IEEE 802.15.1 and Other Protocol, Applications.

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Mobile Ad-Hoc Networks

Ad-Hoc Basic Concepts, Characteristics, Applications, Design Issues , Routing , Essential of Traditional Routing Protocols , Popular Routing Protocols, Vehicular Ad Hoc networks (VANET) , MANET Vs VANET , Security.

Text Books:

1. Wireless Communications, Principles, Practice – Theodore, S. Rappaport, PHI, 2nd Edn., 2002
2. Wireless Communication and Networking – William Stallings, PHI, 2003.

Reference Books:

1. Wireless Digital Communications – Kamilo Feher, PHI, 1999
2. Principles of Wireless Networks – Kaveh Pah Laven and P. Krishna Murthy, Pearson Education, 2002 3.Introduction to Wireless and Mobile Systems – Dharma Prakash Agarwal, Qing-An Zeng, Thomson 2nd Edition, 2006.
4. Wireless Communications – Andreaws F. Molisch, Wiley India, 2006.

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Department of Computer Science, A.P.S. University, Rewa (M.P.)
Syllabus for M.Tech. Computer Science-Third Semester
(Session 2020-21)
Paper (MTECHCS- 302(C)): Software Reuse & Customization

Course Outcome

COs.1 Apply schedule and cost control techniques for project monitoring including contract management.

COs.2 Apply quality models in software projects for maintaining software quality and reliability.

COs.3 Use suitable project organization structure, leadership, decision and motivation styles, proper safety and ethical practices and be responsible to the society.

Department of Computer Science, A.P.S. University, Rewa (M.P.)
Syllabus for M.Tech. Computer Science- Third Semester
(Session 2020-21)
Paper (MTECHCS- 302(C)): Software Reuse & Customization

Time: 3 hours **Max. Marks: 60**
Min. Marks: 24

UNIT I

Introducing to Software Reuse: What is Software Reuse?, Reuse types, Reuse Approaches, Reuse Technology, Reuse benefits & barriers, Reuse success & failure Factors, Reuse Driven Software Engineering is a business

UNIT II

Architectural Style: Application and component systems- Application Developers can reuse OOSE model components; Application families allow significant reuse, Application Systems Are Built from Reusable Components, Group Components into Component Systems, Facades Control Access to Component System Internals, Component Systems Export Components Via Facades. Use Case Components, Object Components, Layered Architecture

UNIT III

Process- Object Oriented Business Engineering, Applying Business Engineering to Define Process and Organization, Application Family engineering, Component System Engineering, Application System Engineering.

UNIT IV

Organizing a Reuse Business: Transition to a Reuse Business, Reengineering and Reuse, Managing the Reuse Business.

UNIT V

Design Patterns: Object Oriented Principles, Importance of Design Patterns in Reuse, Introduction to Creational Patterns, Structural Patterns, Behavioural Patterns, Miscellaneous Patterns, Implementation of Design Patterns.

Text Book:

1. Ivar Jacobson, Martin Griss, Patrick Johnson, "*Software Reuse Architecture, Process and Organization for Business Success*", First Edition, Pearson Education, 2000.
2. Erich Gamma at al., "*Design Patterns: Elements of Reusable Object-Oriented Software*", Addison Wesley, 1999.

Reference Books:

1. Eric Braude, "*Software Design: From Programming to Architecture*", John Wiley & Sons, 2003.
2. Bernd Bruegge & A. Dutoit, "*Object Oriented Software Engineering using UML, Design Patterns, and Java*", Pearson Education, 2004.
3. Ugrasen Suman, "*Software Engineering: Concepts & Practices*", Cengage Learning publications, 2013.

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- Francis daCosta, "Rethinking the Internet of Things: A Scalable Approach to ConnectingEverything", 1st Edition, Apress Publications, 2013
- Vijay Madisetti and ArshdeepBahga, "Internet of Things (A Hands-on-Approach)", 1st Edition, VPT, 2014

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Department of Computer Science, A.P.S. University, Rewa (M.P.)
Syllabus for M.Tech. Computer Science-Third Semester
(Session 2020-21)
Paper (MTECHCS- 304): Internet of Things

Course Outcome

COs.1 To understand with the concepts of internet of things.

COs.2 To be familiar with the big data and cloud in the IoT basis.

COs.3 Students will know different IoT devices and working process.

COs.4 Able to build architechture in IoT.

COs.5 Can use devices like Raspberry PI- Interfaces, Gateways and Data Management in IoT.

Department of Computer Science, A.P.S. University, Rewa (M.P.)

Syllabus for M.Tech. Computer Science-Third Semester
(Session 2020-21)
Paper (MTECHCS- 304): Internet of Things (IoT)

Time: 3 hours | **Max. Marks: 60** | **Min. Marks: 24**

UNIT-I

INTRODUCTION TO IoT

Internet of Things- What Is IoT? IoT Devices, IoT Design- Physical Design, Logical Design, IoT Enabling Technologies, IoT Levels & Deployment Templates, Domain Specific IoTs, IoT and M2M, IoT System Management with NETCONF-YANG, IoT Platforms, Design Methodology

Unit-II

IoT ARCHITECTURE

M2M high-level ETSI Architecture, IETF Architecture for IoT, OGC Architecture- IoT Reference model, Domain model, Information model, Functional model, Communication model, IoT Reference Architecture

Unit-III

IoT PROTOCOLS

Protocols Concepts, Protocol standardization for IoT- Efforts- M2M and WSN Protocols-SCADA and RFID Protocols, Issues with IoT Standardization, Unified Data Standards, Protocols- IEEE 802.15.4, BACNet Protocol, Modbus, Zigbee Architecture, Network layer – 6LowPAN CoAP-Security

Unit-IV

BUILDING IoT WITH RASPBERRY PI & ARDUINO

Building IOT with RASPERRY PI, IoT Systems, Logical Design using Python, IoT Physical Devices & Endpoints, IoT Device-Building blocks –Raspberry Pi- Board - Linux on Raspberry Pi - Raspberry Pi Interfaces -Programming Raspberry Pi with Python - Other IoT Platforms

Unit-V

REAL WORLD IoT APPLICATIONS

Real world design constraints- Applications, Asset management, Industrial Internet of Things, Industrial automation, smart grid, Commercial building automation, Smart cities - participatory sensing - Data Analytics for IoT, Software & Management Tools for IoT, Cloud Storage Models & Communication APIs, Cloud for IoT, Amazon Web Services for IoT.

Text & References:

Text:

- Honbo Zhou, "The Internet of Things in the Cloud: A Middleware Perspective", CRC Press, 2012.
- Dieter Uckelmann, Mark Harrison, Michahelles, Florian (Eds), "Architecting the Internet Of Things", Springer, 2011
- Olivier Hersent, David Boswarthick, Omar Elloumi , "The Internet of Things – Key applicationsand Protocols", Wiley, 2012

Reference Books:

- CunoPfister, Getting Started with the Internet of Things, O'Reilly Media, 2011, ISBN: 978-1-4493-9357-1

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Dept. Computer Science
A.P.S. Rewa (M.P.) 486003

Department of Computer Science, A.P.S. University, Rewa (M.P.)

Syllabus for M.Tech. Computer Science-Third Semester
(Session 2020-21)
Paper (MTECHCS- 402): Data Science

Course Outcome

COs.1 To learn a powerful, flexible, and scalable general-purpose database to handle big data.

COs.2 Deploy the Data Analytics Lifecycle to address big data analytics projects.

COs.3 Apply appropriate analytic techniques and tools to analyze big data, create statistical models, and identify insights that can lead to actionable results.

COs.4 To select appropriate data visualizations to communicate analytic insights to business sponsors and analytic audiences.

Department of Computer Science, A.P.S. University, Rewa (M.P.)

Syllabus for M.Tech. Computer Science-Fourth Semester
(Session 2020-21)
Paper (MTECHCS- 402): Data Science

Time: 3 hours **Max. Marks: 60**
Min. Marks: 24

UNIT-I

INTRODUCTION TO DATA SCIENCE

Definition – Data Science in a Big Data world, Why data science? Benefits and uses of Data Science and big data, Facts of Data,Who is Data Scientist? Data Science Process, The big data ecosystem and data science, Defining goals, Retrieving data – Data Preparation, Data exploration, Data Modelling – Presentation

Unit-II

BIG DATA

Problems when handling large data, General techniques for handling large data, Case study – Steps in big data, Distributing data storage and processing with Frameworks – Case study, Join the NoSQL movement-Introduction to NoSQL, ACID: the principle of relational databases, CAP Theorem, The rise of graph databases

Unit-III

MACHINE LEARNING

Machine learning, Modeling Process – Training model, Validating model, and Predicting new observations, Supervised learning algorithms – Unsupervised learning algorithms. Tools used in machine learning, The Perception algorithm, Kernel Functions

DEEP LEARNING

Introduction, Deep Feedforward Networks, Regularization, Optimization of Deep Learning, Convolutional Networks, Recurrent and Recursive Nets – Applications of Deep Learning, Generative Adversarial Networks (GANs)

Unit-IV

DATA VISUALIZATION

Introduction to data visualization – Data visualization options – Filters, MapReduce, Dashboard development tools – Creating an interactive dashboard with dc.js-summary.

Unit-V

ETHICS AND RECENT TRENDS

Data Science Ethics – Doing good data science, Owners of the data, Valuing different aspects of privacy, Getting informed consent, The Five Cs, Diversity, Inclusion – Future Trends

Text Books and Reference Books:

[1]. Introducing Data Science, Davy Cielen, Arno D. B. Meysman, Mohamed Ali, Manning Publications Co., 1st edition, 2016

[2]. An Introduction to Statistical Learning: with Applications in R, Gareth James, Daniela Witten, Trevor Hastie, Robert Tibshirani, Springer, 1st edition, 2013

[3]. Deep Learning, Ian Goodfellow, Yoshua Bengio, Aaron Courville, MIT Press, 1st edition, 2016

[4]. Ethics and Data Science, D J Patil, Hilary Mason, Mike Loukides, O' Reilly, 1st edition, 2018

Essential Reading / Recommended Reading

[1]. Data Science from Scratch: First Principles with Python, Joel Grus, O'Reilly, 1st edition, 2015

[2]. Doing Data Science, Straight Talk from the Frontline, Cathy O'Neil, Rachel Schutt, O' Reilly, 1st edition, 2013

R.K. Rathore

Ph.D. COMPUTER SCIENCE

Ph.D. 101: RESEARCH METHODOLOGY

Time : 3Hrs.

Theory Paper : Max. Marks 80
Internal Assessment : Max Marks 20
Minimum Pass Marks : 55

The paper setter is required to set in all Eight questions, out of which only four question are to be attempted by the students. All questions will be of equal marks. Two questions are to be set from each unit. The students are required to attempt at least one questions from each unit.

Unit- I **Introduction to Computer Science Research:** What is Research, Types of Research, Why Research, and Significance & Status of Research in Computer Science. Steps in Research: Having grounding in Computer Science, Major Journals & Publication in Computer Science, Major Research areas of Computer Science, Identification, selection & Formulation of research problem, Hypothesis formulation, Developing a research proposal, Planning your research, The wider community, Resources and Tools, How engineering research differs from scientific research, The role of empirical studies.

Unit-II **Qualitative Reasoning**: Qualitative Representations, Representing Quantity, Representing Mathematical Relationship, Ontology, State, Time and Behaviours, Space and Shape, Compositional Modelling, Domain Theories, and Modelling Assumptions, Qualitative Reasoning Techniques, Model Formulation, Causal Reasoning, Simulation, Comparative Analysis, Teleological Reasoning, Data Interpretation, Planning, Spatial Reasoning, Applications of Qualitative Physics. **Simulation:** What is simulation? How a simulation model works, Time and randomness in simulations, Applications of simulation.

Unit- III **Literature Survey:** Finding out about your research area, Literature search strategy, Writing critical reviews, Identifying venues for publishing your research. **Research Data:** What is data, Mathematical statistics and computer science views on data analysis, Methods for finding associations: regression and pattern recognition, Method for aggregation and visualization: principal components and clustering, Hypothesis testing.

Unit- IV **Basis of Computer Science Research:** Introduction to Formal Models and Computability: Turing Machine & Computability, Undecidability, Diagonalization and Self-Reference, Reductions. **Thesis Writing:** Planning the thesis, Writing the thesis, Thesis structure, Writing up schedule, The Oral examination and Viva Voce. **Writing Papers and the Review Process:** Preparing and presenting your paper. The conference review process, Making use of the referees' reports, The journal review process, Group exercise in reviewing research papers.

Text Books/REFERENCES:

1. **Research Methods By Francis C. Dane,** *Brooks/ Cole Publishing Company, California.*
2. **Basic of Qualitative Research (3rd Edition) By Juliet Corbin & Anselm Strauss,** *Sage Publications (2008).*
3. **The Nature of Research: Inquiry in Academic Context By Angela Brew,** *Routledge Falmer (2001).*
4. **Research Methods By Ram Ahuja,** *Rawat Publications (2001).*
5. **The Computer Science and Engineering Handbook by (Editor-in-Chief)** *By* **Allen B. Tucker, jr.** *CRC Press, A CRC Handbook Published in co-operation with A* ***(only relevant parts of chapters of*** **Chapter-2, Chapter-3, Chapter-4 Chapter-9,Chapter-10 & Chapter-32).**

Ph.D. COMPUTER SCIENCE
Ph.D. 103: COMPUTER APPLICATION

Theory Paper	: Max. Marks	80
Internal Assessment	: Max Marks	20
Min Pass Marks	:	55

Time : 3Hrs.

The paper setter is required to set in all eight question, out of which only four question are to be attempted by the students. All questions will be of equal marks. Two questions are to be set from each unit. The students are required to attempt at least one questions from each unit.

Unit I **Overview Of Programming Languages**, Brief History, Programming Paradigms And Application Domain, Programming Qualities,**Imperative Language** : Principes, Naming Variables, Elément, Types, Values And Expression, Syntax And Semantics Of Jay Statements, Syntax And Semantics Of Statements In Real Languages,Scope Visibility Anf Life Time ,Examples Of Imperative Lanuages.

Unit II **Object Oriented Languages** : Principles, Classes, Inheritance, Class , Hierarchies, Polymorphism,Dynamic Binding ,Reference Semantics And Thier Implementation, Abstract, Class, Interface. **Functional Languages** : Principles,Functions, Lists,Types And Polymorphism,High Order Function, Lazy Evaluation,Equation And Pattern Matching.

Unit III **Logic Programming** :Logic Predicate And Horn Clauss, Prolog :Fact, Variables And Queries,Lists, Practical Aspects Of Prolog,Prolog Applications ,**Event Driven Programming** :The Event Model Event Driven Programming Paradigm,Applets,Event Handling,Example Of A Simple Guiinterface And Interactive Games other Programming.

Unit IV **Concurrent Programming** : Concepts,Communicationand Synchronization,Deadlockand Unfairness,Semaphores,Monitors, Javathreads,Synchronization In Java,Example Of Bouncing Ball.Exception Handling :Traditional Techniques,Modeland Exceptions In Jav, Some Examples.

Text Books/REFERENCES:

1. Programming Language Principal And Paradigms By Allentucker And Robert Noonam,Tatamcgraw Hill Edition.
2. Concept Of Programming Languages,4th Editio, Robert W.Seesta, Addison-Wesley,1999

Ph.D. COMPUTER SCIENCE

Ph.D. 104(I):Data Ware House and Data Mining Techniques

Theory Paper	: Max. Marks	80
Internal Assessment	: Max Marks	20
Min Pass Marks	:	55

The paper setter is required to set in all **eight** question, out of which only four question are to be attempted by the students. All questions will be of equal marks. Two questions are to be set from each unit. The students are required to attempt at least one questions from each unit.

Unit I Data Warehousing Introduction –Definition-Architecture-Warehouse Schema-Warehouse server-OLAP operations. Data Warehouse technology –Hardware and operating system-Warehousing Software –Extraction tools –Transformation tools –Data quality tools –Data loaders –Data Access and retrieval tools –Data Modeling tools –Fact tables and dimensions Data warehousing case studies : Data warehousing in Government , Tourism, Industry , Genomics data.

Unit II Data Mining definition –DM Techniques –current trends in data mining -Different forms of Knowledge –Data selection, cleaning, Integration, Transformation, Reduction and Enrichment. Data: Types of data -Data Quality -Data Preprocessing -Measures of similarity and dissimilarity. Exploration: Summary statistics –Visualization.

Unit III Association rules: Introduction –Methods to discover association rule –Apriori algorithm Partition Algorithm –Pincher search algorithm –Dynamic Item set algorithm –FP Tree growth algorithm. Classification: Decision Tree classification –Bayesian Classification – Classification by Back Propagation.

Unit IV Clustering Techniques: Introduction –Clustering Paradigms –Partitioning Algorithms –K means & K Mediod algorithms –CLARA –CLARANS –Hierarchical clustering –DBSCAN –BIRCH –Categorical Clustering algorithms –STIRR –ROCK –CACTUS. Introduction to machine learning –Supervised learning –Unsupervised learning –Machine learning and data mining. Neural Networks: Introduction –Use of NN –Working of NN Genetic Algorithm: Introduction –Working of GA.

Unit V Web Mining: Introduction ,Web content mining ,Web structure mining ,Web usage mining ,Text mining ,Text clustering, Temporal mining, Spatial mining ,Visual data mining, Knowledge mining, Various tools and techniques for implementation using (Weka / R / Matlab).

Text Books/ References:

1. Paulraj Ponniah, "Data Warehousing Fundamentals", John Wile.
2. M. H. Dunham, "Data Mining Introductory and Advanced Topics", Pearson Education.
3. Han, Kamber, " Dta Mining Concepts and Techniques", Morgan Kaufmann.
4. Ralph Kimball, "The Data Warehouse Lifecycle toolkit", John Wiley.
5. M Berry and G. Linoff, "Mastering Data Mining", John Willey.

DEPARTMENT OF ENGLISH

AWADHESH PRATAP SINGH UNIVERSITY, REWA

B. A. English 4 Year Programme

PROGRAMME OUTCOME

PO #	PROGRAMME OUTCOME
PO 1	**Critical Thinking**: Take informed actions after identifying the assumptions that frame our thinking and actions, check out the degree to which these assumptions are accurate and valid, and look at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.
PO 2	**Effective Communication**: Speak, read, write and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media and technology.
PO 3	**Social Interaction**: Elicit views of others, mediate disagreements and help reach conclusions in group settings.
PO 4	**Effective Citizenship**: Demonstrate empathetic social concern and equity-centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
PO 5	**Ethics**: Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.
PO 6	**Environment and Sustainability**: Understand the issues of environmental contexts and sustainable development.
PO 7	**Self-directed and Life-long Learning**: Acquire the ability to engage in independent and life-long learning in the broadest context of socio technological changes.

PROGRAMME SPECIFIC OUTCOME (PSOs)

PSO1	Demonstrate a set of basic skills in literary communication and explication of literary practices and process with clarity.
PSO2	Demonstrate a coherent and systematic knowledge of the field of English Literature and Bhasha Literatures in English showing an understanding of current theoretical and literary developments in relation to the specific field of English studies.
PSO3	Display an ability to read and understand various literary genres and stylistic variations and write critically.
PSO4	Cultivate ability to look at and evaluate literary texts as a field of study and as part of the wider network of local and global culture.
PSO5	Demonstrate a critical aptitude and reflexive thinking to systematically analyze the existing scholarship and expand critical questions and the knowledge vase in the field of English studies using digital resources.
PSO6	Display knowledge to cultivate a better understanding of values – both literary values that aide us in literary judgment and also values of life at all stages; apply appropriate methodologies for the development of the creative and analytical faculties of students, their overall development of writing, including imaginative writing.
PSO7	Recognize employability options in English studies programme as part of skill development and as career avenues open to graduates in today's global world such as professional writing, translation, teaching. English at different levels, mass media, journalism, aviation communication and personality development.
PSO8	Channelize the interests of the students and analytical reasoning in a better way and make more meaningful choices regarding career after completion of graduate programme.
PSO9	To enable students to develop an awareness of the linguistic-cultural richness of India as an important outcome of English literary studies in India.

B. A. Hons. English-Sem.-I

S.No.	Paper Name	Credits	Scheme of Marks		Total
			External	Internal	
Paper-1	Major –British Poetry and Drama 14th and 17th Centuries	6	60	40	100
Paper-2	Minor- General Psychology/History of India (From Earliest times to 550 A. D.)	6	60	40	100
Paper-3	Generic Elective – Academic Writing and Composition	4	60	40	100
Paper-4	Ability Enhancement Compulsory course: English Communication	4	60	40	100
		20			400

B.A. Hons English Sem.-II

S.No.	Paper Name	Credits	Scheme of Marks		Total
			External	**Internal**	
Paper-1	Major- European Classical Literature	6	60	40	100
Paper-2	Minor- Community Psychology/History of India (550 A. D. to 1200 A.D.)	6	60	40	100
Paper-3	Generic Elective- Media and Communication Skills	4	60	40	100
Paper-4	Ability Enhancement	4	60	40	1O0
	Compulsory course Environment studies				
		20			400

PAPER- 1

Major: BRITISH POETRY AND DRAMA: 14TH TO 17TH CENTURIES

Course Credits: 6

Course Content

1. Poetry from Chaucer to Donne

Geoffrey Chaucer *The Wife of Bath's Prologue*

Edmund Spenser Selections from *Amoretti*:

Sonnet LXVII 'Like as a huntsman...'

Sonnet LVII 'Sweet warrior...'

Sonnet LXXV 'One day I wrote her name...'

John Donne: 'The Sunne Rising',

'Batter My Heart'

'Valediction: Forbidding Mourning'

2. **Christopher Marlowe** : *Doctor Faustus*

3. **William Shakespeare** *Macbeth*

4. **William Shakespeare** *Twelfth Night*

5. **John Milton** *On His Blindness* and *Lycidas*

Suggested Topics

- Renaissance Humanism
- The Stage, Court and City
- Religious and Political Thought
- Ideas of Love and Marriage
- The Writer in Society

Suggested Readings

- Pico Della Mirandola, excerpts from the *Oration on the Dignity of Man,* in *The Portable Renaissance Reader,* ed. James Bruce Ross and Mary Martin McLaughlin (New York: Penguin Books, 1953) pp. 476–9.

- John Calvin, 'Predestination and Free Will', in *The Portable Renaissance* Reader,ed. James Bruce Ross and Mary Martin McLaughlin (New York: Penguin Books,1953) pp. 704–11.
- Baldassare Castiglione, 'Longing for Beauty' and 'Invocation of Love', in Book 4 of *The Courtier*, 'Love and Beauty', tr. George Bull (Harmondsworth: Penguin, rpt. 1983) pp. 324– 8, 330–5.
- Philip Sidney, *An Apology for Poetry,* ed. Forrest G. Robinson (Indianapolis: Bobbs-Merrill, 1970) pp. 13–18.

Course Outcomes

C01	Students will understand the traditions of English literature from 14th to 17th centuries.
CO2	Students will develop a clear understanding of Renaissance Humanism
CO3	Students will engage with the major genres and forms of English literature
CO4	Students will develop fundamental skills required for close reading and critical thinking of the texts and concepts
CO5	Students will learn to appreciate and analyze the poems and plays in the larger socio-political and religious contexts of the time

Paper-2

Minor - **General Psychology** Or **History of India (From the Earliest times to 550 A. D.)**

Course Credits: 6

General Psychology

Course Outcomes

Course Content

Unit 1:

Nature of Psychology: Definition, Schools of modern psychology

Psychology in India: History and current status

Unit 2: Orientation to Psychology: Nature, fields and applications of psychology; Cognitive

Processes: Learning, memory and problem solving;

Cognitive Processes: Motivation, types of motives (Sociogenic/Psychogenic motives);

Affective Processes: Emotion, Positive and negative emotion

Unit 3: Psychology of Individual Differences: Theories of personality: Freudian psychoanalysis, type and trait; humanistic;

Theories of intelligence: Spearman 'g' theory, Sternberg and Gardner; Emotional intelligence;

Assessment of intelligence and personality

Unit 4: Understanding Developmental Processes: Cognitive Development: Piaget; Moral Development: Kohlberg;

Psycho-social Development: Erikson

Unit 5: Applications of Psychology: Work; Health

References:

Ciccarelli , S. K & Meyer, G.E (2008). Psychology (South Asian Edition). New Delhi: Pearson

Feldman.S.R. (2009).Essentials of understanding psychology (7th Ed.) New Delhi : Tata McGraw Hill.

Michael ,W., Passer, Smith,R.E. (2007). Psychology The science of mind and Behaviour. New Delhi: Tata Mc Graw-Hill

Course Outcomes

C01	Developing knowledge of the basic concepts in psychology
CO2	Developing skills for applying psychological knowledge to real life situations
CO3	to improve interpersonal interactions and adjustment in life.
CO4	Understanding and enhancing positive mental health and wellbeing
CO5	Developing an understanding of human strengths and virtues, and gain insights into positive aspects of work.

OR

History of India (From Earliest times to 550 A. D.)

Course Contents

Unit -1

Sources of Ancient Indian History., Harappan Civilization, Outline of the Vedic age.

Unit -2

Invasion of Alexander, Nandas, Mouryas and their administration, Sungas, Indo Greek.

Unit -3

Satavahanas, Kharavela of Kalinga, Shakas, Kushanas.

Unit –4

Rise of Guptas, Chandragupta I, Samundagupta, Kacha and Ramgupta. Chandragupta II, Kumargupta and Skandgupta, Downfall of the Gupta Empire under later imperial Guptas, Gupta administration.

Unit-5 Vakatakas, Hunas, Aulikarans of Dashpura.

Course Outcome

C01	As a history student will learn about the historiographical trends
CO2	Students will learn about Interpretation of the historical sources of ancient India as well.
CO3	They can acquire knowledge about the Vedic Period
CO4	They can acquire knowledge about the rise of Jainism and Buddhism culture in ancient times of India
CO5	They will also acquire the knowledge of changing socio-cultural scenarios of India.

Paper-3

Generic Elective: ACADEMIC WRITING AND COMPOSITION

Course Credits: 4

Course Contents

Introduction to the Writing Process

Introduction to the Conventions of Academic Writing

Writing in one's own words: Summarizing and Paraphrasing

Study Skills including note making, note taking, information transfer, reviewing etc.

3. Structuring an Argument: Introduction, Interjection, and Conclusion

4. Critical Thinking: Syntheses, Analyses, and Evaluation

5. Citing Resources; Editing, Book and Media Review

Suggested Readings

Liz Hamp-Lyons and Ben Heasley, *Study writing: A Course in Writing Skills for Academic Purposes* (Cambridge: CUP, 2006).

Renu Gupta, *A Course in Academic Writing* (New Delhi: Orient Black Swan, 2010).

Ilona Leki, *Academic Writing: Exploring Processes and Strategies* (New York: CUP, 2nd edn, 1998).

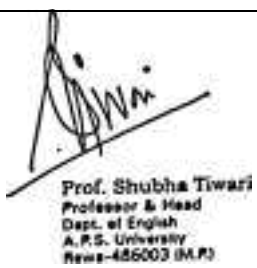
Gerald Graff and Cathy Birkenstein, *They Say/I Say: The Moves That Matter in Academic Writing* (New York: Norton, 2009).

Eastwood, John. (2005) *Oxford Practice Grammar*. Oxford, OUP

Wallace, Michael. (2004). *Study Skills*. Cambridge, CUP

Course Outcomes

C01	convey their ideas in English using simple and acceptable English in writing
CO2	understand to recognize and draft different types of writing – e.g. classroom notes, summaries, reports, exploratory and descriptive paragraphs, substantiating etc
CO3	describe a diagram or elaborate information contained in a graph, chart, table etc



CO4	Learn to write a review of a book or a movie
CO5	Learn to write report for newspaper, magazines, journals etc.

Paper-4

AECC: English Communication

Course Outcomes

Credits: 4

1. **Basic Language Skills**:

Vocabulary Building: Suffix, Prefix, Synonyms, Antonyms, Homophones, Homonyms and one-word substitution.

1.2. Basic Grammar: Noun, Pronoun, Adjective, Verb, Adverb, Prepositions, Articles, Time and Tense

Introduction: Theory of Communication, Types and modes of Communication

Language of Communication: Verbal and Non-verbal (Spoken and Written) Personal, Social and Business Barriers and Strategies Intra-personal, Inter-personal and Group communication

3. **Speaking Skills:**

Monologue

Dialogue

Group Discussion

Effective Communication/ Mis- Communication

Interview

Public Speech

4. **Reading and Understanding**

Close Reading

Comprehension

Summary

Paraphrasing

Analysis and Interpretation

5. **Writing Skills**:

Documenting,

Report Writing,

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Making notes,

Letter writing

Recommended Readings:

1. Fluency in English - Part II, Oxford University Press, 2006.

2. Business English, Pearson, 2008.

3. Language, Literature and Creativity, Orient Blackswan, 2013.

4. Language through Literature (forthcoming) ed. Dr. Gauri Mishra, Dr Ranjana Kaul, Dr Brati Biswas

Learning Outcomes :

1. Prepare for various competitive exams by developing their English language competence.

2. Promote their comprehension skills being exposed to a variety of texts and their interpretations

3. Build and enhance their vocabulary.

4. Develop their communication skills by strengthening grammar and usages.

It is hoped that after studying this course, students will find a difference in their personal and professional interactions.

C01	The purpose of this course is to introduce students to the theory, fundamentals and tools of communication
CO2	to develop in them vital communication skills which should be integral to personal, social and professional interactions.
CO3	to develop basic language skills as well as prepare them for competitive exams
CO4	To analyze the various types of communication
CO5	identify the prominent methods and models of Communication

Sem. II PAPER 1:

Type - Major

Title -EUROPEAN CLASSICAL LITERATURE

Course Credits: 6

Course Outcomes :

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1. Classical Drama:

Comedy and Tragedy in Classical Drama

1.3 Literary Culture in Augustan Rome

2. **Classical Epic Poetry**

Homer: selections from *The Iliad*

Virgil, selections from the *Aeneid*

3. **Classical Tragedy**

Sophocles: *Antigone* or Oedipus Rex

a. Oedipus Rex: Summary and analysis

b. Oedipus Rex : a classical and modern tragedy

4. Classical Poetry

Horace : Life and works

Horace: *Satires (*textual analysis)

5. **Classical Comedy**

Plautus: Selections from *The Ghost or Menaechmi*

Suggested Readings

Homer, *The Iliad*. Tr. E.V. Rieu. Harmondsworth: Penguin, 1985.

Sophocles, *Oedipus the King*. Tr. Robert Fagles in *Sophocles: The Three Theban Plays.* Harmondsworth: Penguin, 1984.

Richard Rutherford, *Classical Literature: A Concise History*. Oxford: Blackwell Publishing, 2005.

CO1	historically situate classical European, i.e., Greek and Latin literary cultures and their socio-political-cultural contexts
CO2	engage with classical literary traditions of Europe from the beginning till the 5th century AD
CO3	grasp the evolution of the concept of classic and classical in the European literary thinking and its reception over a period of time
CO4	appreciate classical literature of Europe and pursue their interests in it
CO5	examine different ways of reading and using literary texts across a wide range of classical authors, genres and periods with comparative perspectives

Paper -2

Type-Minor

Community Psychology/ History of India (550 A. D. to 1200 A. D.)

Course Credits: 6

Community Psychology

Course Outcomes

Course Content

1. **Introduction to community Psychology**

Definition of community psychology;

Types of communities – locality based and relational;

Models: ecological level analysis of community, conceptual level model.

2. **Core values in community psychology**:

- Individual and family wellness;
- sense of community;
- respect for human diversity;
- social justice;
- empowerment and citizen participation;
- collaboration and community strengths.

3.**Community functions** – learning, socialization, and supportive functions.

4. **Communities as setting for health promotion**

Need and process of community organization and building for health promotion programming 4.2 Community programme for child and maternal health, for physical challenged and old age in the Indian context.

5. **Interventions for Community Development and Empowerment**

Concept and practices for community development and empowerment

Case studies of community intervention programs by the governmental and nongovernmental organizations in Indian context such as, rural panchayat programs, children's education, citizen right, self- help group, social accounting.

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Suggestive readings:

- Banerjee, A., Banerji, R., Duflo, E., Glenneske, R., & Khenani, S. (2006) Can Information Campaign start local participation and improve outcomes? A study of primary education in Uttar Pradesh, India, World Bank Policy Research, Working Paper No.3967
- Fetterman, D.M., Kaftarian, S.J. & Wandersman, A (Eds)(1996) Empowerment Evaluation, New Delhi : Sage Publication.
- Kloos B. Hill, J Thomas, Wandersman A, Elias M.J. & Dalton J.H. (2012). Community Psychology: Linking Individuals and Communities, Wadsworth Cengage Learning.
- McKenzie, J. F. Pinger, R. R. & Kotecki, J. E. (2005). An introduction to community health. United States: Jones and Bartlett Publishers.
- Misra, G. (Ed). (2010) Psychology in India. Indian Council of Social Science Research. Dorling Kindersley (India) Pvt Ltd. Pearson Education
- Poland, B. D., Green, L.W. & Rootman, I.(2000) Setting for Health Promotion: Linking Theory and Practice, Sage Publication, New Delhi

Course Outcomes

CO1	Understanding the role of Psychology in community development.
CO2	Developing an appreciation of the core values that guide community psychology and facilitate community functions
CO3	Developing insights with respect to health promotion programs in communities
CO4	Community programme for child and maternal health
CO5	Community programme for physically challenged and elderly people in the Indian context, through case studies

OR

History of India (550 A. D. to 1200 A. D.)
Course Outcomes

Course Content

Unit -1

Harshvardhan of Pushyabhuti dynasty---Early history, military and cultural achievements and administrations.

Unit-2

PulkeshinII of Chalukyas and Vatap

Shashnka of Gaur, Maukharis and later Guptas Yashovarman of Kannuj

Unit-3

Pallavs and their administration, Rasheakutas Chaluykas of Kalyani

Cholas and their administration.

Unit-4

Origin of the Rajputas and Gurjar Praiharas, Chandellas, Kalchuris Parmaras.

Unit-5

Palas, Sanas, Gahamanas.

CO1	Students will learn and analyze about the transition from historic centuries to the early medieval.
CO2	They'll be able to delineate changes in the realm of polity and culture; puranic religion; the growth of vernacular languages and newer forms of art and architecture.
CO3	Students will learn the growth of vernacular languages
CO4	Students will learn the growth of newer forms of art and architecture.
CO5	Students will be able to identify the major political developments in the History of India during the period

PAPER- 3:

Generic Elective Course

MEDIA AND COMMUNICATION SKILLS

Course Credits: 4

Course Content

1. **Introduction to Mass Communication**

1. 1Mass Communication and Globalization

2. **Forms of Mass Communication**

Topics for Student Presentations:

a. Case studies on current issues Indian journalism

b. Performing street plays

c. Writing pamphlets and posters, etc.

3. **Advertisement**

1. Types of advertisements

2. Advertising ethics

3. How to create advertisements/storyboards

Topics for Student Presentations: a. Creating an advertisement/visualization b. Enacting an advertisement in a group c. Creating jingles and taglines

4. Media Writing

1. Scriptwriting for TV and Radio

2. Writing News Reports and Editorials

3. Editing for Print and Online Media

Topics for Student Presentations:

a. Script writing for a TV news/panel discussion/radio programme/hosting radio programmes on community radio

b. Writing news reports/book reviews/film reviews/TV program reviews/interviews

c. Editing articles

d. Writing an editorial on a topical subject

5. Introduction to Cyber Media and Social Media

1. Types of Social Media

2. The Impact of Social Media

3. Introduction to Cyber Media

Suggested Readings

Bel, B. et al. Media and Mediation. New Delhi: Sage, 2005.

Bernet, John R, Mass Communication, an Introduction. New Jersey: Prantice Hall, 1989.

Stanley J. Baran and Davis, Mass Communication Theory: Foundations, Ferment and Future. Boston: Wadsworth Cengage Learning, 2012.

John Fiske, Introduction to Communication Studies. London: Routledge, 1982.

Katherine Miller, Communication theories: Perspectives, Processes and Contexts. New York: McGraw Hill, 2004.

Michael Ruffner and Michael Burgoon, Interpersonal Communication. New York & London: Holt, Rinehart and Winston1981.

Kevin Williams, Understanding Media Theory. London & New York: Bloomsbury, 2015.

V.S. Gupta, Communication and Development. New Delhi: Concept Publication, 2000.

Course Outcomes

CO1	Articulate the interconnected and interdisciplinary nature of environmental studies
CO2	Students will develop an understanding of environmental issues
CO3	Students will reflect on their roles ,responsibilities and identities as citizens, consumers environmental actors in a complex, interconnected world
CO4	Promote sustainable development
CO5	Bring awareness on climate change and Global warming

.

Paper -4

Ability Enhancement Compulsory Course

Environment Studies

Course Credits: 4

Course Contents

Unit 1 : Study of Environment and Ecology

Introduction to environmental studies

• Multidisciplinary nature of environmental studies;

• Scope and importance; Concept of sustainability and sustainable development.

Ecology and Ecosystems

- Introduction to Ecology
- What is an ecosystem?

Structure and function of ecosystem;

Energy flow in an ecosystem: food chains, food webs and ecological succession.

Case studies of the following ecosystems :

a) Forest ecosystem b) Grassland ecosystem c) Desert ecosystem d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

Unit 2 : Natural Resources : Renewable and Non-renewable Resources

• Land resources and landuse change; Land degradation, soil erosion and desertification.

• Deforestation: Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations.

• Water : Use and over-exploitation of surface and ground water, floods, droughts, conflicts over water (international & inter-state).

• Energy resources : Renewable and non renewable energy sources, use of alternate energy sources, growing energy needs, case studies. (8 lectures)

Unit- 3. Biodiversity and Conservation

• Levels of biological diversity : genetic, species and ecosystem diversity;

Biogeographic zones of India; Biodiversity patterns and global biodiversity hot spots

• India as a mega-biodiversity nation; Endangered and endemic species of India

• Threats to biodiversity : Habitat loss, poaching of wildlife, man-wildlife conflicts, biological invasions; Conservation of biodiversity : In-situ and Ex-situ conservation of biodiversity.

• Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and Informational value.

Unit 4 : Environmental Pollution, Policies and Practices

Environmental Pollution

• Environmental pollution : types, causes, effects and controls; Air, water, soil and noise pollution • Nuclear hazards and human health risks

• Solid waste management : Control measures of urban and industrial waste.

• Pollution case studies

Environmental Policies & Practices

• Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture 2/2

• Environment Laws: Environment Protection Act; Air (Prevention & Control of Pollution) Act; Water (Prevention and control of Pollution) Act; Wildlife Protection Act; Forest Conservation Act. International agreements: Montreal and Kyoto protocols and Convention on Biological Diversity (CBD).

• Nature reserves, tribal populations and rights, and human wildlife conflicts in Indian context.

Unit 5 : Human Communities and the Environment

• Human population growth: Impacts on environment, human health and welfare.

• Resettlement and rehabilitation of project affected persons; case studies.

• Disaster management : floods, earthquake, cyclones and landslides.

• Environmental movements : Chipko, Silent valley, Bishnois of Rajasthan.

• Environmental ethics: Role of Indian and other religions and cultures in environmental conservation.

• Environmental communication and public awareness, case studies (e.g., CNG vehicles in Delhi).

Unit 6 : Field work

• Visit to an area to document environmental assets: river/ forest/ flora/fauna, etc.

• Visit to a local polluted site-Urban/Rural/Industrial/Agricultural.

• Study of common plants, insects, birds and basic principles of identification.

• Study of simple ecosystems-pond, river, Delhi Ridge, etc.

Suggested Readings:

1. Carson, R. 2002. Silent Spring. Houghton Mifflin Harcourt.

2. Gadgil, M., & Guha, R. 1993. This Fissured Land: An Ecological History of India. Univ. of California Press.

3. Gleeson, B. and Low, N. (eds.) 1999. Global Ethics and Environment, London, Routledge.

4. Gleick, P. H. 1993. Water in Crisis. Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute, Oxford Univ. Press.

5. Groom, Martha J., Gary K. Meffe, and Carl Ronald Carroll. Principles of Conservation Biology. Sunderland: Sinauer Associates, 2006.

6. Grumbine, R. Edward, and Pandit, M.K. 2013. Threats from India's Himalaya dams. Science, 339: 36-37.

7. McCully, P. 1996. Rivers no more: the environmental effects of dams (pp. 29-64). Zed Books.

8. McNeill, John R. 2000. Something New Under the Sun: An Environmental History of the Twentieth Century.

9. Odum, E.P., Odum, H.T. & Andrews, J. 1971. Fundamentals of Ecology. Philadelphia: Saunders.

10. Pepper, I.L., Gerba, C.P. & Brusseau, M.L. 2011. Environmental and Pollution Science. Academic Press.

11. Rao, M.N. & Datta, A.K. 1987. Waste Water Treatment. Oxford and IBH Publishing Co. Pvt. Ltd.

12. Raven, P.H., Hassenzahl, D.M. & Berg, L.R. 2012. Environment. 8th edition. John Wiley & Sons.

13. Rosencranz, A., Divan, S., & Noble, M. L. 2001. Environmental law and policy in India. Tripathi 1992.

14. Sengupta, R. 2003. Ecology and economics: An approach to sustainable development. OUP.

15. Singh, J.S., Singh, S.P. and Gupta, S.R. 2014. Ecology, Environmental Science and Conservation. S. Chand Publishing, New Delhi.

16. Sodhi, N.S., Gibson, L. & Raven, P.H. (eds). 2013. Conservation Biology: Voices from the Tropics. John Wiley & Sons.

17. Thapar, V. 1998. Land of the Tiger: A Natural History of the Indian Subcontinent.

18. Warren, C. E. 1971. Biology and Water Pollution Control. WB Saunders.

19. Wilson, E. O. 2006. The Creation: An appeal to save life on earth. New York: Norton.

20. World Commission on Environment and Development. 1987. Our Common Future. Oxford University Press

Course Outcomes

CO1	Articulate the interconnected and interdisciplinary nature of environmental studies
CO2	Students will develop an understanding of environmental issues
CO3	Students will reflect on their roles ,responsibilities and identities as citizens, consumers environmental actors in a complex, interconnected world
CO4	Promote sustainable development
CO5	Bring awareness on climate change and Global warming

B. A. Hons English-Sem.-III

S.No.	Paper Name	Credits	Scheme of Marks		Total
			External	Internal	
Paper-1	Major –British Literature Neoclassical era to Victorian era	6	60	40	100
Paper-2	Minor- Psychology- Youth, Gender and Identity / Elements of Indian Archaeology	6	60	40	100
Paper-3	Generic Elective – Language and Linguistics	4	60	40	100

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Paper-4	Vocational course: Creative writing	4	60	40	100
		20			400

B. A. Hons English-Sem.-IV

S.No.	Paper Name	Credits	Scheme of Marks		Total
			External	Internal	
Paper-1	Major –Modern Age	6	60	40	100
Paper-2	Minor- Foundations of Organizational Psychology-/Socio-economy Ideas and Institutions in Ancient India	6	60	40	100
Paper-3	Generic Elective – Indian Literature and Culture	4	60	40	100
Paper-4	Vocational course - English Language Teaching	4	60	40	100
		20			400

Sem. -III

Paper -1

Type –Major

Course Credits: 6

To teach the students how there was a complete shift in the trend of poetry writing during the different eras.

1] Poetry–

John Dryden : Mac

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Flecknoe Alexander

Pope: Solitude

Thomas Gray : Elegy Written in a Country Churchyard

William Blake : From the Songs of Innocence: The Lamb

2] Poetry

1] Wordsworth : Daffodils

2] Shelley : To a Skylark

3] Keats : Ode to a Nightingale

4] Byron : She Walks in Beauty

5] Tennyson : The Lotos Eaters

6] Browning : My Last Duchess

7] Arnold : Dover Beach

III] Prose –

1] Addison : Sir Roger at Home

2] Charles Lamb : Dream Children

3] William Hazlitt : On the Ignorance of the Learned.

4] Carlyle : Hero as Poet

5] Stevenson : Child's Play

IV] Fiction –

1] Jane Austen : Pride and Prejudice

2] Walter Scott : Ivanhoe 3]Dickens

: David Copperfield

4] Thomas Hardy : The Mayor of Caster bridge

V] Drama –

1] Oliver Goldsmith: She Stoops to Conquer

Course Outcome

CO1	develop academic and practical skills in terms of communication and presentation and also learn about human and literary values of different literary periods
CO2	demonstrate in-depth knowledge and understanding of the religious, socio-intellectual and cultural thoughts of the time
CO3	examine critically keys themes in representative texts of the period, including Sin, Transgression, Love, Pride, revenge, sexuality, human follies, among others
CO4	show their appreciation of texts in terms of plot-construction, socio-cultural contexts and genre of poetry and drama
CO5	analyze literary devices forms and techniques in order to appreciate and interpret the texts

Paper-2

Minor- Psychology/History

Credits-6

Youth, Gender and Identity

Learning Outcomes

- Understanding the transitory phase of youth, the issues surrounding it and thereby developing sensitivity to the youth of today.
- Developing an appreciation of the multiple influences that mould the identity of today's youth.

Corse content

1. **Introduction**

a) Concept of Youth: Transition to Adulthood, Extended Youth in the Indian context

b) Concept of Gender: Sex, Gender Identity, Sexual Orientation, Gender Roles, Gender Roles Attitudes, Gender Stereotypes

c) Concept of Identity: Multiple identities

2. Youth and Identity

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a) Family: Parent- youth conflict, sibling relationships, intergenerational gap
b) Peer group identity: Friendships and Romantic relationships.
c) Workplace identity and relationships

3. Gender and Identity

a) Issues of Sexuality in Youth
b) Gender discrimination

4. Issues related to Youth, Gender and Identity

a) Youth, Gender and violence
b) Enhancing work-life balance
c) Changing roles and women empowerment
d) Encouraging now gender stereotyped attitudes in youth

5. a) **Youth culture: I**nfluence of globalization on Youth identity and identity crisis.

b) **Culture and Gender:** Influence of globalization on Gender identity.

Suggested reading:

Berk, L. E. (2010).Child Development (9th Ed.). New Delhi: Prentice Hall.

Baron, R.A., Byrne, D. &Bhardwaj.G (2010). Social Psychology (12th Ed).New Delhi:Pearson.

BPCG-172: Youth, Gender and Identity (IGNOU Study Guide Book) Gyaniversity Publications

Course Outcomes

CO1	Understanding the transitory phase of youth, the issues surrounding it and thereby developing sensitivity to the youth of today
CO2	Understanding the issues related to youth and thereby developing sensitivity to the youth of today
CO3	developing sensitivity for the youth of today, Changing roles and women empowerment
CO4	Developing an appreciation of the multiple influences that mould the identity of today's youth.
CO5	promoting work-life balance, encouraging non-gender stereotyped attitudes in youth

OR

History

Elements of Indian Archaeology

Course Credits: 6

1.Definitions of Archaeology, scope, relations with other branches of study, history of Archaeology in India

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2. Methods of exploration and excavation and dating.

3. Palaeolithic cultures, Mesolithic cultures, Neolithic cultures.

4. Harappan and Chalcolithic cultures, Ochre Coloured pottery and copper hoard painted grey ware, Magalithic and Northern Black polished ware.

5. Kasambi Hastinapur, Tarila, Mathura, Besanagar, Ujjain, Rock art of M. P. – BhimBetka.

Suggested Readings

Agrawal D. P., South Asian Prehistory, Aryan Books, Delhi, 2002.

Allchin Briget and Raymond, The Rise of Civilization in India and Pakistan, Cambridge University Press, First South Asian Edition, 1996.

Allchin F. R., Archaeology of Early Historic South Asia, The Emergence of Cities and States, Cambridge University Press, 1995.

Chakrabarty D. K., A History of Indian Archaeology: FromBeginning to 1947, MunshiramManoharlal, Delhi, 1988.

Daniel G., A Short History of Archaeology, Thames nd Hudson, London, 1981.

Dhawalikar M. K., Indian Protohistory, Books and Books, New Delhi, 1997.

Dhawalikar M. K., Historical Archaeology of India, Books and Books, New Delhi, 199

Course Outcome

CO1	the student will be able to identify and classify archaeological materials
CO2	the student will be able to create scale maps of regions, archaeological sites, features, and/or excavation units using appropriate methodology
CO3	the student will be able to use archaeological field methods to discover and reveal information about archaeological sites
CO4	the student will be able to use archaeological recording methods to document site locations, features, and artifacts
CO5	Students will be familiarized to the elements of Indian archeology

Paper-3

Generic Elective

LANGUAGE AND LINGUISTICS

Course Credits: 4

Course Level Learning Outcomes

The students are able to:

- recognize/understand the structure and various parts of the language
- understand the existence of language in the form of different dialects based on a set of established factors
- identify the various functions a language performs and the roles assigned to it
- understand that all languages behave alike and develop a tolerance for other languages
- understand that making errors is a process of learning and not hesitate to use language for the fear of making error

Unit 1: Language and Human Language

1. Nature and features of Human language; language and human communication; differences from other forms of communications

2. Artificial intelligence and human language

Unit 2: Linguistics as a Science

1. What is linguistics; development in the history of linguistic studies; contribution of linguistics

to other areas of human inquiry

2. Linguistics for jobs

Unit 3: Phonetics and Speech

1. Phonetics and accuracy in pronunciation

2. Fluency and contextual speaking

Unit 4: Morphology

1. Morphology and Nature of words

2. Word formation processes

Unit 5: Syntax and Semantics

1. Nature of sentences and connected texts; syntax and discourse

2. Language and meaning: semantics

Suggested Reading

1. Linguistics: A very short introduction. P H Mathews. OUP

2. Language and Linguistics: An Introduction

John Lyons, Cambridge to other areas of human inquiry

Course Outcomes

CO1	recognize/understand the structure and various parts of the language
CO2	understand that all languages behave alike and develop a tolerance for other languages
CO3	identify the various functions a language performs and the roles assigned to it
CO4	understand that making errors is a process of learning and not hesitate to use language for the fear of making errors
CO5	understand the existence of language in the form of different dialects based on a set of established factors

PAPER 4: Vocational course

CREATIVE WRITING

Course Credits: 4

Course Level Learning Outcomes

Some of the course learning outcomes that students of this course are required to demonstrate run thus:

- recognize creativity in writing and discern the difference between academic/non creative and creative writing
- develop a thorough knowledge of different aspects of language such as figures of speech, language codes and language registers so that they can both, identify as well as use these; in other words, they must learn that creative writing is as much a craft as an art
- develop a comprehensive understanding of some specific genres such as fiction, poetry, drama and newspaper writing
- distinguish between these as well as look at the sub divisions within each genre(such as in poetry, different forms like sonnets, ballads, haiku, ghazal, etc)
- process their writing for publication and so must have the ability to edit and proofread writing such that it is ready to get into print.

Course Content

Unit 1. What is Creative Writing?

Unit 2. The Art and Craft of Writing

Unit 3. Modes of creative Writing

Unit 4. Writing for the Media

Unit 5. Preparing for Publication

Suggested Readings

Dev, AnjanaNeira (2009). Creative Writing: A Beginner's Manual. Pearson, Delhi, 2009.

Morley, David (2007). The Cambridge Introduction to Creative Writing. Cambridge, New York.

Course Outcomes

CO1	recognize creativity in writing and discern the difference between academic/non creative and creative writing
CO2	develop a thorough knowledge of different aspects of language such as figures of speech, language codes and language registers so that they can both, identify as well as use these; in other words, they must learn that creative writing is as much a craft as an art
CO3	develop a comprehensive understanding of some specific genres such as fiction, poetry, drama and newspaper writing
CO4	distinguish between these as well as look at the sub divisions within each genre(such as in poetry, different forms like sonnets, ballads, haiku, stories, novels etc)
CO5	process their writing for publication and so must have the ability to edit and proofread writing such that it is ready to get into print.

Sem. IV

Paper-1 Major

Modern Age

Course Credits: 6

To make the students observe the shift in the literature of the Modern Age

To make them understand the modern literary trends

I] Modern Literary Trends in British English Literature

II] Poetry –

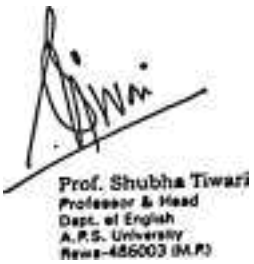
1] Yeats - Byzantium

2] T.S. Eliot : The Love Song of J. Alfred Prufrock

3] Philip Larkin : Church Going

III] Fiction –(Novel)

1] George Orwell : Animal Farm



2] Aldous Huxley : Brave New World

3] Doris Lessing : The Golden Notebook

IV]Fiction –(Short Story)

1] James Joyce: Stories from Dubliners (The Sisters, Evelyn, An Encounter, Clay, Two Gallants)

2] Virginia Woolf: The Mark on the Wall

V] Drama -

1] G.B. Shaw : Saint Joan

2] Henric Ibsen : The Pillars of Society

Course Outcomes

CO1	trace the history of modernism in the socio-cultural and intellectual contexts of late nineteenth century and early twentieth century Europe
CO2	link and distinguish between modernity and modernism
CO3	link and distinguish between modernity and modernism
CO4	explain the history of early twentieth-century modernism in the light of stream of consciousness, Jungian and Freudian ideas, Psychoanalysis, Imagism, Cubism, Vorticism
CO5	identify and analyze the use and modernist technique in different genres in early twentieth century British literature

Paper-2

Minor- Psychology/History

Credits-6

Foundations of Organizational Psychology

Learning Outcomes:

1. Developing a deeper understanding of conceptual and theoretical bases of motivation and employees' work attitudes and their relationship with performance and organizational outcomes.

2. Understanding leadership processes from different theoretical perspectives.

3. Understanding group dynamics, working through conflicts and working in teams.

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Course Content:

1 Introduction

Nature and facets of organizational psychology, Contribution of other social science subjects to organizational psychology.

Historical Developments: The Early Years, Classical School: Taylor, Fayol& Weber. Human Relations Approach.

European contribution and contemporary scenario: Socio-technical Approach, The Aston Studies. System approach and the contemporary challenges to organizations, concept of organizational change.

Organizational Psychology in the Indian context: Replication, disenchantment and integration.

2 Employee motivation and Job Attitudes

Nature of Work motivation, Five key concepts (Behaviour, performance, ability, situation and motivation), Role of self esteem, intrinsic motivation and need for achievement in the development of motivation.

Theories of Work motivation: Content theory (Maslow, Herzberg), Process theories: Vroom's Expectancy Theory, Equity Theory, Goal Setting theory and Self Regulation theory. Integration of theories.

Job Attitude: Positive Organizational Behaviour, Brief Introduction to Organizational Commitment, Organizational Citizenship Behaviour, Employee' engagement.

Motivational perspective in cultural context: Giving Theory of motivation, Work Values, brief introduction to the concept of organizational culture.

3 Leadership and the Influence process

Conceptual Foundations: Leaders versus managers, Themes in Leadership: positional power, the leader, the led, the influence process, the situation, Leader emergence versus leader effectiveness.

Theoretical Approaches: Trait approach, Behavioural approach, Power and influence approach, Leader-Member Exchange theory.

The Situational Approach: Fiedler Hersen, Blenchard Situational Leadership and

Path Goal theory. Transformational and Charismatic leadership. The Implicit leadership theory.

Indigenous Theories: Performance-Maintenance theory, Nurturant Task participative (NT-P) Model of Leadership, Consultative Style of Management,

Pioneering-Innovative Theory of Leadership.

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4 Group Behaviour, Teams and conflicts

Nature, functions and types of groups. Group Structure: Role differentiation,

Status differentiation, Norms formation and group cohesiveness.

Factors affecting group performance: HomogeneitBhuly of group, stability of membership, Group size, Group status, communication structure, Social facilitation and inhibition.

Co-operation and competition, Conflicts and its management, Negotiation process.

Team Work: Genesis, teams and groups, cultural influences on team work: Teams in the Indian context and Building teams in Indian organizations.

5.Stress and management of stress in an organization

1. What is Stress?

2. Sources of Stress

Individual Factors

Organizational Factors

Environmental Factors

Individual Differences

3. Consequences and Costs of Stress

4. Workplace Stress Management

Individual Approaches to Stress Management

Managerial Approaches to Stress Management

Organizational Approaches to Stress Management

Suggested Readings:

Aamodt, M. G. (2016). Industrial/Organizational psychology: An applied approach. Boston:

Cengage Learning.

Kalra, S. K. (2004). Consultative managerial leadership style in India: A viable alternative. In

P. N. Mukherjee, & C. Sengupta (Eds.), Indigenity and universality in social sciences: A south asian response. New Delhi: Sage Publications.

Muchinsky, P. M., & Culbertson, S. S. (2016). Psychology applied to work. Summerfield, NC: Hypergraphic Press.

Pareek, U. (2007). Understanding organizational behaviour. New Delhi: Oxford University Press.

Pareek, U.,& Gupta, R. K. (2010). Organizational behaviour. New Delhi: Tata McGraw Hill.

Sinha, J. B. P. (2008). Culture and organizational behavior. New Delhi, India: Sage Publications.

Suggested Practical Work (Illustrations only):

1) A study of women leaders in organizations through the use of secondary data (website, .
2) online interviews, newspaper articles etc.) Women leaders of organizations such as Biba, Cremica etc. may be done. Themes like traits of women leaders, work-life balance etc are quite interesting to be discussed in class.

2) Experiential activities/ workshops for skill building.

Team building: Walking as a team with balloons in between without touching the balloon, ensuring that the balloon doesn't fall off. The group is lead to do some physical tasks without letting the balloon fall.

Leadership emergence: With a group of participants standing on the bed-sheet, asking them to flip the bedsheet upside down, without anyone's foot touching the floor.

3) Case study of an organization

A group wise visit to an organization multiple times, interviewing employees (related to one or the other aspects of organizational functioning), collating the data, analysing it. Data from observation as well as records of the organization may be studied.

3) Self-reflection exercises on the relevance of motivation and emotion referring to one's personal goals

CO1	Developing a deeper understanding of conceptual and theoretical bases of motivation for employees.
CO2	Developing a deeper understanding of employees' work attitudes and their relationship with performance and organizational outcomes
CO3	Understanding leadership processes from different theoretical perspectives
CO4	Understanding group dynamics, working through conflicts and working in teams.
CO5	Developing a deeper understanding of organizational stress an overcoming the same

OR

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History

Socio-economic Ideas and Institutions in Ancient India

Course Credits: 6

1. Varna and Jatis

Slavery, Ashrama System, Purushrthas

2. Samsakaras especially –Marriage, family, Position of Women

3. Aims and ideals of Ancient Indian—Education, Brahmanical Educations and institutions, Buddhist Educations and institutions.

4. Agriculture and land system, types of villages, types of land produce, land revenue, Science of agriculture land, ownership of land and land grants.

5. Currency, banking and guilds, trade.

Suggested Books

1. R. C. Majumdar[Ed]- History and Culture of the Indian people (Vol.V)
2. U. N. Ghoshal – Agrarian System in Ancient India
3. R. K. Mookerji – Ancient Indian Education
4. A. S. Allekar – Positions of Women in Hindu Civilization
5. Kane P. V – History of the Dharmashastra
6. Omprakash- Economy and Food in Ancient India (Vol. 2)

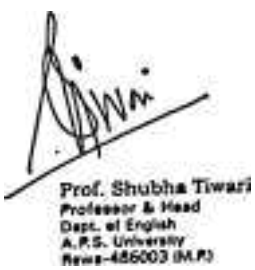
Course Outcomes

CO1	Developing a deeper understanding of the various land revenue settlements in India.
CO2	Developing a deeper understanding of the rise of industrial capitalism and its impact on Indian economy.
CO3	Developing a deeper understanding of the various socio-religious reform movements in India.
CO4	Developing a deeper understanding of the various socio-economic movements in India.
CO5	Elucidate the social change and transformation process in India

Paper-3

Generic Elective

Indian Literature and Culture



Course Credits: 4

Course Level Learning Outcomes

The students are able to:

- see literature as a fine form of expression and as a major source of transmitting culture
- use literature for analysis to understand the use of language
- show the understanding of literature in the form of extrapolation (see the relevance of a story, poem, play etc. in their own lives)
- show how cultures and languages are interrelated especially through their presentation of differences.

1.Poetry

Chapter -7 verses 8-11 Shrimad Bhagwat Gita

Lal Ded(1420-1392) :By Pandering to Your Appetites

Nanak Devji (1469-1539) :The Sky is Your Platter

2.Poetry

Om Prakash Valmiki: I Refuse to Enter Your Swarga

Jyoti Lanjewar: Mother

Ranveer: Why Were You Born.

A. P. J. Abdul Kalam: Journey to Mars.

3.Prose

Vivekanand: The Chicago Address

Jawahar Lal Nehru: An Excerpt from The Discovery ofIndia{What is Hinduism... applied to any of the ancient Indian Faiths(including Buddhism and Jainism) }

Radhakrishnan: One World:Nations as Friendly Partners

(Mr Officiating Dean... happening in the world.)

4.Drama

Kalidas: Malvikagnmitram

Girish Karnad: Nag Mandala

5.Fiction

Krishna Sobti: The Music of Solitude (Trans. by VasudhaDalmia)

Premchand: Panch Parmeshwar (Holy Panchayat).

Course outcome

CO1	Learner will be able to see literature as a fine form of expression and as a major source of transmitting culture
CO2	Learner will be able to use literature for analysis to understand the use of language
CO3	Learner will be able to show the understanding of literature in the form of extrapolation (see the relevance of a story, poem, play etc. in their own lives)
CO4	Learner will be able to show how cultures and languages are interrelated especially through their presentation of differences.
CO5	Learner will be able to appreciate Indian literature and Culture

Sem. IV

PAPER 4: Vocational course

ENGLISH LANGUAGE TEACHING

Course Credits: 4

Course Level Learning Outcomes

Some of the course learning outcomes that students of this course are required to demonstrate run thus:

- identify and classify strategies used by a teacher to teach language
- demonstrate clear understanding of the syllabus, its structure and development
- understand the structure of a textbook and its use
- articulate the reasons for different types of tests the teacher administers
- demonstrate the ways in which technology can be used for learning language.

Course Content

a. Knowing the learner (Syllabus structure; identifying the learner)

b. Structures of English language (Grammatical syllabuses and their contents)

c. Methods of teaching English language and literature

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d. Materials for language teaching (Structure of a textbook and its relation to the syllabus)

e. Assessing language skills (tests and their purposes)

f. Using Technology in language learning (ICT and language learning including Web 2.0 Tools)

Suggested Reading

Penny Ur, A Course in Language Teaching: Practice and Theory (Cambridge: CUP, 1996).

Marianne Celce-Murcia, Donna M. Brinton, and Marguerite Ann Snow, Teaching English as a Second or Foreign Language (Delhi: Cengage Learning, 4th ed., 2014).

Adrian Doff, Teach English: A Training Course For Teachers (Teacher's Workbook) (Cambridge: CUP, 1988).

Business English (New Delhi: Pearson, 2008).

R.K. Bansal and J.B. Harrison, Spoken English: A Manual of Speech and Phonetics (New Delhi: Orient Black Swan, 4th edn, 2013).

Mohammad Aslam, Teaching of English (New Delhi: CUP, 2nd edn, 2009).

Course outcome

CO1	identify and classify strategies used by a teacher to teach language
CO2	demonstrate clear understanding of the syllabus, its structure and development
CO3	understand the structure of a textbook and its use
CO4	articulate the reasons for different types of tests the teacher administers
CO5	demonstrate the ways in which technology can be used for learning language

B. A. Hons English-Sem.-V

S.No.	Paper Name	Credits	Scheme of Marks		Total
			External	Internal	
Paper-1	Major – Commonwealth Literature	6	60	40	100
Paper-2	Discipline Specific-American Literature	4	60	40	100

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Paper-3	Vocational course- Basics of Computers	6	60	40	100
Paper-4	Community service and engagement/University Publishing cell/publishing houses	4	60	40	100
		20			400

B. A. English Hons -Sem.-VI

S.No.	Paper Name	Credits	Scheme of Marks		Total
			External	Internal	
Paper-1	Major –Indian Literature in English Translation	6	60	40	100
Paper-2	Discipline Specific Elective - Indian Writing in English	4	60	40	100
Paper-3	Discipline Specific Elective -Modern Global Literature	6	60	40	100
Paper-4	University workshops	4	60	40	100
		20			400

B. A. Hons English-Sem.-VII

Major

Paper -1

Commonwealth Literature

Course Credits: 6

- To equip the students with the knowledge of World Literature
- To create in them the ability to compare and discern the differences between literatures created across the world

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I] What is Commonwealth Literature?

II] Poetry –

1] Wole Soyinka: Civilian & Soldier, I Think It Rains.

2] Seamus Heaney: Mid–Term Break, Blackberry, Picking,

The Poet Crowned

3] Michael Ondaatje: (1) The Cinnamon Peeler.

III] **Fiction-I**

1]V.S. Naipaul: A House of Mr. Biswas.

2] Elizabeth Jolley: My Father's Moon.

IV] Fiction -II

1] Ben Okri (Nigerian) : The Famished Road

2] Jean Rhys (Dominica): Wide Sargasso Sea

3] Nadine Gordimer – July's People

V] Drama -

1] Wole Soyinka : The Road

2] Derek Walcott : Walker and the Ghost Dance (New York: Farrar Straus Giroux 2002)

3] Sharon Pollock: Walsh

CO1	Learner will be able to appreciate and define Commonwealth Literature
CO2	Learner will be able to identify the geography of commonwealth literature
CO3	Learner will be able to state the Functions of Commonwealth Literature
CO4	Learner will be able to list the major themes and literary trends in Commonwealth Literature
CO5	Learner will be able to major Characteristics of Commonwealth Literature/Issues common to the writer

Discipline Specific Elective
Paper-II

American Literature

Course Credits: 4

- To make the students aware of the history of American Literature
- To explain to them the importance of the Self through the texts of the leading writers of America
- To sensitize them towards the problem of apartheid that riddled the American society

I] Short History of American Literature

II] Poetry –

1] Walt Whitman: One's Self I Sing, A Clear Midnight

2] Robert Frost : Stopping by Woods On A Snowy Evening; Mending Wall

3] Emily Dickinson: My Life Closed Twice Before its Close; Hope is the thing with feathers

III] Prose and Fiction -

1] Emerson: Self Reliance

2] Thoreau: Walden

3] Hemingway: The Old Man and The Sea

4] Toni Morrison: Sula

IV] Short stories:

Edgar Allan Poe: The Fall of the House of Usher

O'Henry: The Last Leaf

John Steinbeck: The Chrysanthemums

Kate Chopin: The Story of an Hour

V] Drama -

1] Tennesse Williams: A Streetcar Named Desire.

2] Arthur Miller: All My Sons.

Course Outcomes

CO1	understand the depth and diversity of American literature, keeping in mind the history and culture of the United States of America from the colonial period to the present
CO2	Students will be aware of the history of American Literature
CO3	Students will understand the importance of the Self through the texts of the leading writers of America
CO4	Students will be sensitized towards the problem of apartheid that riddled the American society

CO5	Students will be able to analyze the American mind from global and Indian perspectives and situate the American in the contemporary world

3
onalCourse-
of Computers

Course Credits: 6

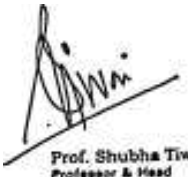
ction to Computers: Computer system characteristics and capabilities, types of computers, Introduction to IBM PC, Input Devices, Keyboard, Scanner and Mouse, Output Devices Impact and nonimpact printers, DMP, inkjet, Laser Printers, Storage Devices, Floppy Disks, Hard disk, CD-ROM, Introduction to Windows XP. Control Panel & Accessories.

ws-Operating System: Operating system and operating environment, Graphic user interface, Documents, Drives, My Computer, Setting: Control Panel & control switches, taskbar & printers, Display properties: Background and screensaver; Recycle bin, Icon & icon creation. Shortcut to programs, basic of folder and files, concept of CUT, COPY, PASTE; Clipboard, Window Explorer, Paint and word pad facility.

ORD: Introduction to MS-OFFICE & MS-WORD, Concept of File Toolbar & active window, formatted output: Font & Font size, page setup, alignment, bold, italic & underline, Paint and word pad facility.

cel: Introduction to MS-Excel, concept of file, charts, macros, forms, spreadsheet, cell toolbar and active window, row, column, Expressions and formulas, Data manipulation, filtering of data, use of financials and statistical functions.

er Point: Elementary idea of Power Point, Presentation in Point, Presentation type, output, presentation style, presentation option, On Screen presentation, view Slides, Rehearse Timing, Different types of Slides & Slides making, Setup shows.



Internet: Introduction of Internet, History, Advantages & Disadvantages, Uses, Browsers, Search Engine Using Internet.

Course Outcomes

CO1	Students will have a functional integration of vocational computer knowledge
CO2	Students will develop skills for productivity software and OS.
CO3	Students will develop interests in using computers for professional work
CO4	Students will be able to discover their interests in programming
CO5	Students will be able to Keep pace with the rapid technological changes occurring in the workplace.

B. A.Hons English-Sem.-VI

Major

Paper-I

Indian Literature in English Translation

Course Credits: 6

- To acquaint the students with the contemporary scenario in India as reflected through the regional literature created here.
- To teach them to reach beyond the boundaries of language and culture and understand the diversity in Indian unity.

1] Brief Review of Indian Literature in English Translation

2] Bama Faustina Soosairaj : Karukku (Tr. Lakshmi Holmstrom OUP)

3] Qurrutulain Haider : Aag Ka Dariya (River of Fire)

4] Sri Lal Shukla : Raag Darbari

5] Adya Rangacharya : Listen Janmejay

6] Mahasweta Devi : Hajar Churashir Maa (Mother of 1084)

Course Outcomes

CO1	the students get acquainted with the contemporary scenario in India as reflected through the regional literature created here.

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CO2	the students learn to reach beyond the boundaries of language and culture and understand the diversity in Indian unity
CO3	the students learn the similarities between them understand and creatively engage with the notion of nation and nationalism
CO4	the students learn to appreciate the impact of literary movements on various Indian literatures
CO5	appreciate the impact of literary movements on various Indian literatures and the importance of translation studies through the English versions of regional texts.

Discipline Specific Elective
Paper-II

Indian English Writing

Course Credits: 4

- To understand the flowering of English Literature in our own country
- To make them understand the use of English as a second language by our native writers
- To explain to them the importance of translation studies through the English versions of regional texts.

I] Brief Review of Indian English Literature-

II] Poetry –

1] Tagore: Gitanjali Song No 10

2] Ezekiel: Night of the Scorpion

3] Arun Kolatkar: The Butterfly

4] Meena Alexander: Muse

III] Drama -

1] Vijay Tendulkar : Silence! The Court is in Session

2] Girish Karnad : Tuglaq

3] Mahesh Dattani : Tara

IV] Prose and Fiction -

1] J. Krishnamurti : What is Self?

2] Raja Rao: The Serpent and The Rope

3] Amitav Ghosh: The Shadow Lines

4] Arundhati Roy: The God of Small Things

V] Short stories:

Raja Rao: India – A Fable

Ruskin Bond: When Darkness Falls

Nayantara Sahgal; Martand

Course Outcomes

CO1	Learners will appreciate the historical trajectory of various genres of IWE from colonial times till the present
CO2	Learners will critically engage with Indian literary texts written in English in terms of colonialism/postcolonialism, regionalism, and nationalism
CO3	Learners will understand the flowering of English Literature in our own country
CO4	understand the use of English as a second language by our native writers
CO5	Learners will approach IWE from multiple positions based on historical and social locations

Paper-III

Modern Global Literature

Course Credits: 6

Objectives : To acquaint the students with the literary texts created around the globe

To make them aware of how various events and happenings have resulted in the creation of modern global literature

I] Global Literary Trends

II] Poetry –

1] Selected Songs of Bob Dylan: Young At Heart, These Foolish Things

2] Wislawa Szymborska : Utopia, The Three Oddest Words

III] Poetry-

1] Khalil Gibran : On Children

2] Tomas Transtromer : After a Death; Track

IV] Prose and Fiction -

1] Svetlana Alexievich : The Unwomanly Face of War
(Chapter I & II)

2] Gabriel Garcia Marquez : A Very Old Man with Enormous Wings

3] V.S. Naipual : Half a Life

4] Derek Walcott : What the Twilight Says

V] Drama -

1] Harold Pinter: The Birthday Party

2] Dario Fo: Can't Pay? Won't Pay

Course Outcomes

CO1	the students get acquainted with the literary texts created around the globe
CO2	the students will be aware of how various events and happenings have resulted in the creation of modern global literature.
CO3	the students will be able to appreciate the connectedness and diversity of human experiences and literary responses to them in different parts of the world.
CO4	the students will be able to analyze and appreciate literary texts from different parts of the world and receive them in the light of one's own literary traditions
CO5	the students will be able to analyze and interpret literary texts in their contexts and locate them.

B. A. Hons English-Sem.-VII

S.No.	Paper Name	Credits	Scheme of Marks		Total
			External	Internal	
Paper-1	Major –Indian Classical Literature	6	60	40	100
Paper-2	Discipline Specific-Critical Theories	4	60	40	100
Paper-3	Research Methodology-1	4	60	40	100
Paper-4	Research Project	6	60	40	100

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		20			400

B. A.Hons English-Sem.-VIII

S.No.	Paper Name	Credits	Scheme of Marks		Total
			External	Internal	
Paper-1	Major –Popular Literature	6	60	40	100
Paper-2	Research Methodology	4	60	40	100
Paper-3	Research Project	10	60	40	100
		20			400

B. A. Hons English-Sem.-VII

Major

PAPER 1: INDIAN CLASSICAL LITERATURE

Course Credits: 6

Course Level Learning Outcomes:

Some of the course learning outcomes that students of this course are requiredto demonstrate run thus:

- explain the eco-socio-political-cultural context of the age that produced Indian classical literature from its early beginning till 1100 AD
- To appreciate the pluralistic and inclusive nature of Indian classical literature and its attributes

- historically situate the classical literature and diverse literary cultures from India, mainly from Sanskrit, but also Tamil, Prakrit and Pali by focusing on major texts in the principal genres
- To trace the evolution of literary culture(s) in India in its/their contexts, issues of genres, themes and critical cultures
- To understand, analyze and appreciate various texts with comparative perspectives

Course Content

I]Excerpts from The Ramayana

II] Excerpts from The Mahabharta

III]Bharatamuni'sNatyashastra (Chapter 1 on the origin of drama)

IV]Banabhatta, Kadambari

V] Kalidas, Shakuntala

Suggested Readings:

Bharata, Natyashastra, tr. Manmohan Ghosh, vol. I, 2nd edn. Calcutta: Granthalaya, 1967.

J.A.B. Van Buitenen, 'Dharma and Moksa', in Roy W. Perrett, ed., Indian Philosophy, vol.

V, Theory of Value: A Collection of Readings (New York: Garland, 2000) pp. 33–40.

A.V. Kieth, History of Sanskrit Literature. Oxford: OUP, 1920

A.K. Warder, Indian Kavya Literature, 8 Volumes. Delhi: MotilalBanarrsidas, 2011

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CO1	explain the eco-socio-political-cultural context of the age that produced Indian classical literature from its early beginning till 1100 AD
CO2	To appreciate the pluralistic and inclusive nature of Indian classical literature and its attributes
CO3	historically situate the classical literature and diverse literary cultures from India, mainly from Sanskrit, but also Tamil, Prakrit and Pali by focusing on major texts in the principal genres
CO4	To trace the evolution of literary culture(s) in India in its/their contexts, issues of genres, themes and critical cultures
CO5	To understand, analyze and appreciate various texts with comparative perspectives

Discipline Specific Elective

Critical Theories

Paper-2

Course Credits: 4

- To develop the critical acumen in students.
- To make them understand the process of creation of literature

I] Literary Criticism : A Brief Overview.

Contemporary Trends in Literary Criticism

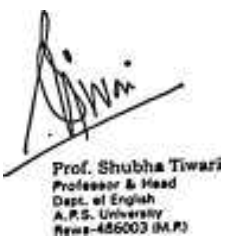
II] New Criticism and Formalism: Saussure, with an emphasis on the main critical concepts of New Criticism such as paradox, irony, tension, intentional and affective fallacy, heresy of paraphrase and of Formalism such as ostranenie, literariness, foregrounding, dominant and deviant

III] Structuralism, Marxism and New Historicism: with an emphasis on main critical concepts of Marxism such as base, superstructure, ideology, commoditisation, determination and of New Historicism such as power, resistance, high-low dialectic

IV] Post Structuralism, Post-colonialism and Post-modernism: with an emphasis on the main critical concepts of Structuralism such as binary opposition, synchrony and diachronic, syntagm and paradigm and of Post Structuralism such as collapse of the binary, difference, mise-en-abym, erasure

V] Feminism and Eco-criticism: Three waves of feminism; emphasis on main critical concepts of Ecology as environment, balance, food chain and of Eco-feminism as body and its colonisation, patriarchy, woman as a creative principle in harmony with nature.

CO1	understand the historical and philosophical contexts that led to the development of literary criticism and its practice in different traditions and periods
CO2	learners will be able to understand fundamental literary and critical concepts and underlying distinctions amongst them (e.g.., difference between literary criticism and literary theory)
CO3	learners will be able to grasp a wide range of literary philosophers and critics whose works had informed and shaped the discourse of literary theory
CO4	learners will have knowledge about major, critical movements and critics in various critical traditions
CO5	learners will be able to identify theoretical and critical concepts with critics/texts/movements with which they are associated and understand them in their contexts



PAPER 3: RESEARCH METHODOLOGY

Course Credits: 4

Course Level Learning Outcomes

- To develop a simple questionnaire to elicit specific information.
- To collect data based on a survey and arrive at inferences using a small sample
- Discuss and draft a plan for carrying out a piece of work systematically
- Refer to authentic sources of information and document the same properly.
- Provide proper explanation for technical terms in simple language.

Course Content

I] Basic concept of research and the terminology involved

1. Research as systematic investigation

2. Research related terminology

II] Basic types of research

III] Basic tools of research

Literature Survey for

IV] Reference skills including skills to use dictionaries, encyclopaedias, library and net resources.

1. Use of authentic resources for research: primary, secondary, tertiary

2. Use of materials: print, media, online, verbal (e.g. personal interviews)

V] Literature review

1. Review of existing literature to locate and finalise the research question

2. Refining the research problem/question; formulating its rationale and objectives

3. Providing justifications for the researchquestion and the objectives

4. Review of applicable theories to explore specific research questions

Suggested Readings

Kumar, Ranjit. (2012) Research Methodology: A Step-by-Step Guide for Beginners. New Delhi, Vikas.

Manuals of style (MLA Style Sheet)

Wallace, Michael. (2004). Study Skills. Cambridge: CUP.

Internal Assessment

a. Literature review: 1000 words

b. Presentation 1: Literature review

Final Assessment

Students will write a research project and

submit the same to the Supervisor. The Supervisor and an external expert will assess each

research project. 40 marks for the research project dissertation and 20 marks for the viva will be there.

For the Internal and the final assessments, the average of the addition of the examiners' marks

will be posted as the marks secured by individual candidates.

CO1	learners will be able to understand fundamentals of research methodology
CO2	To collect data based on a survey and arrive at inferences using a small sample
CO3	Discuss and draft a plan for carrying out a piece of work systematically
CO4	Refer to authentic sources of information and document the same properly
CO5	Provide proper explanation for technical terms in simple language

B. A. Hons English-Sem.-VIII

Major

PAPER 1: POPULAR LITERATURE

Credit -6

Course Level Learning Outcomes

Some of the course learning outcomes that students of this course are required to demonstrate

run thus:

- trace the early history of print culture in England and the emergence of genre fiction and best sellers
- engage with debates on high and low culture, canonical and non-canonical literature
- articulate the characteristics of various genres of non-literary fiction

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- investigate the role of popular fiction in the literary polysystem of various linguistic cultures
- demonstrate how popular literature belongs to its time
- Use various methods of literary analysis to interpret popular literature

Course Content

1. Children's Literature

Lewis Carroll, Through the Looking Glass

Sukumar Ray, Two Poems: "The Sons of Ramgaroo", and "Khichudi"

2. Detective Fiction

Agatha Christie The Murder of Roger Ackroyd

3. Romance/Chick Lit

Daphne du Maurier, Rebecca

Or

Anuja Chauhan, The Zoya Factor

4. Graphic Fiction

Vishwajyoti Ghosh, This Side That Side: Restorying Partition

5. Science Fiction

Isaac Asimov, "Nightfall"

Suggested Topics for Background Reading and Class Presentation

- Coming of Age
- The Canonical and the Popular
- Ethics and Education in Children's Literature
- Sense and Nonsense
- The Graphic Novel
- The Popular and the Market

Suggested Readings

Leslie Fiedler, 'Towards a Definition of Popular Literature', in Super Culture: American Popular Culture and Europe, ed. C.W.E. Bigsby

Felicity Hughes, 'Children's Literature: Theory and Practice', English Literary History, vol. 45, 1978,

Christopher Pawling, 'Popular Fiction: Ideology or Utopia?' in Popular Fiction and Social

Change, ed. Christopher Pawling

Tzevetan Todorov, 'The Typology of Detective Fiction', in The Poetics of Prose

Darco Suvin, 'On Teaching SF Critically', in Positions and Presuppositions in Science Fiction

Janice Radway. 'The Institutional Matrix, Publishing Romantic Fiction', in Reading the Romance: Women, Patriarchy, and Popular Literature

Edmund Wilson, 'Who Cares Who Killed Roger Ackroyd?', The New Yorker, 20 June 1945.

CO1	trace the early history of print culture in England and the emergence of genre fiction and best sellers engage with debates on high and low culture, canonical and non-canonical literature
CO2	articulate the characteristics of various genres of non-literary fiction
CO3	investigate the role of popular fiction in the literary polysystem of various linguistic
CO4	cultures demonstrate how popular literature belongs to its time
CO5	Use various methods of literary analysis to interpret popular literature

PAPER 2: RESEARCH METHODOLOGY

Course Credits: 4

I] Stating and defending a research proposal

II] Conceptualizing and drafting a research proposal

III] Parts of research proposal

IV] Writing a research paper

Style manuals

Notes, references and bibliography

V] Research and Ethics: Documentation and Plagiarism

Paper-3 Research Project

Course Credits: 10

Internal assessment

a. Synopsis: 1000 words

b. Presentation 2: Synopsis of the research

Final Assessment

Students will write a research project and submit it to the Supervisor.

The Supervisor and an external expert will assess each research project.

40 marks for the research project dissertation and 20 marks for the viva will be there.

For the Internal and the final assessments, the average of the addition of the examiners' marks will be posted as the marks secured by individual candidates.

Texts prescribed

i.

K Samantray, Academic and Research Writing. Orient Black swan (2015)

ii.

Kothari & Garg, Research Methodology. New Age Publishers

iii.

Introducing Research Methodology: A Beginner's Guide to Doing a Research

Project 2nd ed. Edition, by Uwe Flick

Suggested Reading

i.

Qualitative Research: A Guide to Design and Implementation 4th Edition, by Sharan

B. Merriam (Author), Elizabeth J. Tisdell

ii.

Doing Your Research Project (Open Up Study Skills) 5th Edition, by Judith Bell

iii.

Deepak Chawla & Neena Sondhi. Research methodology: Concepts & Cases. Vikas

Publishing

iv.

The Essential Guide to Doing Your Research Project 2nd Edition, by Zina O'Leary

CO1	learners will be able to develop a simple questionnaire to elicit specific information.
CO2	learners will be able to understand fundamentals of research writing e.g. Research paper, research proposal
CO3	To develop a simple questionnaire to elicit specific information
CO4	learners will learn documentation
CO5	learners will learn research ethics

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M.A. ENGLISH EXAMINATION SCHEME

Nomenclature of Paper **Distribution of Marks**

		Theory/External Assessment		Internal Assessment		Total Marks	Credit Point
Semester – I		**Max.**	**Min.**	**Max.**	**Min.**		
1	Drama	60	21	40	14	100	04
2	Fiction	60	21	40	14	100	04
3	Prose	60	21	40	14	100	04
4	Poetry (Generic Elective)	60	21	40	14	100	04
5	Comprehensive Viva-Voce					100	04
Semester – II							
1	Drama	60	21	40	14	100	04
2	Fiction	60	21	40	14	100	04
3	Prose	60	21	40	14	100	04
4	Poetry (Generic Elective)	60	21	40	14	100	04
5	Comprehensive Viva-Voce					100	04
Semester – III							
1	Critical Theory	60	21	40	14	100	04
2	English Language	60	21	40	14	100	04
3	Disciple Centric Elective- **1]** American Literature **2]** Commonwealth Literature	60	21	40	14	100	04
4	Indian Writings in English (Generic Elective)	60	21	40	14	100	04
5	Comprehensive Viva-Voce					100	04
Semester – IV							
1	Critical Theory	60	21	40	14	100	04
2	English Language	60	21	40	14	100	04
3	Disciple Centric Elective- **1]** American Literature **2]** Commonwealth Literature	60	21	40	14	100	04
4	Indian Writings in English (Generic Elective)	60	21	40	14	100	04
5	Comprehensive Viva-Voce					100	04




Grand Total - 2000

Objective:

The growth of English language and literature over the centuries from a totally different state- more in the condition ofa dialect in the earliest periods- to what it is in the present century should form the background knowledge of every student of English literature.

The objective of this course is to introduce the music and beauty of the English sounds and vocabulary of the earliest period in English literary history to the students to enable them to have a historical perspective of the developments over the centuries. The course also introduces the great masters of the early period such as Chaucer, Spencer Donne, Milton, Marlowe and Shakespeare.

Introduction of poetic forms, and different movements evaluation of the impact of Romanticism and Victorianism on the development of English literature, with emphasis on development of literary form and literary modes of expression and an understanding of concepts of gender and women during these periods have been included

:

The task of inculcating a comparative awareness in the minds of the participants to realize its cultural significance in the globe as well as in states like India is central to the goal of this course. Inculcation of good text in literature and human values is the aim of this course.

PROGRAMME OUTCOMES

PO #	PROGRAMME OUTCOMES
PO 1	**Critical Thinking**: Take informed actions after identifying the assumptions that frame our thinking and actions, check out the degree to which these assumptions are accurate and valid, and look at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.
PO 2	**Effective Communication**: Speak, read, write and listen clearly in personand through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media andtechnology.
PO 3	**Social Interaction**: Elicit views of others, mediate disagreements and helpreach conclusions in group settings.
PO 4	**Effective Citizenship**: Demonstrate empathetic social concern and equity-centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
PO 5	**Ethics**: Recognize different value systems including your own, understandthe moral dimensions of your decisions, and accept responsibility for them.
PO 6	**Environment and Sustainability**: Understand the issues of environmental contexts and sustainable development.
PO 7	**Self-directed and Life-long Learning**: Acquire the ability to engage in independent and life-long learning in the broadest context of sociotechnological changes.

PROGRAMME SPECIFIC OUTCOMES (PSOs)

PSO1	Development of cognition and a healthy moral sense through incisive understanding of human motives and behaviors as gathered from in-depthstudy of literary texts and critical works.
PSO2	Ability to utilize the principles of Indian as well as western aesthetics, literary criticism and theory texts.
PSO3	Application of ICT in teaching and learning of English language and literature.
PSO4	Development of effective communicative skills in English and a literary and critical sense that would enable to them to think critically, write creatively,script effectively and edit texts successfully.
PSO5	Knowledge of various perspectives, literary movements and cultural trends inIndia and the world through literary and critical works in translation and its applicability for problem solving in personal, social and professional life.

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Class	-	M.A Previous
Subject	-	English Literature
Semester	-	I
Course	-	Drama
Paper	-	I
Marks	-	60 + 40 =100
	-	Theory + Internal Assessment

Objective:-

The objective is to explain the genre of drama to the student. As the foundation pillar of English literature, this papertalks about psychological nuances of English drama, Shakespearean drama and eras before and after it.

Unit-: 1.	Annotations (Any two out of four given passages selecting least one from each unit). A Brief literary history of English Drama.
Unit 2.	Non-English Drama: Sophocles: Oedipus Rex Kalidas: Abhigyana Shankuntalam. (English Translation, Sahítya Academy)
Unit-3	Shakespearean Tragedy:Hamlet Othello
Unit 4:	Other Shakespearean Plays:As you Like It The Tempest
Unit- 5:	Renaissance Drama: (Non-Shakespearean) Christopher Marlowe: Dr. Faustus John Webster: Duchess of Malfi

Books Recommended:

AC. Bradley	:	Shakespearean Tragedy.
H.B. Charlton	:	Shakespearean Comedy.Ram Vilas Sharma
	:	Shakespearean Tragedy. Allardyce Nicoll
	:	British Drama

Note: - The internal assessment will be based on a term paper written by the student and then its presentation

Outcome:

The Student will have an understanding of the origin of English drama and its deep psychological and literary value. Thestudent will have a better understanding of life as such.

CO1	Learner will understand the tradition of English literature of 16th century.
CO2	Learner will develop a clear understanding of Renaissance Humanism that provides the basis for the texts suggested
CO3	Learner will engage with the major genres and forms of English literature and develop fundamental skills required for close reading and critical thinking of the texts and concepts
C04	Learner will appreciate and analyze the poems and plays in the larger socio-political and religious contexts of the time.
CO5	Learner will learn about the Elizabethan drama

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As Amended in the BOS meeting held on 21/09/2020

Class	-	M.A. Previous
Subject	-	English Literature
Semester	-	I
Course	-	Fiction
Paper	-	II
Marks	-	60 + 40 =100
	-	Theory + Internal Assessment

Objective:-

The objective is to explain the beginning of early fiction. This paper talks about Indian and British fiction. It explore the genre of the fiction. We have tried to pickup interesting novels of different ages so as to lure the student into the worldof words.

Unit- 1: Early Prose Narrative. A Brief literary history of English Fiction.
Bana Bhatt: Kadambari Cervantes: Don Quixote

Unit-2 Picaresque Novel:
Henry Fielding: Tom Jones Daniel Defoe: Robinson Crusoe

Unit-3 Historical Novel
Walter Scott: Kenilworth
W.M. Thackeray: Henry Esmond

Unit- 4 Fiction by Women:
Jane Austen – Pride and PrejudiceCharlotte Bronte: Jane Eyre

Unit-5 19thCentury Realistic Novel
Charles Dickens: Great Expectations Zola: Nana

Book Recommended –

Walter Allen	: History of English Novel
David Daiches	: Critical Approaches to Literature
O.P. Budholia	: George Eliot: Art and Vision in Her Novels.
Austin Dobson	: Fielding
lan Watt	: The Rise of the Novel

Note: - The internal assessment will be based on a term paper written by the student and then its presentation

Outcome:-

The students learn the evolution of novels as a genre and discus its features. Students are asked todiscuss early novel narrative techniques characterisation, plot and themes.

CO1	Learner will trace the early history of print culture in England and the emergence of genre fiction
CO2	The student will learn the evaluation of novels as a genre and discuss its features.
CO3	Students are asked to discuss early novel narrative techniques characterization, plot and themes.
C04	Learner will link the changes in the English novels to changes brought about in similar settings
CO5	




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Class	-	M.A. Previous English LiteratureI
Subject	-	ProseIII
Semester	–	60 + 40 =100
Course	-	- Theory + Internal Assessment
Paper	-	
Marks	-	

Objective:-

It helps students yet acquainted with the richness of literature through representative works of biography, autobiography and essay. It also helps students to learn philosophical writing, political and social writing in prose.

Unit-1: Annotations (Any two out of four given passages selecting at least one from each unit).

Unit-2 **Biography and Autobiography:**
Gandhi – My Experiments with Truth (Chapter-1 and 2)Kamala Das: My Story (Fourth Chapter)

Unit 3: **Political and Social Writings:**
Plato: The Republic, Book II (First four chapters). Francis Bacon: of Truth, Of Studies, Of Revenge, of Love

Unit-4 **Philosophical Writings: J. Krishnamurti**

1. Individual and Society
2. Action and Idea.
3. What is Self?
4. What are We Seeking?

Unit-5 Bertrand Russell: True Success, WilliamHazlitt:

1. The ignorance of the Learned
2. The Indian Jugglers.

Books Recommended

Hugh Walker : The English Essay and Essayists.
Benson : The Art of Essay Writing J.Krishnamurti : The First and the Last Freedom

Note: - The internal assessment will be based on a term paper written by the student and then its presentation

Outcomes:-

The students discuss the effect of essay writing and autobiography. This Paper gives the students an idea of logical flowof thought in literature through the genre of prose.

CO1	the outline of the prose through the respective age
CO2	Describe and differentiate the varieties of prose of major Indian and western writers
CO3	Determine the prose style in detail.
C04	the students will learn the effect of essay writing an autobiography
CO5	the students will get an idea of logical flow of thought in literature through the genre of prose

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Class	-	M.A. Previous
Subject	-	English
Semester	-	I
Course	-	Poetry (GE)
Paper	-	IV
Marks	-	60 + 40 =100
-		Theory + Internal Assessment

Objective:-

The objective is to initiate the student into the realm of poetry. She should have knowledge and taste of basic genres ofpoetry. She should study excellent samples of all genres.

Unit- 1 Annotations (Any two out of four given passages. At least one to be selected, at least one from each unit). A brief literary history of English Poetry.

Unit- 2 **Epic Poetry:**
John Milton: Paradise Lost Book IValmiki: Ramayan (Sunder Kand)

Unit- 3 **Narrative Poetry:**
Geoffrey Chaucer: The Prolouge to the Canterbury Tales
S. T. Coleridge: Dejection: An Ode

Unit- 4 **Renaissance Poetry:**
William Shakespeare: Sonnets No. 23, 24, 26, 27, 31, 44
John Donne: The Good Morrow, Love's Alchemie, The Canonization, The Anniversarie.

Unit- 5 **Satarical Poetry:**
John Dryden: Absalom and Achitophel – Line 1 to Line 302Alexender Pope: The Rape of Lock – (cantos 1 & 2)

Books Recommended:-

Emile Legouis : Chaucer
EMW TilLyard : Milton
Compton Rickett : History of English LiteratureDavid Daiches : History of English Literature

Note: - The internal assessment will be based on a term paper written by the student and then its presentation

Outcomes:

The student will have an in depth idea of English poetry and its different genres. This course will work as a foundationfor understanding of poetry and its nuances.

CO1	the students will learn the genre of poetry in a specific era.
CO2	the students will learn to identify the poetry of major writers.
CO3	Learn to define various elements of poetry such as diction, tone, form, genre
C04	recognize and analyze poetic terms of different schools of poetry
CO5	Demonstrate poetry using poetic devices and metrical analysis.




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Class - M.A. Previous
Subjet - English Literature
Semester - II
Course - Drama
Paper - I
Marks - 60 + 40 =100
- Theory + Internal Assessment

Objective:-

This paper talks about different genres of drama. Students explore modern English drama.

Unit- 1: **Annotations :**
(Any two out of four given passages selecting at least one from eachunit)

Unit-2: **Restoration Drama:**
John Dryden: All For Love
William Congreve: The Way of the World

Unit-3: **Victorian Drama & Modern Drama**
G.B. Shaw: Man and Superman John Osborne – Look back in Anger

Unit 4 **Experimental Drama:**
Henric Ibsen: A Doll's House Bertolt Brecht: Mother Courage

Unit 5 **Indian Drama**
Girish Karnad: Tughlaq Mahesh Dattani: Final Solution

Books Recommended:

Frederick Lumley : Trends in 20th Century Drama.
Allardyce Nicoll : British Drama
Raymond Williams : Drama from Ibsen to Eliot
O.P. Budholia Critical Essays on Indian English Literature

Note: - The internal assessment will be based on a term paper written by the student and then its presentation

Outcomes:-

Students get to know non Shakespearen drama and compare Shakespearen style to other styles and methods.

CO1	Students will learn non Shakespearean drama and to compare Shakespearean drama with other forms
CO2	Students will learn restoration drama and its features
CO3	Students will learn Victorian drama and its features
C04	Students will learn Experiential drama and its features
CO5	




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Class	-	M.A. Previous
Subject	-	English Literature
Semester	-	II
Course	-	Fiction
Paper	-	II
Marks	-	60 + 40 =100

- Theory + Internal Assessment

Objectives:-

It introduces students to the texts that reflect a range of historical, cultural and aesthetic values. The course also reflectsaspects of instruction, entertainment, society, class and gender as perceived in the nineteenth century England. It also included a novel by Prem Chand.

Unit-1 **19th Century Fiction:**
Gustav Flaubert: Madarne Bovary
George Meredith: The Egoist

Unit-2: **Rural Novel:**
Thomas Hardy: Tess of the Durbervilles
Munshi Premchand: Godaan

Unit-3 **Psychological Novel**
Virginia Woolf: To the Light house
D.H. Lawrence: Sons and Lovers

Unit-4 **Naturalist Novel:**
Joseph Conrad: Lord Jim.
Earnest Hemingway: Old Man and the Sea

Unit-5 **Post Naturalist Novel:**
William Golding: Lord of the Flies.
Saul Bellow: Herzog

Books Recommended:-

SisirChattopadhyaya:	The Technique of the Modern English Novel.
A.S. Collins:	English Literature of the 20" Century
Arnold Kettle:	An Introduction to the English Novel.
David Daiches:	The Novel and the Modern World.
Dorothy Van Ghent:	The English Novel: Form and function

Ian Watt:	The Rise of the Novel.
SisirChatterjee:	Problems in Modern English Fiction.
Katherine Lever:	The English and the Reader
Wilbur L. Cross:	The English Novel
David Cecil:	Early Victorian Novelists.
S.S. Narula:	Galsworthy and the English Novel.

Note: - The internal assessment will be based on a term paper written by the student and then its presentation.

Outcomes:-

The outcome of the course is to initiate critical thinking on evaluation of various constructions of identity, such as age, class, religion and strata in society.

CO1	the students will evaluate various constructions of identity, age, class, religion and strata in society.
CO2	the students will learn about rural novels and its features
CO3	the students will learn about psychological novels and its features
C04	the students will learn about naturalist novels and its features
CO5	the students will learn about post-naturalist novels and its features

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Class	-	M.A. Previous
Subject	-	English
Semester	-	II
Course	-	Prose
Paper	-	III
Marks	-	60 + 40 =100
-		Theory + Internal Assessment

Objective:

The objective is to develop the taste of the student in English prose and give excellent reading material.

Unit- 1 Annotations (Any two out of four given passages. At least one to be selected at least one from each unit).

Unit-2 Boswell: The Life of Dr. Johnson (From Every man's Edition of Boswell's Lifeof Dr. Johnson London: J.M. Dent 1958 Vol. I, Introductory PP 5-11.
Addison : Choice of Hercules, Uses of the Spectators.

Unit -3 Oliver Goldsmith: The Man in Black.
Charles Lamb: New Year's Eve, A Bachelor's Complaint Against the Behaviour of Married People.

Unit_4 A.G. Gardiner: On the Rule of the Road, In Defence of Laziness. Robert Lynd: Back to the Desk; Forgetting; The Pleasures of Ignorance; I Tremble to Think

Unit-5 G.K. Chesterton: On Running after One's Hat, Patriotism and Sport.Hilaire Belloc: On Books, On preserving English

Books Recommended:-

R.P. Tiwari (ed) : A.G. Gardiner: Selected Essays.
Stuart Hodgson : A.G. Gardiner
G.S. Fraser : The Modern Writer and His World.

Note: - The internal assessment will be based on a term paper written by the student and then its presentation.

Outcome:

The Students will have a better understanding of English prose. She will feel the naturalness of English Prose.

CO1	the students will have a better understanding and feel naturalness of English prose
CO2	the students will be able to demonstrate different writing styles
CO3	the students will be able to compare different writing styles
C04	the students will be able to trace developments in writing styles
CO5	




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Subject	-	English Literature
Semester	-	II
Course	-	Poetry (GE)
PaperMarks	-	IV
	-	60 + 40 =100
	-	Theory + Internal Assessment

Objective

We expose learners to the changing trends in English poetry from pre-romantic to modern poetry. In this paper, we havepomes that touch modern, symbolic, victorian, and romantic poetry.

Unit – 1: **Pre - Romantic Poetry:**

Thomas Gray: The Bard, The Progress of Poesy.

William Blake: On Another Sorrow, From "Auguries of Innocence", The Poison Tree

Unit -2: **Romantic Poetry:**
W. Wordsworth: Tintern Abbey ; Ode on Intimations of Immortality
P.B. Shelley: Adonais
John Keats: Ode on a Grecian Urn, Ode to Autumn.

Unit-3 **Victorian Poetry:**
Alfred Tennyson: The Lotus Eaters
Robert Browning: The Last Ride Together, My last DuchessMatthew
Arnold: The Scholar Gypsy

Unit-4 **Symbolist Poetry:**
T.S. Eliot: The Waste Land
W.B. Yeats: The Second Coming;Philip Larkin – Church Going

Unit-5 **Modern Poetry**
W.H. Auden: Strange Meeting, The Shield of Achilles.
Dylan Thomas: Fern Hill, A Refusal to Mourn the Death of a child.

Books Recommended:

Desmond King	: Helle: Shelley- His Thought And Work, Macmillan, London
Graham Hough	: The Last Romantics
Humphrey House	: Coleridge
C.M. Bowra	: The Romantic Imagination

Note: - The internal assessment will be based on a term paper written by the student and then its

presentationOutcomes:

The students compare all genres of poetic form and discuss the glory of romantic poetry. They learn modern poetry andthey also discuss the themes of modern poetry. It develops the student's sense of understanding literature and poetry.

CO1	The students compare all genres of poetic form and discuss the glory of romantic poetry, pre romantic an modern poetry.
CO2	They learn modern poetry and they also discuss the themes of pre romantic and romantic poetry.
CO3	the students will develop the sense of understanding of Victorian poetry
C04	the students will develop the sense of understanding of symbolist poetry
CO5	the students will develop the sense of understanding of modern poetry

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Class	-	M.A.
Subject	-	English
Semester	-	III
Course	-	Critical Theory
Paper	-	I
Marks	-	60 + 40 =100
-		Theory + Internal Assessment

Objective:-

The course aims at facilitating basic knowledge in English critical tradition from the beginning. Assuch it begins with an introduction to classical literary theory.

Unit – 1	Natyashastra – Rasa Theory, Aristotle-Poetics (Butcher's Translation)
Unit – 2	Longinus – On the Sublime, Philip Sydney – Apology for Poetry.
Unit – 3	John Dryden : An Essay on Dramatic Poesy, Dr. Johnson Preface to Shakespeare.
Unit – 4	Wordsworth – Preface to the Lyrical Ballads; Coleridge – BiographiaLiteraria, Ch. XIII & XIV.
Unit – 5	Mathew Arnold – Essays in Criticism (Second Series); T.S. Eliot – Tradition and Individual Talent

Books Recommended : -

KapilKapoor	- Critical Theory
R.S. Pathak	- Literary Theory
Charusheel Singh	- Literary Theory, Linear Configurations
Butcher (tr.)	- Aristotle's Poetics
Scott James	- The Making of Literature
David Duiches	- Modern Criticism and Theory: A Reader (Long Man)
H. Adams and L. Searle (ed)	– Critical theory Since 1965 (Farida Stale University Press)
A.H. Giltert	- Literary Criticism Plato to Dryden
T. Eogleton	- Literary Theory : An Introduction (Blackwell Oxford, 19 Awadhesh Pratap Singh University, Rewa (M.P.), Govt. of M.P.

Note: - The internal assessment will be based on a term paper written by the student and then its presentation.

Outcomes:-

This course will equip the student to prepare himself / herself to lay the foundation for learning how to address the discursive and ideational aspects of literary texts. The study of critical theories will help the student in understandingliterature and life better.

CO1	understand the historical and philosophical contexts that led to the development of literary criticism and its practice in different traditions and periods.
CO2	earners will be able to grasp a wide range of literary philosophers and critics whose works had informed and shaped the discourse of literary theory
CO3	learners will be able to apply various theoretical frameworks and concepts to literary and cultural texts
C04	learners will be able to apply various theoretical frameworks and concepts to literary and cultural texts
CO5	learners will be able to evaluate and analyze strengths and limitations of critical/theoretical frameworks and arguments




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Class	-	M.A.
Subject	-	English Literature
Semester	-	III
Title of Subject of group paper	-	English Language
Paper	-	II
Max. Marks	-	60 + 40 =100
	-	Theory + Internal Assessment

OBJECTIVE

To enable the students to get an insight into the study of language and its socio-cultural variables.

Particulars

Unit – 1	Definition, Functions, Characteristics, Development of English Language
Unit – 2	Language Variations, Register, Style and Dialect, Approaches to the Study of Language Synchronic and Diachronic
Unit – 3	Definition of Phonetics and Phonology Difference between Phonetics and Phonology, Organs of Speech.
Unit – 4	Phonomes, Allophones, Phonetic, Symbols for Sound in RP.
Unit – 5	Basics of Transformational Generic Grammar: Nature and Charactcristics.

Suggested Readings:

Verma and Krishnamurty: Modern Linguistics : An Introduction (O.U.P. 1989)

A.C. Gimson : As Introduction to the Pronounciationof English.

P.K. BansalandJ.B. Harison : Spoken English for India.

GeoffreyLeech : A Lingustic Guide to English Poetry (Longuman, London 1969)David Crystal : Linguistics

(Penguin)

Geoffrey Leech and Jan Svartvic : A Communicative Grammar of English

Note: - The internal assessment will be based on a term paper written by the student and then its presentation.

Outcomes:-

In this paper students develop an understanding of the concepts, theories, and methodologies used in linguistics.

CO1	recognize/understand the structure and various parts of the language
CO2	understand the existence of language in the form of different dialects based on a set of established factors
CO3	identify the various functions a language performs and the roles assigned to it
C04	understand that all languages behave alike and develop a tolerance for other languages
CO5	understand that making errors is a process of learning and not hesitate to uselanguage for the fear of making errors

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Post Graduate Semester Wise Syllabus
Session 2020-21
As Amended in the BOS meeting held on 21/09/2020

Class	-	M.A.
Subject	-	English Literature
Semester	-	III
Title of Subject of group paper	-	American Literature (**D**isciple Centric Elective)
Paper	-	III (1)
Max. Marks	-	60 + 40 =100
	-	Theory + Internal Assessment

Objective:

The present course is an introductory course that enables the students to understand the character, flavour and ethos ofthe American literature. A second aim is to initiate critical knowledge of the major literary innovations and cultural issues of the 19th and 20th century America.

Particulars

Unit – 1	Annotations: Six Passages selection at least two from Units II, III and IV each to be set, two to be attempted.
Unit – 2	Prose Emerson : American Scholar.
Unit – 3	Poetry Walt Whitman : O Captain, My Captain; Song of Myself; When Lilacs last in the Dooryard Bloomed, I Celebrate Myself. Robert Frost: After Apple Picking, Birches, The Road not taken.
Unit – 4	Drama: Arthur Miller – All my Sons Harlod Pinter : The Caretaker
Unit – 5	Fiction: Mark Twain: Huckleberry Finn.

Books Recommended:

1] History of American Literature Goodman.
2] Walt Whitman by D. Dhawale.
3] Cycle of American Literature by Rober Spiller.

Note: - The internal assessment will be based on a term paper written by the student and then its presentation.

Outcome:

The student develops an understanding of American Literature.

CO1	critically engage with the complex nature of American society, given its journeyfrom specific religious obligations and their literary transformations (such as Puritanism, Unitarianism, Transcendentalism, etc.) to the growth of anti- or non-Christian sensibilities
CO2	explore and understand the nature of the relationships of human beings to other human beings and other life forms in relation to representative literary texts in various genres
CO3	analyze the American mind from global and Indian perspectives and situate the American in the contemporary world
C04	understand the depth and diversity of American literature, keeping in mind the history and culture of the United States of America
CO5	critically appreciate the diversity of American literature in the light of regional variations in climate, cultural traits, economic priorities

Awadhesh Pratap Singh University, Rewa (M.P.),
Post Graduate Semester Wise Syllabus
Session 2020-21
As Amended in the BOS meeting held on 21/09/2020

Class	-	M.A.
Subject	-	English Literature
Semester	-	III
Title of Subject of group paper	-	Commonwealth Literature in English (**D**isciple Centric Elective)
Paper	-	III (2)
Max. Marks	-	60 + 40 =100
	-	Theory + Internal Assessment

Objective:

The objective is to make the students experience the diversity and richness of current English Literature.

Particulars

Unit – 1	Canadian Poetry Margaret Atwood : (1) This is a photograph of me. (2) Tricks with Mirrors.
Unit – 2	Canadian Fiction Margaratee Laurence : The Stone Angel
Unit – 3	British Novel Doris Lessing : The Grass is Singing
Unit – 4	Carribean Novel George Lamming : In the Castle of my Skin.
Unit – 5	Australian Novel Patrick White : A Fringe of Leaves.

Books Recommended:

1] R.K. Dhawan ed. Commonwealth Literature in English.
2] Alloriginal works by the prescribed authors.

Note: - The internal assessment will be based on a term paper written by the student and then its presentation.

Outcome:

The student gets the taste of English literature being written in different countries.

CO1	explain the eco-socio-political-cultural context of the age that produced Indianclassical literature from its early beginning till 1100 AD
CO2	To appreciate the pluralistic and inclusive nature of Indian classical literature and its attributes
CO3	historically situate the classical literature and diverse literary cultures from India, mainly from Sanskrit, but also Tamil, Prakrit and Pali by focusing on major texts inthe principal genres
CO4	To trace the evolution of literary culture(s) in India in its/their contexts, issues of genres, themes and critical cultures
CO5	To understand, analyze and appreciate various texts with comparative perspectives




Awadhesh Pratap Singh University, Rewa (M.P.),
Post Graduate Semester Wise Syllabus
Session 2020-21
As Amended in the BOS meeting held on 21/09/2020

Class	-	M.A.
Subject	-	English Literature
Semester	-	III
Title of Subject of group paper	-	Indian Writing in English (Generic Elective)
Paper	-	IV
Max. Marks	-	60 + 40 =100
	-	Theory + Internal Assessment

Objective:

The aim of this paper is to make the learner aware of Indian sensibility in the representative works. **Particulars**

Unit – 1	Annotations : Six Passages selecting at least two from Unit II, III and IV will be given and two to be attempted.
Unit – 2	Sri Aurobindo : Savitri Book 1 conto I. R.N. Tagore : Geetanjali – poems 1 to 10 (Mc-Millianedition).
Unit – 3	APJ Abdul Kalam : Wings of Fire
Unit – 4	Tendulkar : Silence, The court is in session Mohan Rakesh : Halfway House, (Basu, K Dilip ed. New Delhi: Wordview Publication, 2006)
Unit – 5	M.R. Anand : Untouchable R.K. Narain: The English Teacher

Books Recommended :

K.R.S. Lyengar. - Indian Writings in English

Meenakshi - Twice Born Fiction

A.N. Dwivedi - Kamala Dass Thompson
- Tagore

O.P. Budholia - Anita Desai: Vision and Technique in her Novels. M.K. Maik (ed.)

- History of Indian English Literature

Note: - The internal assessment will be based on a term paper written by the student and then its presentation.

Outcome:

Students get to know the beauty and depth of modern Indian English literautre.

CO1	Student will know the beauty and depth of modern Indian English literature
CO2	critically engage with Indian literary texts written in English in terms of colonialism/postcolonialism, regionalism, and nationalism
CO3	approach IWE from multiple positions based on historical and social locations
C04	critically appreciate the creative use of the English language in different genres of IWE
CO5	appreciate and analyze the poems and plays in the larger socio-political and religious contexts of the time.

Awadhesh Pratap Singh University, Rewa (M.P.),
Post Graduate Semester Wise Syllabus
Session 2020-21
As Amended in the BOS meeting held on 21/09/2020

Class	-	M.A.
Subject	-	English
Semester	-	IV
Course	-	Critical Theory
Paper	-	I
Marks	-	60 + 40 =100
-		Theory + Internal Assessment

Objective

This course provides students with grounding in some of the major theoretical methodologies in literary studies.

Particulars

Unit – 1	AnandVardhan : Dhwani Theory. F.R. Leavis : Literary Criticism and Philosophy
Unit – 2	I.A. Richards : Two Uses of Language. J.C. Ransom : Concept of Structure and Texture of Poetry.
Unit – 3	Ferdinand Saussure : Nature of Linguistic Sign J. Derrida : Structure, Sign and Play in the Discourse of Human Sciences.
Unit – 4	Edward Said : Crisis (The Scope of Orientalism)Gayatri Chakravorty Spivak: Can the Subaltern Speak.
Unit – 5	Virginia Woolf : A Room of one's own Elaine Showalter : Towards a Feminist Poetics

Book Recommended:

Kapil Kapoor	: Critical Theory.
R.S. Pathak	: Literary Theory.
Charusheel Singh	: Literary Theory, Linear Configuration.
Butcher (tr)	: Aristotle's Poetics.
Scott James	: The making of Literature.
David Daiches	: Critical Approaches to English Literature.
H.Adams and L. Searle (Ed.)	: Critical Theory since 1965 (Florida State University Press).
A.H. Gilbert	: Literary Criticism Plato to Dryden.
T. Eagleton	: Literary Theory : An Introduction (Black well, Oxford, 1983).

Note: - The internal assessment will be based on a term paper written by the student and then its presentation.

Outcome

Students read complex literary texts deeply and critically.

C01	Learner will have knowledge of Indian an western literary tradition
CO2	Learner will have knowledge of critical theory
CO3	Learner will have knowledge of literary critical philosophy
CO4	Learner will be able to evaluate and analyze strengths and limitations of theories
CO5	Learner will have knowledge of interpretive skills

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Post Graduate Semester Wise Syllabus
Session 2020-21
As Amended in the BOS meeting held on 21/09/2020

Class	-	M.A.
Subject	-	English Literature
Semester	-	IV
Title of Subject of group paper	-	English Language
Paper	-	II
Max. Marks	-	60 + 40 =100
	-	Theory + Internal Assessment

Objective

The objective is to enhance the learning and teaching skills of English of the students.

Particulars

Unit – 1	Morphology Morpheme, Allomorph, Word formation.
Unit – 2	Linguistic Analysis I.C. Analysis & Ambiguities.
Unit – 3	Phonology Sound sequences: Syllable, Word Stress, Strong and Weak forms, Stress and Intonation.
Unit – 4	Grammar Sentence types and their transformation relations : (a) Statement (b) Question, (c) Negative, (d) Passive, (e) Imperative.
Unit – 5	Grammar Word classes: Noun Phrase, Verb Phrase, Adjunct Phrase, Syntax Coordination, Subordination, Relative Clauses, Adverbials, Determiners, Article Features, Concord.

Books Recommended:

1] Verma and Krishnaswamy : Modern Linguistics : An Introduction (O.U.P. 1989)
2] A.C. Gimson : An Introduction to the pronunciation of English.
3] R.K. Bansal and J.B. Harrison : Spoken English for India.
4] Geoffrey Leech : A Linguistic Guide to English Poetry (Longman, London 1969)
5] David Crystal : Linguistics (Penguin)
6] Geoffrey Leech and Jan Svartvic : A Communicative Grammar of English.

Note: - The internal assessment will be based on a term paper written by the student and then its presentation.

Outcome:

The students will learn English language in a scientific and systematic manner.

C01	Students will recognize/understand the structure and various parts of the language
CO2	Students will understand the existence of language in the form of different dialects based on a set of established factor
CO3	Students will identify the various functions a language performs and the roles assigned to it
CO4	Students will understand that all languages behave alike and develop a tolerance for other languages
CO5	Students will understand that making errors is a process of learning and not hesitate to use language for the fear of making errors

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Post Graduate Semester Wise Syllabus
Session 2020-21
As Amended in the BOS meeting held on 21/09/2020

Class	-	M.A.
Subject	-	English Literature
Semester	-	IV
Title of Subject of group paper	-	American Literature (**D**esciple Centric Elective)
Paper	-	III (1)
Max. Marks	-	60 + 40 =100
	-	Theory + Internal Assessment

Objective:

This Course aims to provide the learner an overall idea of what American Literature is and help the learner see thedifferences between major American writing.

Particulars

Unit – 1	Annotations: (Six Passages selection at least two from Unit II, III and IV each to be set, two to be attempted.)
Unit – 2	Prose R.W. Emerson : American Scholar H.D. Thoreau : Civil Disobedience
Unit – 3	Poetry Emily Dickinson : Because I could not stop for Death, I taste a Liquor Never Brewed, Lightin Spring, This is my letter to the world. Sylvia Plath: Daddy, Lady Lizarus, The Bee Meeting.
Unit – 4	Drama: Tenessee Williams: The Glass Menageric. Eugene O'Neill : Mourning Becomes Electra.
Unit – 5	Fiction: Ernest Hemingway : For whom the Bell Tolls Steinbeck : of Mice and Men.

Books Recommended:

1] History of American Literature Goodman.
2] Cycle of American Literature by Robet Spiller.

Note: - The internal assessment will be based on a term paper written by the student and then its presentation.

Outcome:

The learners will develop a taste for American prose writings, major essays and will also enjoy typical American Poetry.The learners will be motivated to read American Fiction.

C01	Learners will understand the depth and diversity of American literature, keeping in mind the history and culture of the United States of America from the colonial periodto the present (17th century to 21st century)
CO2	Learners will know about social-cultural-ecological-political contexts may, for example, include the idea of democracy, Millennial Narratives, the Myth of Success, the American dream
CO3	Learners will critically appreciate the diversity of American literature in the light of regional variations in climate, cultural traits, economic priorities
CO4	Learners will explore and understand the nature of the relationships of human beings to other human beings and other life forms in relation to representative literary textsin various genres
CO5	Learners will analyze the American mind from global and Indian perspectives and situate the American in the contemporary world

Awadhesh Pratap Singh University, Rewa (M.P.),
Post Graduate Semester Wise Syllabus
Session 2020-21
As Amended in the BOS meeting held on 21/09/2020

Class	-	M.A.
Subject	-	English Literature
Semester	-	IV
Title of Subject of group paper	-	Commonwealth Literature in English (**D**isciple Centric Elective)
Paper	-	III (2)
Max. Marks	-	60 + 40 =100
	-	Theory + Internal Assessment

Objective:

The aim of this paper is to make students know and experience the literature from commonwealth countries.

Particulars

Unit – 1	Canadian Poetry Michael Ondaatje : (1) The Cinnamon Peeker. : (2) To a Sad Daughter.
Unit – 2	Canadian Fiction Margaret Atwood : Surfacing
Unit – 3	The African Novel Nadime Gordimer : July's People Chinua Achebe : Arrow of God.
Unit – 4	Australian and Caribbean Novel V.S. Naipaul : A House of Mr. Biswas. ElizabethJolley : My Father's Moon.
Unit – 5	Canadian Drama Sharan Pollock : Walsh Draw Heydon Taylor : Alternatives

Books Recommended:

1] R.K. Dhawaned. Commonwealth Literature in English.
2] Alloriginal works by the prescribed authors.

Note: - The internal assessment will be based on a term paper written by the student and then its presentation.

Outcome

Students read and understand the basics of Commonwealth Literature.

CO1	explain the eco-socio-political-cultural context of the age that produced Indianclassical literature from its early beginning till 1100 AD
CO2	To appreciate the pluralistic and inclusive nature of Indian classical literature and its attributes
CO3	historically situate the classical literature and diverse literary cultures from India, mainly from Sanskrit, but also Tamil, Prakrit and Pali by focusing on major texts inthe principal genres
CO4	To trace the evolution of literary culture(s) in India in its/their contexts, issues of genres, themes and critical cultures
CO5	To understand, analyze and appreciate various texts with comparative perspectives

Awadhesh Pratap Singh University, Rewa (M.P.),
Post Graduate Semester Wise Syllabus
Session 2020-21
As Amended in the BOS meeting held on 21/09/2020

Class	-	M.A.
Subject	-	English Literature
Semester	-	IV
Title of Subject of group paper	-	Indian Writing in English (Generic Elective)
Paper	-	IV
Max. Marks	-	60 + 40 =100
	-	Theory + Internal Assessment

Objective:

The aim of this course is to give basic knowledge about Indian English literature and Indian Literature in translation.

Particulars

Unit – 1	Annotations: Six Passages selection at least two from Unit II, III and IV will be given and two to be attempted.
Unit – 2	(1) Vishnu Sharma : Panchatantra (Book) (2) MunshiPremchand : The Shroud (Kafan)
Unit – 3	(1) Sarojini Naidu (All poems of each poet in V.K. Gokak ed. (2) Kamala Das (Golden Treasure of Indo – Anglian Poetry- Sahitya Academy)
Unit – 4	(1) M.R. Anand : Untouchable (2) R.K. Narayan : The English Teacher
Unit – 5	(1) AmitavGhosh : The Shadow Lines (2) ShashiDeshpande : That Long Silence

Books Recommended:

1] K.R.S. lyengar : Indian Writings in English
2] M.K. Naik : History of Indian English Literature.
3] M.K. Naik (ed) :Perspectives on Indian Drama in English
4] Meenakshi Mukharjee : Twice Born Fiction.
5] Thompson : Tagore.
6] O.P. Budholia : Anita Desai: Vision and Techniques in her Novels.

Note: - The internal assessment will be based on a term paper written by the student and then its presentation.

Outcome

The students will know the essence of Indian writing in English and will also get the taste of Indian Literature in translation.

C01	Learners will appreciate the historical trajectory of various genres of IWE from colonial times till the present
CO2	Learners will critically engage with Indian literary texts written in English in terms of colonialism/postcolonialism, regionalism, and nationalism
CO3	Learners will critically appreciate the creative use of the English language in IWE
CO4	Learners will approach IWE from multiple positions based on historical and social locations
CO5	Learners will know the essence of Indian writing in English an also get the taste of Indian literature in translation

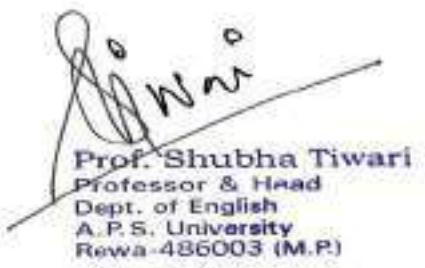
AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.) 486003

Pre-Ph.D. Course Work

Syllabus

ENGLISH

Paper Code	Name of the Paper	Credit	MM	Min.
Ph.D. 101	Research Methodology	04	100	55
Ph.D. 102	Review of Literature	03	100	55
Ph.D. 103	Computer Application	03	100	55
Ph.D. 104	An Overview of Literature in English	03	100	55
Ph.D. 105	Comprehensive Viva-Voce	03	100	55
	Total Credits	16	600	275



AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.) 486003

Pre-Ph.D. Course Work

Syllabus

ENGLISH

PAPER - I [RESEARCH METHODOLOGY]

M.M.-100 **Passing Marks – 55** **Credits– 04**

UNIT- I : BASICS OF RESEARCH **25**

a] Research : Definition, Meaning, Objectives and Types

b] The Philosophy of Research: Nature of Inquiry in Physical Sciences, Social Sciences and Humanities.

c] Research Procedure in Literature and Linguistics

d] Broad Principles of Research

UNIT – II: PREPARATION FOR RESEARCH **25**

a] Choice of a Subject : Identification of a Topic

b] Survey of Relevant Literature and Critical Material.

c] Preparation and Presentation of a Research Project/Proposal.

d] Consulting Libraries, Collecting Material, Preparing Bibliographies, Primary and Secondary Sources.

e] Preparation of a Research Paper/Term Paper/Dissertation/ Thesis from first to the final draft.

UNIT–III : THE MECHANICS OF RESEARCH WRITING **25**

a] The Mechanics of Research Writing

b] Norms, Conventions and Formats of Research Writing.

c] Suitable Style for a Literary Thesis : Narration, Argumentation, Exposition and Description.

d] Task for the Participants to Prepare a Research Proposal

UNIT-IV : ETHICS OF RESEARCH **25**

a] Ethics of Research

b] Challenges faced by the Research Scholar

c] Specific Problems and Solutions Keeping the Indian Research Scene in Mind.

Prof. Shubha Tiwari
Professor & Head
Dept. of English
A.P.S. University
Rewa-486003 (M.P.)

PAPER - II [REVIEW OF LITERATURE]

M.M.-100 **Passing Marks – 55** **Credits– 03**

The participants will be asked to prepare a review of the specific topic and critical material related to that topic in about 2000 words. The Supervisor will allot marks in Review of Literature in Consultation with the Department keeping in view the attendance of the participant.

PAPER - III [COMPUTER APPLICATION]

M.M.-100 **Passing Marks – 55** **Credits– 03**

Unit – I: Learning and Research in Literature 25

Unit – II: Correct and Fruitful use of Internet in Material Collection. 25

Unit – III: Proper use of different Software's. 25

Unit – IV: Consultation and Access to Web Resources-e-journals, Research sites, payment modes, web indexcs, mail discussion groups, virtual libraries and web search engines.

PAPER - IV [AN OVERVIEW OF LITERATURE IN ENGLISH]

M.M.-100 **Passing Marks – 55** **Credits– 03**

a] Literatures in English : British, America, Indian, Australian, Canadian and others. 25

b] Critical Theories. 25

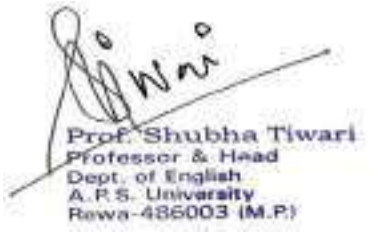
c] Literary Movements. 25

d] Literary Ages with special reference to British, American and Indian Writing in English. 25

PAPER - V [COMPREHENSIVE VICA-VOCE]

M.M.-100 **Passing Marks – 55** **Credits– 03**

Each candidate will appear in a comprehensive vica-voce before a panel of the faculty of the Department headed by the H.O.D. and will be allotted marks.



CENTRE FOR BIOTECHNOLOGY & MICROBIOLOGY STUDIES, SCHOOL OF ENVIRONMENTAL BIOLOGY, A.P.S. UNIVERSITY, REWA (M.P.)

B.Sc. (Hon's) BIOTECHNOLOGY

PROGRAMME OUTCOME

PO#	PROGRAMME OUTCOME
PO1	Bachelor course in biotechnology offers the synergism of basic concepts of biology, biotechnology, molecular biology, genomics, Recombinant DNA technology, microbiology, biochemistry and bioinformatics with technological applications.
PO2	The main objective of this degree course is to produce graduates with enhanced skills, knowledge and research aptitude to carry out higher studies, entrepreneurship or research and development in the various health, research and industrial areas.
PO3	Develop proficiency in application of current aspects of biotechnology, molecular biology, Recombinant DNA technology, bioinformatics and genomics. Prepares the students for immediate entry to the workplace with sound theoretical, experimental knowledge in the area of health and pharmaceuticals, biochemicals, biofuel, environment related, food and dairy, cosmetics, biopolymers and related multidisciplinary fields.
PO4	Overall, the course offers basic foundation in biotechnology which enables the students to understand the concepts in biochemistry, molecular biology, microbiology, genetic engineering and related industrial technology.
PO5	Students will be able to design, execute, record and analyse the results of experiments in field of molecular biology, genomics,, Recombinant DNA technology, biochemistry, microbiology and genetic engineering.
PO6	Students will be able to work effectively in a group in the classroom, laboratory, industries and fieldbased situations.
PO 7	Become efficient in using standard operating procedures and will be well versed with the regulationsfor safe handling and use of chemicals as well as IPR and biosafety issues related to experiments in field of biochemistry, microbiology and genetic engineering.

(Program Outcomes)

PSOs

(Program Specific Outcomes)

PSO #	**PROGRAMME SPECIFIC OUTCOME**
PSO 1	Critical Thinking- Students will demonstrate an understanding of major concepts in all disciplines of biology, biochemistry, biotechnology microbiology and bioinformatics. Understand the basic concepts, fundamental principles, and the scientific theories related to various scientific phenomena and their relevancies in the day-to-day life.
PSO 2	Effective Communication- Development of various communication skills such as reading, listening, speaking, etc., which will help in expressing ideas and views clearly and effectively.
PSO 3	Social Interaction- Development of scientific outlook not only with respect to science subjects but also in all aspects related to life
PSO 4	Effective Citizenship- Imbibe moral and social values in personal and social life leading to highly cultured and civilized personality.

Course Outcome (COs)

S.No.	Course Name	Course Code
	Semester-I	
101	**Cell Biology**	C1
	Course Outcome	
CO1	Develop an understanding of the Cytoskeleton, Microtubules, microfilaments and Cell Membrane.	
CO2	Distinguish between the cellular organization of prokaryotic and eukaryotic cells	
CO3	Would have deeper understanding of cell at structural and functional level.	
CO4	Would have broad knowledge on the molecular interaction between cells.	
CO5	Would demonstrate a clear understanding of the signal transduction, secondary messengers.	
102	**Animal Biodiversity 1**	C2
	Course Outcome	
CO1	To understand diversity in animal kingdom	
CO2	will be able to understand role of protozoa in human and bacterial disease	
CO3	Study of Insects belongs to largest Phyllum Arthropoda and associated diseases.	
CO4	Student will be able to identify the zoological samples belongs to different phyllums.	
CO5	Students will study the habitat and adaptations found in organisms.	
103	**Chemistry -1**	GEC1
	Course Outcome	
C01	Students will be informed about atomic structure	
C02	After studying this course students will have better understanding of chemical bonding	

C03	Students will be informed about periodic table and s p d block elements	
C04	Students will be aware about thermodynamics and solid state	
CO5	students will have better understanding of chemical analysis and structure	
104	**English**	AECC1
	Course Outcome	
C01	To enhance all the four communication skills in the students-- listening, speaking, reading and writing.	
C02	To familiarize the students with the nature and importance of effective communication skills in their professional life.	
C03	To make the students capable of actively participating in various individual/group communications such as group discussion, debate, meeting, presentation etc.	
C04	To enrich the vocabulary of the students to make them efficient communicators.	
C05	To strengthen the Grammar of the students.	
	SEMESTER -II	
201	**Genetics & Molecular Biology**	C3
	Course Outcome	
C01	Concept of gene, pseudogene, cryptic gene and split gene	
C02	DNA replication and regulation in prokaryotes and eukaryotes	
C03	Transcription in prokaryotes and eukaryotes, Translation in prokaryotes and eukaryotes	
C04	Post translation and transcriptional mechanism.	
C05	Gene expression in prokaryotes using Lac operon and Trp operon.	
202	**Animal Biodiversity 2**	C4
	Course Outcome	
CO1	To understand higher animal kingdom	
CO2	will be able to understand phyllum chordata	

CO3	Study of mammals	
CO4	Student will be able to identify the zoological samples belongs to different phylum.	
CO5	will study the nomenclature of animals and underatand	
203	**Chemistry 2**	GEC2
	Course Outcome	
C01	Students will be informed biomolecules	
C02	After studying this course students will have better understanding of carbohydrate lipid protein	
C03	Students will be informed about structure of DNA/RNA	
C04	Students will be aware about thermodynamics and solid state	
CO5	Students will be informed molecular arrangements	
204	**Environmental Studies**	AECC2
	Course Outcome	
C01	Have knowledge of the Modern fuels and their environmental impact – Methanogenic bacteria, Biogas, Microbial hydrogen Production, Conversion of sugar to alcohol Gasohol.	
C02	Comprehend the Structural and Functional dynamics of microbes, their diversity, activity and growth, community profiling their uses as biosensors, bioreporters, Microchips. Also know about Methanogenesis: methonogenic, acetogenic and fermentive bacteria	
C03	Have knowledge of treatment of municipal waste and Industrial effluents, Biofertilizers: Role of symbiotic and asymbiotic nitrogen fixing bacteria in the enrichment of soil, algal and fungal biofertilizers (VAM).	
C04	Have basic understanding of Enrichment of ores by microorganisms (gold, copper, and Uranium),	
CO5	Environmental significance of Genetically modified microbes, plants and	

	animals.	
	SEMESTER-III	
301	**Bio-analytical Tools**	C5
	Course Outcome	
C01	Concept of electromagnetic radiation, absorption spectrum, Beer's law and Lamberts law, Principle, working and applications of spectrophotometer and AAS	
C02	Concepts of chromatography and concept of partition coefficient	
C03	Principle, methodology and application of various chromatographic techniques	
C04	Centrifugation and Electrophoresis-Principles and applications	
CO5	Importance of radioactivity in biological studies, GM counters and Scintillation counting.	
302	**Plant Biotechnology**	C6
	Course Outcome	
C01	Have a strong foundation of basics of botany. Study of physiology of plants.	
C02	The students will get proper knowledge about the media preparation for In-vitro propagation of plants and different aseptic techniques used during preparation.	
C03	The students will learn the role of techniques haploid plant production and its significance.	
C04	The students will learn about the protoplast isolation and somatic hybridization of protoplast and its application.	
C05	The students will learn about the transgenic plants and different strategies to make recombinant and its application.	
303	**Biochemistry & Metabolism**	GEC3
	Course Outcome	
C01	Characteristic of Enzymes, enzyme inhibition and kinetics	
C02	Carbohydrate metabolism, significance of glycolysis and ETC, untreated diabetes	

C03	Lipid metabolism and production of ketone bodies	
C04	CO4 Protein metabolism, role of urea cycle and errors of protein metabolism	
C05	Basics Biomolecules and secondary metabolism	
304	**Industrial Fermentation**	SEC1
	Course Outcome	
C01	Understand the basics of industrial fermentation technology	
C02	Have knowledge of fermentation medium and sterilization techniques	
C03	Have knowledge of Industrial fermentation process, types of fermentation	
C04	Know the process development, upstream and downstream processing	
C05	Understand the production of Industrial fermented products	
	SEMESTER-IV	
401	**Immunology**	C7
	Course Outcome	
C01	Know the history and scope of Immunology.	
C02	Understand the types of Immunity: Passive, Active, Innate and Acquired immunity, Humoral and Cell Mediated Immunity and the cell and organs of immune responses and their functions, B & T cells.	
C03	Have basic knowledge of Antigens as haptens, epitopes and Factors influencing immunogenicity, and Antibodies as their Structure, types, production and functions of immunoglobulins also about Clonal selection theory and Antigen Antibody reactions as Precipitation, Immunoelectrophoresis, Haem-agglutination, RIA and ELISA.	
C04	Comprehend Histocompatibility, structure of MHC class I, II & III antigens and their mode of antigen presentation, MHC restriction Complement system: Components, Classical and alternate pathways of complement activation, Hypersensitivity, Autoimmunity	
C05	Understand Passive and Active immunization, Types of Vaccines: Inactivated, Attenuated, Recombinant and Sub Unit Vaccines, Peptide and DNA Vaccines	

402	**General Microbiology & Physiology**	C8
	Course Outcome	

CO1	Study of Basics of microbiology & Basics of Recombination in Prokaryotes	
CO2	General Classification of microbes	
CO3	Basics of Control of Microorganisms	
CO4	Study of bacteriophages and microbes in extreme environments and microbial interactions	
CO5	General Classification of microbes, viruses and fungal kingdom	
403	**Biotechnology & Human Welfare**	GEC4
	Course Outcome	
CO1	Get knowledge about classification of pathogenic microbes, protozoal parasites, and medical bacteriology.	
CO2	Get to know about viral diseases and medical mycology and preventive measures.	
CO3	To understand how blood cell are formed, blood cancer, about brain as well as brain tumour. Pathology of AIDS, Japanese encephalitis, yellow fever, dengue and TB.	
CO4	To understand various therapeutics measures including antibiotics.	
CO5	To get knowledge about medico-legal aspects of medical biotechnology	
404	**Molecular Diagnostics**	**SEC2**
	Course Outcome	
C01	Molecular diagnostics are used to identify infectious diseases such as chlamydia, influenza virusand tuberculosis or specific strains such as H1N1 virus or SARS-CoV-2.	
C02	Molecular diagnostics are also used to understand the specific strain of the pathogen—for example by detecting which drug resistance genes it possesses—and hence which therapies to avoid	
C03	In addition, assays based on metagenomic next generation sequencing can be implemented to identify pathogenic organisms without bias.	
C04	Molecular diagnostics is a more sensitive method allowing detection of lower amounts of infectious agents and therefore giving the ability to detect infections earlier than was previously possible.	

CO5	This ability is especially significant in blood screening.	
	SEMESTER -V	
501	**RECOMBINANT DNA TECHNOLOGY**	C9
	Course Outcome	
C01	Students get proper knowledge about the DNA manipulative enzymes: Restriction enzymes and DNA ligases, and Gene cloning vectors.	
C02	learn about screening and selection of recombinant host cells, Expression of cloned DNA	
C03	Learn about the basics of Electrophoretic techniques, Polymerase chain reaction (PCR), Site directed mutagenesis (SDM), Nucleic acid sequencing: Blotting techniques.	
C04	Students will have knowledge of Application of r-DNA technique in human health, Production of Insulin, Production of recombinant vaccines: Hepatitis B, Production of human growth hormone.	
CO5	learn about screening and selection of recombinant host cells, Gene Libraries, cloning techniques,	
502	**Environmental Biotechnology**	DSE1
	Course Outcome	
C01	CO1 Have knowledge of the Modern fuels and their environmental impact – Methanogenic bacteria, Biogas, Microbial hydrogen Production, Conversion of sugar to alcohol Gasohol.	
C02	Comprehend the Structural and Functional dynamics of microbes, their diversity, activity and growth, community profiling their uses as biosensors, bioreporters, Microchips. Also know about Methanogenesis: methonogenic, acetogenic and fermentive bacteria- technical processes and conditions	
C03	Gain insight on Bioremediation and Phytoremediation of soil & water contaminated with oil spills, heavy metals and detergents and use of microbes in degradation of lignin and cellulose using and of pesticides and other toxic chemicals by micro-organisms, Degradation of aromatic and chlorinated	

	hydrocarbons and petroleum products.	
C04	Have knowledge of treatment of municipal waste and Industrial effluents, Biofertilizers: Role of symbiotic and asymbiotic nitrogen fixing bacteria in the enrichment of soil, algal and fungal biofertilizers (VAM).	
CO5	Have knowledge of Degradation of aromatic and chlorinated hydrocarbons and petroleum products.	
503	**Animal Biotechnology**	SEC3
	Course Outcome	
C01	Students get proper knowledge about the history and Scope of Animal Tissue Culture, Culture Media, Simulating natural conditions for growth of animal cells. Have knowledge of Production and Applications of monoclonal antibodies, and Transgenic Animals	
C02	gain knowledge about Primary Culture, cell lines and Secondary Culture, transformed animal cells and continuous cell lines. Monolayer formation, Synchronization.	
C03	learn about transfection of animal cell lines, Selectable makers and Transplantation of Cultural Cells. Microinjection, In vitro fertilization and Stem cell technology.	
C05	learn about the basics of expression of Cloned proteins in animal cell and Production of Vaccines in animal Cells.	
	Field Project & Training-1 **(Bioprocess Technology)**	
	Course outcome	
CO1	Bioprocess technology itself is very important and job oriented branch of Biotechnology. The student will be aware of fermentation and its basics	
CO2	The student will have hands on experience in drug/antibiotic production at industrial level.	
	SEMESTER-VI	
601	**Developmental Biology**	C10
	Course Outcome	

C01	Student will learn how a single cell becomes an organized grouping of cells that is then programmed at specific times to become specialized for certain tasks.	
C02	While embryonic development involves a series of highly controlled and coordinated steps, cancer exhibits a lack of cellular control.	
C03	Part of the "nature vs. nurture" paradigm involves non-genetic mechanisms that play a role in switching on and off various genes during development. IRP scientists are at the forefront of research into the importance of chromatin and epigenetics in many aspects of development and disease, including potential uses in gene therapies.	
C04	Learn the importance of chromatin and epigenetics in many aspects of development and disease, including potential uses in gene therapies.	
CO5	Understanding the key regulatory pathways behind development may point the way towards therapies designed to modulate disrupted pathways.	
602	**FORENSIC SCIENCE**	DSE2
	Course Outcome	
C01	Study of basics of Forensic sciences Human DNA quantization	
C02	Alternative genetic markers & Compromised DNA evidence	
C03	Mitochondrial DNA and Non-human DNA	
C04	Y-chromosome analysis, Microbial analysis, Sperm detection and separation	
CO5	Miniaturization and automation	
603	**MEDICAL MICROBIOLOGY**	DSE3
	Course Outcome	
C01	Get knowledge about classification of pathogenic microbes, protozoal parasites, and medical bacteriology.	
C02	Get to know about viral diseases and medical mycology and preventive measures.	
C03	To understand how blood cell are formed, blood cancer, about brain as well as brain	

C04	tumour. Pathology of AIDS, Japanese encephalitis, yellow fever, dengue and TB.	
CO5	learn medical mycology and preventive measures.	
604	**Field Project & Training 2** **(Genomics & Proteomics)**	
	Course Outcome	
C01	This course will consolidate the learning, knowledge and skills in the area of genomics and proteomics that have already taken place as well as developing the capability of the students to undertake and complete an academic research to apply what is learned in theory.	
C02	The course will develop the critical thinking, , problem solving, research and communication skills of the participants.	
C03	They will be able to raise a research question, answer it and write about its findings	
C04	Development of crucial skills among the participants will help them in boosting their employability	
	SEMESTER-VII **Enzymology**	C11
CO1	To describe the different models of enzyme catalysis and the mechanisms for its assessment	
CO2	To explain various methods for identifying active site residues	
CO3	To illustrate the several methods for the enzyme regulation	
CO4	To appreciate the applicability of enzymology in various industries for growth and sustainability	
CO5	To develop skill for analyzing kinetic data of enzyme substrate reaction	
	Bioethics & Bio-safety	DSE4

CO 1	To evaluate, understand and become aware of the risk factors and ethical issues associated with inbreeding in humans and pre-natal diagnosis of genetic diseases.	
CO2	Students will be informed about the safety measures and levels of laboratory.	
CO3	Students will be aware about the ethical issues and laws associated with laboratory and research	
CO4	Students will learn the research protocols and its importance's	
CO5	Students will learn the consequences of research copying	
	Research Methodology	C12
CO1	To enable to promulgate the understanding of formulating, pursuing and analyzing research benefitting human development	
CO2	To sensitize students regarding the ethics of conducting research by enabling in-depth understanding of plagiarism	
CO3	To impart necessary traits to analyze, compare, logically criticize and evaluate biological data	
CO4	To developing competitive acumen to use modern-age computer programs to analyze and represent research data	
CO 5	To be able to develop and elevate skills of scientific writing to present research interpretations in a form of research paper, presentation, book chapters and short communication	
	Field Project & Training	
CO1	The students will be supervised to go to the fields of their interest and learn the basics of research work	
C03	They will be able to raise a research question, answer it and write about its findings	
C04	Development of crucial skills among the participants will help them in	

	boosting their employability	
	SEMESTER-VIII **Medical Biotechnology**	C13
CO1	Improrttance of Biotechnology in development of medicines	
CO2	Role of genes in development of disease	
CO3	Production of genetic and recombinant vaccines.	
CO4	Production and uses of monoclonal antibodies	
CO5	Basics of gene therapy and research in the area	
	Biostatistics & Bioinformatics	C14
CO1	To expose students to use computational power to evaluate biological information	
CO2	Acquire skills to retrieve information from biological data-bases, analyze it and further remodel protein and genes to create their phylogeny	
CO3	To impart necessary traits to analyze, compare,	
CO4	To developing competitive acumen to use modern-age computer programs to analyze and represent research dat	
CO5	logically criticize and evaluate biological data	
	Research Project	
CO1	students would be able to learn how to design the objectives or experiment.	
CO2:	students would be able to learn the different techniques through experimental design.	
CO 3:	students would be able to analyze the data through statistical software.	

CO 4:	students would be able to gain the knowledge of basic research.	
CO5:	students would be able to think independently in various research areas and design of experiment so that they will absorb in various pharmaceutical industries and research lab in the country and abroad.	

B.Sc. (Hon's) BIOTECHNOLOGY

BSc. BIOTECHNOLOGY SEM-1				
S.No.	**Paper code**	**PAPER NAME**	**PAPER CATEGORY**	**CREDIT**
1.	C1	Cell Biology	MAJOR	06
2.	C2	Animal Diversity -1	MINOR	06
3.	GEC1	Chemistry -1	GEC	04
4.	AECC1	English	AECC	04
5.				
BSc. BIOTECHNOLOGY SEM-2				
		PAPER NAME	**PAPER CATEGORY**	**CREDIT**
	C3	Genetics & Molecular Biology	MAJOR	06
	C4	Animal Diversity -2	MINOR	06
	GEC2	Chemistry -2	GEC	04
	AECC2	Environmental Studies	AECC	04
BSc. BIOTECHNOLOGY SEM-3				
		PAPER NAME	**PAPER CATEGORY**	**CREDIT**
	C5	Bio-analytical Tools	MAJOR	06
	C6	Plant Biotechnology	MINOR	06
	GEC3	Biochemistry & Metabolism	GEC	04
	SEC1	Industrial Fermentation	SEC	04
BSc. BIOTECHNOLOGY SEM-4				
		PAPER NAME	**PAPER CATEGORY**	**CREDIT**
	C7	Immunology	MAJOR	06
	C8	General Microbiology & Physiology	MINOR	06
	GEC4	Biotechnology & Human Welfare	GEC	04
	SEC2	Molecular Diagnostics	SEC	04
BSc. BIOTECHNOLOGY SEM-5				
		PAPER NAME	**PAPER CATEGORY**	**CREDIT**
	C9	Recombinant DNA Technology	Major	06

	DSE1	Environmental Biotechnology	DSE	04
	SEC3	Animal Biotechnology	SEC	04
		Field Project & Training-1 (Bioprocess Technology)		06
BSc. BIOTECHNOLOGY SEM-6				
		PAPER NAME	**PAPER CATEGORY**	**CREDIT**
	C10	Developmental Biology	Major	06
	DSE2	Forensic Science	DSE	04
	DSE3	Medical Microbiology	DSE	04
		Field Project & Training 2 (Genomics & Proteomics)		06
BSc. BIOTECHNOLOGY SEM-7				
		Paper Name	**PAPER CATEGORY**	**CREDIT**
	C11	Enzymology	MAJOR	06
	DSE4	Bioethics & Bio-safety	DSE	04
	C12	Research Methodology	Minor	04
		Field Project & Training 3 (……)		06
BSc. BIOTECHNOLOGY SEM-8				
		Paper Name	**PAPER CATEGORY**	**CREDIT**
	C13	Medical Biotechnology	MAJOR	06
	C14	Biostatistics & Bioinformatics	MINOR	04
		Research Project (……)		10

ABBREVATION:

CC- CORE COURSE (MAJOR/MINOR) DSE- DISCIPLINE SPECIFIC ELECTIVE

SEC- SKILL ENHANCMENT COURSE AECC-ABILITY ENHANCMENT COMPULSORY COURSE GEC- GENERIC ELECTIVE COURSE

s.no.	Class	Paper	Category	Credit
BT-101	**BSc Biotechnology 1st**	**Cell Biology**	**MAJOR**	**06**

Unit-1

Introduction, Scope and Importance, History of Cytology. Prokaryotic cell, Eukaryotic cell(Plant and Animal Cell). Structure of cell wall.

Plasma membrane: structure and functions (simple diffusion, facilitated diffusion, activetransport, endocytosis, pinocytosis, phagocytois, and exocytosis).

Unit-2

Structure and functions of mitochondria, chloroplast, Structure and functions of Endoplasmic reticulum, Endoplasmic reticulum targeting proteins, protein folding and processing in ER, Targeting of lysosomal protein. Structure and function of Golgi complex, Protein Glycosylation within the Golgi. Structure and functions of Ribosome. Lysosome and Inracellular digestion.

Unit-3

The nucleus and nucleolus. structure and classification of Chromosomes. Chromosome structure and its types. Lampbrush and Polytene Chromosomes.**Cellular reproduction:** Cell cycle- mitosis and meiosis.

Unit-4

Cell Motility and Shape I: Structure and function of microfilaments and Intermediate Filaments. Molecular Mechanisms of Cell-Cell Adhesions. Extracellular Matrix of animals, Cell signaling. Introduction and application of stem cells.

Unit-5

General introduction of Cancer, Apoptosis and necrosis.

Techniques in cell biology: chromosomal banding techniques. Principles and applications of light microscope and electron microscope (Scanning and transmission). Karyotyping and Idiogram.

s.no.	Class	Paper	Category	Credit
BT-102	BSc Biotechnology 1st	Animal Diversity -1	Minor	06

Paper-2nd (BT-102)

Animal Diversity -1

Unit-1

Elementary Knowledge of Zoological Nomenclature and International Code. Classification of Lower Invertebrates (According to Parker and Haswell 7th edition) Classification of Higher Invertebrates (According to Parker and Haswell 7th edition) Protozoa- Type, Study of Plasmodium, Protozoa and Diseases.

Unit-2

Porifera- Type study of Sycon.Types of Canal system.

Coelenterata- Type study of ObeliaCorals and Coral Reef formation.

Unit-3

Helminthes- Type study of Liver Fluke.Nematodes and diseases.

Annelida- Type study of earthworm , metamerism.Type Study of Hirudinaria.

Structure and significance of Trochophore larva.

Unit-4

Arthropoda- Type study of Prawn.Types study of Periplanata.

Larval forms of Crustacea.

Insect as Vectors of human diseases.

Unit-5

Mollusca- Type study of Pila

Echinodermata- External features and water vascular system of Star fish. Larval forms of Echinoderms.

Minor Phyla – Ectoprocta & Rotifera.

COURSE OUTCOMES

After completion of the course, a student will be able to COURSE OUTCOME

s.no.	Class	Paper	Category	Credit
BT-103	BSc Biotechnology 1st	Chemistry -1	GEC	04

Paper- 3rd

Chemistry -1

Unit-1

Atomic Structure: Idea of de Broglie matter wave, Heisenberg uncertainty principle, atomic orbital's, Quantum numbers, shapes of s, p, d orbitals, Trends in periodic table and applications in predicting and explaining the physical and chemical behaviors. Atomic radii, ionic radii, ionization energy, electron affinity and electro negativity.

Unit-2

Chemical Bonding: Valence bond theory and its limitations ,directional characteristics of covalent bond, various types of hybridization and shapes of simple inorganic molecules and ions, Valence shell electron pair repulsion (VSEPR) theory, homonuclear and heteronuclear (CO and NO) diatomic molecules, Weak interactions, Hydrogen bonding, van der Waal forces.

Unit-3

s - Block elements: Comparative study, diagonal relationships, salient features of Hydrides, Solvation and complexation tendencies. **p- Block elements:** Comparative study of groups 13–17 elements, compounds like hydrides, oxides, halides of group 13-16, basic properties of halogens, inter halogens and polyhalides. **d- blocks elements**: First transition series - Properties of the elements of the first transition series, stability of their oxidation states, coordination number. Second and Third transition series – General characteristics, comparative treatments with their 3d- analogues in respect of ionic radii, oxidation state and magnetic property.

Unit-4

Thermodynamics- Principles, Kirchhoff's equation, calculation of w, q, ΔU, ΔH, The Hender- Hasselbatch equation, of thermodynamics, Enthalpy, Second law of

thermodynamics, Entropy free energy, chemical equilibrium, law of mass sction, Le chatlier's principles.

Different States: Structural differences between - solids, liquids and gases. Intermolecular forces, Definition of space lattice, unit cell. Bragg's equation. crystal structure of NaCl, KCl and CsCl, Ideal and non ideal solutions, methods of expressing concentration of solutions, Acid-Baseconcept.

Unit-5

Chemical kinetics & its scope, Rate of reaction, factors influencing the rate of reactions, zero order, second order, pseudo order, half life & mean life, various theories of chemical kinetics, Arrhenious equation & catalysis.

Solution, ideal & non ideal solution, Different methods of concentration expression, raoult's law

S.No.	Class	Paper	Category	Credit
BT-104	BSc Biotechnology 1st	English	AECC	04

English Communication

1. Introduction: Theory of Communication, Types and modes of Communication

2. Language of Communication:

Verbal and Non-verbal (Spoken and Written)

Personal, Social and Business Barriers and Strategies

Intra-personal, Inter-personal and Group communication

3. Speaking Skills:

Monologue

Dialogue

Group Discussion

Effective Communication/ Mis- Communication

Interview

Public Speech

4. Reading and Understanding

Close Reading

Comprehension

Summary Paraphrasing

Analysis and Interpretation

Translation(from Indian language to English and vice-versa)

Literary/Knowledge Texts

5. Writing Skills

Documenting

Report Writing

Making notes

Letter writing

BSc. BIOTECHNOLOGY SEM-2

S.No.	CLASS	PAPER NAME	PAPER CATEGORY	CREDIT
BT-201	**BSc. BIOTECHNOLOGY SEM-2**	Genetics & Molecular Biology	MAJOR	06

Genetics & Molecular Biology

Unit-1

Importance of Genetics, Gene, allele, genotype and phenotype.

Mendelian laws of inheritance, Monohybrid cross, Law of Dominance and the law ofsegregation, Dihybrid cross and law of independent assortment.

Interactions of genes, complementary genes, reversions , lethal genes, epistasis.Multiple

alleles, Blood groups, Rh factor.

Unit-2

Sex linked inheritance**:** X linkage, sex linkage in man, color blindness, Hemophilia (Bleeder's disease) and other genetic diseases.

Characteristics of X linked inheritance.

Y linked inheritance in Man, Inheritance of X-Y linked Genes. Human genetics (pedigree analysis, karyotypes and genetic disorder).

Unit-3

Structure of prokaryotic and eukaryotic genomes. Molecular basis of life.

Nucleic acids as genetic material.Structure of DNA and its alternative forms.

Structure and Types of RNA. DNA replication in prokaryotes (enzymology and process)

Unit-4

Prokaryotic gene expression: Prokaryotic transcription, Genetic code

Prokaryotic translation. Regulation of gene expression: Operon concept (Lac and Trp operon)

Unit-5

DNA recombination: molecular mechanisms

Mutation (point mutation, frame shift mutation) chromosomal aberration and DNA repair.

Oncogenes and Tumor Suppressor Genes: Properties and Significance

Insertion elements and transposons.

S.No.	CLASS	PAPER NAME	PAPER CATEGORY	CREDIT

BT-202	**BSc. BIOTECHNOLOGY SEM-2**	**Animal Diversity -2**	**MINOR**	**06**

Animal Diversity -2

Unit-1

Origin of Chordates Classification of phylum Chordata upto orders according to Parker and Haswell (Latest edition).

Hemichordata – External features and affinities of Balanoglossus. Urochordata – Type study of Herdmania.

Cephalochordata – Type study of Amphioxus. Affinities of Amphioxus.

Unit-2

Comparative account of limb bones and girdles of vertebrates (Amphibia, Reptiles, Birds andMammals).

Comparative account of digestive system. Comparative account of respiratory system. Comparative account of aortic arches and heart.Comparative account of brain

Placentation in mammals.

Unit-3

Origan of life- modern concepts only.Lamarckism, Darwinism.

Modern synthetic theories: Variations, Mutation, Isolation & speciationAdaptation and mimicry Micro, macro evolution and mega evolution.

Unit-4

Aquaculture

Prawn culture: Culture of fresh water prawn, methods of prawn fishing , preservation and processing ofprawns.

Pearl culture and pear industry. Major carp culture : Management of ponds , preservation and processing of fishes.Maintenance of Aquarium.

Unit-5

Economic Entomology

Sericulture: Species of silkworm, life history of *Bombyx mori*, Sericulture Industry in India. Apiculture – Life cycle of the species methods of bee keeping, products of bees, enemies of bees.Lac culture: Lifecycle, and association with the host plant. Biological control of insect pests.

S.No.	CLASS	PAPER NAME	PAPER CATEGORY	CREDIT
BT-203	**BSc. BIOTECHNOLOGY SEM-2**	**Chemistry -2**	**GEC**	**04**

Chemistry -2

(Basics of Organic Chemistry)

Unit-1

Structure of Organic compounds, bond length, bond angle, Hydrogen bond, Resonance, Electronic effects, inductive, Mesomeric, Electromeric & Hyperconjugation. Nucleophiles and Electrophiles, Reaction intermediates Carbonium ions, Carbanions, Free radicals and Carbenes, Homolytic fission and Heterolytic fission.

Unit-2

Introduction, Nomenclature, Isomerism, Preparation and General Properties of Aliphatic hydrocarbons, Alkanes, Alkenes and Alkynes, Cycloalkanes,

Unit-3

Introduction, Nomenclature, Preperation and general properties of Alcohols, Phenols, Aldehydeand Ketones. Aromaticity.

Unit-4

Carbohydrates(monosaccarides, diasaccarides and polysaccharides) : classification and general properties, Glucose and fructose (open chain and cyclic structure), Overview of primary, secondary, tertiary and Quaternary structure of proteins. Introduction, glycerides, synthetic detergents, Introduction, classification of amino acids

Unit-5

Stereochemistry: Simple molecules , Hybridization, conformation & configuration, Geometricalisomerism, optical isomerism, Chirality, Enantiomers and optical activity

S.No.	CLASS	PAPER NAME	PAPER CATEGORY	CREDIT
BT-204	BSc. BIOTECHNOLOGY SEM-2	Environmental Studies	AECC	04

Environmental Studies

Unit 1- The multidisciplinary nature of Environmental Studies, Definitions, scopes & importance, need for public awareness. Natural resources:, renewable & non renewable resources, natural resources & associated problems of forest, water, minerals, food, energy & land resources. Conservation of natural resources, Environmental Ethics:, issues & possible solutions, water conservation, rain water

harvesting & watershed management, resettlements & rehabilitation of peoples.

Unit 2- Ecosystems; Concept of an ecosystem, structure & function of an ecosystem, energy flow in the ecosystem, ecological succession, food chain, food webs & ecological pyramids. Types, characteristic features, structure & function of following ecosystem; forest ecosystem, grassland ecosystem, desert ecosystem, aquatic ecosystem (ponds, streams, lakes, rivers, oceans, estuaries etc.)

Unit 3- Concepts of Biodiversity**:** Definition of Genetic species & ecosystem diversity, biogeographical classification of india- value of diversity: consumptive use, productive use, social, ethical, Aesthetic & option values. Biodiversity at global, national & local levels. Hotspotof diversity, threats to biodiversity: habitat loss, poaching of wild life, man wild life conflicts. Endangered & endemic species of india, conservation of biodiversity.

Unit 4- Definition of environmental pollution, causes, effects, & control measures of air, water, soil, marines, thermal & noise pollution. Climate Change: global warming, acid rain, ozone layer depletion & nuclear accidents. Solid Waste management: causes, effect & control measures of urban & industrial wastes. Role of an individual in prevention of pollution.

Unit 5- Disaster managements: Floods, earthquakes, cyclones, & landslides. Waste lands reclamation, Consumerism & waste product. Population explosion: family welfare programmes, environment & human health, HIV/AIDS: Role of information technology in environmental & human health. Environmental legislation: environment protection act. Air(prevention & control of pollution) Act. Water (prevention & control of pollution) Act. Wild life protection Act. Forest conservation Act.

S.No.	CLASS	PAPER NAME	PAPER CATEGORY	CREDIT
BT- 301	BSc. BIOTECHNOLOGY SEM-3	Bio-analytical Tools	MAJOR	06

Bio-analytical Tools

Unit-1

PH Metter, Buffer, Handerson and
Hasselblach equation,Titration of weak
acid and weak bases.
Tracer Technique.

Unit-2

Spectroscopic Technique:Principle and its applications- UV, visible and Fluorescencespectr

Unit-3

Chromatographic Technique: Principle and its Application, Types(Adsorption and PartitionChromatography). Paper, Thin layer, Ion-Exchange, HPLC.

Unit - 4

1Centrifugation Technique,
Electrophoresis of DNA, proteins
and enzymes.Southern, northern
and western blotting

Unit-5

DNA Fingerprinting (VNTR) PCR and its different variations.DNA sequencing

S.No.	CLASS	PAPER NAME	PAPER CATEGORY	CREDIT
BT- 302	**BSc. BIOTECHNOLOGY SEM-3**	**Plant Biotechnology**	**MINOR**	**06**

Plant Biotechnology

UNIT I

Plant Tissue Culture: Basic aspects of plant biotechnology (History, application, scope and importance), laboratory and culture media for plant tissue culture, cell Culture and its applications.

Clonal Propagation and Protoplast Culture: Micro propagation, Somaclonal Variation, Production and uses of Haploids**,** Protoplast isolation, Regeneration of plant, Somatic Hybridization

UNIT II

Gene Transfer in Plants: Vectors of gene transfer (Plasmids, Agrobacterium and Virus vector) Transformation technique (Agrobacterium mediated gene transfer, DNA mediated gene transfer (DMGT) Removal of selected Marker Genes from Transgenic Plants, Regulatory sequences of induced genes.

Transgenic Plant resistance against Stress: Development of herbicide resistant transgenic plant, Development of insect resistant transgenic plant, Transgenic plant resistance against virus, bacterial and fungal pathogens, transgenic plant resistance against abiotic stress.

UNIT III

Genetically Modified Crops and Floricultural Plants: Transgenic plants with improved crop productivity, Transgenic plants with improved nutritional quality, Transgenic plants for Floriculture.

Molecular Farming:

Transgenic Plants for Value Added Specialty Crops, Transgenic Plants for Edible Vaccines, Transgenic Plants for Antibodies and Transgenic Plants for Biopharmaceuticals

UNIT IV

Transgenic Plants for Biosafety: Biosafety regulations of Transgenic Crops, Commercialization of Transgenic plants, quality modifications of plants (Modification of starch quality, modification and futureof oil quality and modification of seed protein quality).

Choloroplast Engineering: plants Engineering of Chloroplast Genome, Transformation of choloroplast genome in higher plants, Transplastomic Plants and its applications (in Tabacco, Patato, Rice, Tomato etc.)

UNIT V

Construction of Molecular Maps: Preparation of Genetic Maps, (cereals, millets, sugarcane, cotton, Soyabean, Pea, Sunflower, etc.), Molecular genetics maps of high density plants, Uses of molecular genetics maps.

Genomics: Microcllinearity in DNA Sequences of Small Genomic Regions, Thale cress genome, Rice (Oryza Sativa).

S.No.	CLASS	**PAPER NAME**	**PAPER CATEGORY**	**CREDIT**

BT- 303	**BSc. BIOTECHNOLOGY SEM-3**	Biochemistry & Metabolism	GEC	04

Biochemistry & Metabolism

Unit-1

The foundation of biochemistry: Biochemical organization of Cell, Intra and inter molecular forces electrostatic interactions and Hydrogen bonding interaction, Vander Waals and Hydrophobic interactions, Disulphide bridges, Role of water and weak interactions, Chemical foundations of Biology- pH, pK, acids, bases, buffers, weak bonds & Covalent bonds.

Unit-2

1. **Carbohydrate:** Classification, Structure & functions.
2. **Lipid:** Classification, nomenclature, structure and properties, Role of lipids in biological system.
3. **Amino Acids:** Classification, structure, properties, Biological important of Amino Acids

Unit-3

1. **Proteins:** Structural organization (Primary, Secondary, Tertiary and Quaternary structure), α helix, β pleated, Biological role of Proteins. Enzyme as a biological catalyst.
2. Structure, function and properties, types of Nucleic Acid (Nucleotide, DNA, RNA), Ribozymes.

Unit-4

1. Basic Concept & Law of thermodynamics. Role of ATP in Metabolism.
2. Metabolism of Glucose- Glycolysis , intermediate Metabolism, Krebs Cycle, Electron Transport chain.
3. Metabolism of lipids

Unit-5

1. Carbohydrate Metabolism in plants.

C_3. C_4, CAM Cycle, Pentose Phosphate Pathway.

2. Metabolism of Amino Acids.

S.No.	CLASS	PAPER NAME	PAPER CATEGORY	CREDIT
BT- 304	**BSc. BIOTECHNOLOGY SEM-3**	**Industrial Fermentation**	**SEC**	**04**

Industrial Fermentation

UNIT I

Isolation and Culture of microorganisms: History, scope and importance of industrial biotechnology, isolation, screening, culture and preservation of microorganism, strain improvement.

Fermentation Technology: Bioreactor design, and operation types of fermenters, Fermentation media, Batch. Fed batch, continuous culture system, *Insitu* recovery of products.

UNIT II

Alcohol and acid Production: Industrial production of alcoholic beverages vinegar, Ethanol, organic acids, Amino acids and Antibiotics.

Enzyme Production: Properties and types of enzymes, Enzymes production, types and application, immobilization of Enzymes, Enzyme/protein Engineering, industrial processing: (Down stream processing, recovery, extraction and purification of fermentation products).

UNIT III

Dairy Industry: Fermented foods cheese production, use of enzymes in food industry, processing of milk and dairy products (Pasteurized milk, sterilized milk, cream and butter), enzymes in fruit juice and brewing industries (Fruit Juice and Wines, Beer), single cell protein.

Polymer and colloid production: Microbial and algal polysaccharides and polyesters production, (Production of Hydrocolloids and polyhdroxyalkonoides) Mass culture technique for algae, primary and secondary metabolites of microorganism and plants.

UNIT IV

Drug Discovery and Designing: History and molecular aspects of drug discovery, drug discovery in cancer, microbial genomics for new antibiotics, drug designing.

Metabolic engineering: Cloning and expression of heterologous genes, molecular breeding of Bio synthetic pathways, metabolomics and metabolic engineering, limitations in metabolic engineering.

UNIT V

Fuel biotechnology: Concept scope and importance of bio-fuels, bio-ethanol, bio-diesel, bio-hydrogen and biogas. **Bio-pesticides:** Microbial insecticides (Types Production and uses) Bio-pesticides (Types production and uses) principles and objectives of integrated nutrient management, biofertilizer

S.No.	CLASS	PAPER NAME	PAPER CATEGORY	CREDIT
BT- 401	**BSc. BIOTECHNOLOGY SEM-4**	**Immunology**	**Major**	**06**

Immunology

UNIT I

Immunity and Immune response: Innate immune and characteristics of adaptive immune Responses, Hematopoiesis. Anatomical organization of Immune System: Primary Lymphoid Organs, Secondary Lymphoid Organs, Cell of immune system: Mononuclear cells and

granulocyte, Antigen presenting cells, lymphocytes and their subsets.

UNIT II

Inflammation: its mediator and the process, cell-adhesion molecules and their role in Inflammation, role of anaphylatoxins, granulocyte in inflammatory process.
Major histocompatibility systems:

UNIT III

Antigen: Properties, types and determinants of antigenicity, Heptanes: Factor affecting immunogenicity, Super antigen.
Antibody: Nature, Types and Structure of Immunoglobulin and Their Functions. Antigen-Antibody interaction avidity and affinity.

UNIT IV

Monoclonal antibodies: production, characterization and application .Compliment System, components, Activation pathway and regulation.Hypersensitivity and its types.

UNIT V

Autoimmunity and Immunodeficiency SyndromeVaccines: Active and passive immunization.
Immunotechniques: Immunodifusion, Immunoprecipitation, ELISA, RIA.

S.No.	CLASS	PAPER NAME	PAPER CATEGORY	CREDIT
BT- 402	BSc. BIOTECHNOLOGY SEM-4	General Microbiology & Physiology	Minor	06

General Microbiology & Physiology

UNIT I

Fundamentals, History and Evolution of Microbiology.

Classification of microorganisms: Microbial taxonomy, criteria used including molecular approaches, Microbial phylogeny and current classification of bacteria.

Microbial Diversity: Distribution and characterization Prokaryotic and Eukaryotic cells, Morphology and cell structure of major groups of microorganisms eg. Bacteria, Algae, Fungi, Protozoa and Unique features of viruses.

UNIT II

Cultivation and Maintenance of microorganisms: Nutritional categories of micro-organisms (autotrophs, hetrotrophs, chemotrophs), methods of isolation, Purification and preservation.

UNIT III

Microbial growth: Growth curve, Generation time, synchronous batch and continuous culture,measurement of growth and factors affecting growth of bacteria.

Microbial Metabolism: Metabolic pathways, amphi-catabolic and biosynthetic pathways Bacterial Reproduction: Transformation, Transduction and Conjugation. Endospores andsporulation in bacteria.

UNIT IV

Control of Microorganisms: By physical, chemical and chemotherapeutic Agents

Water Microbiology: Bacterial pollutants of water, coliforms and non coliforms. Sewage composition and its disposal.

Food Microbiology: Important microorganism in food Microbiology: Moulds, Yeasts, bacteria. Major food born infections and intoxications, Preservation of various types of foods. Fermented Foods.

Unit V

Phototrophic metabolism: anoxygenic & oxygenic photosynthesis, Photosynthetic pigments physiology of bacterial photosynthesis cyclic & non cyclic phosphorylation carbon dioxide fixation, calvin cycle. Methanogens.

S.No.	CLASS	**PAPER NAME**	**PAPER CATEGORY**	**CREDIT**
BT- 403	**BSc. BIOTECHNOLOGY SEM-4**	Biotechnology & Human Welfare	GEC	04

Biotechnology & Human Welfare

UNIT I

Industry: protein engineering; enzyme and polysaccharide synthesis, activity and secretion, alcohol and antibiotic formation.

UNIT II

Agriculture: N2 fixation: transfer of pest resistance genes to plants; interaction between plants and microbes; qualitative improvement of livestock.

UNIT III

Environments: e.g. chlorinated and non-chlorinated organ pollutant degradation; degradation of hydrocarbons and agricultural wastes, stress management, development of biodegradable polymers such as PHB.

UNIT IV

Forensic science: e.g. solving violent crimes such as murder and rape; solving claims of paternityand theft etc. using various methods of DNA finger printing.

UNIT V

Health: e.g. development of non-toxic therapeutic agents, recombinant live vaccines, gene therapy, diagnostics, monoclonal in *E.coli*, human genome project.

S.No.	CLASS	**PAPER NAME**	**PAPER CATEGORY**	**CREDIT**
BT- 404	**BSc. BIOTECHNOLOGY SEM-4**	Molecular Diagnostics	GEC	04

MOLECULAR DIAGNOSTICS

UNIT I

Enzyme Immunoassays:

Comparison of enzymes available for enzyme immunoassays, conjugation of enzymes.

Solid phases used in enzyme immunoassays. Homogeneous and heterogeneous enzyme immunoassays. Enzyme immunoassays after immuno blotting. Enzyme immuno histochemical techniques. Use of polyclonal or monoclonal antibodies in enzymes immuno assays.

Applications of enzyme immunoassays in diagnostic microbiology

UNIT II

Molecular methods in clinical microbiology:

Applications of PCR, RFLP, Nuclear hybridization methods, Single nucleotide polymorphism and plasmid finger printing in clinical microbiology

Laboratory tests in chemotherapy:

Susceptibility tests: Micro-dilution and macro-dilution broth procedures. Susceptibility tests: Diffusion test procedures. Susceptibility tests: Tests for bactericidal activity. Automated procedures for antimicrobial susceptibility tests.

UNIT III

Automation in microbial diagnosis, rapid diagnostic approach including technical purification and standardization of antigen and specific antibodies. Concepts and methods in idiotypes. Antiidiotypes and molecular mimicry and receptors. Epitope design and applications. Immunodiagnostic tests. Immuno florescence. Radioimmunoassay.

UNIT IV

GLC, HPLC, Electron microscopy, flowcytometry and

cell sorting.Transgenic animals.

Unit V:

PCR based molecular diagnosis, genotyping, Single nucleotide polymorphism

Lethal disease diagnosis i. e. sickle cell anemia

Genetic councelling and treatment stratigies.

S.No.	CLASS	**PAPER NAME**	**PAPER CATEGORY**	**CREDIT**
BT- 501	**BSc. BIOTECHNOLOGY SEM-5**	Recombinant DNA Technology	Major	06

RECOMBINANT DNA TECHNOLOGY

UNIT I

Molecular tools and applications- restriction enzymes, ligases, polymerases, alkaline phosphatase. Gene Recombination and Gene transfer: Transformation, Episomes, Plasmids and other cloning vectors (Bacteriophage-derived vectors, artificial chromosomes), Microinjection, Electroporation, Ultrasonication, Principle and applications of Polymerase chain reaction (PCR), primer-design, and RT- (Reverse transcription) PCR.

UNIT II

Restriction and modification system, restriction mapping. Southern and Northern hybridization. Preparation and comparison of Genomic and cDNA library, screening of recombinants, reverse transcription,. Genome mapping, DNA fingerprinting, Applications of Genetic Engineering Genetic engineering in animals: Production and applications of transgenic mice, role of ES cells in gene targeting in mice, Therapeutic products produced by genetic engineering-blood proteins, human hormones, immune modulators and vaccines (one example each).

UNIT III

Random and site-directed mutagenesis: Primer extension and PCR based methods of site directed mutagenesis, Random mutagenesis, Gene shuffling, production of chimeric proteins, Protein engineering concepts and examples (any two).

UNIT IV

Genetic engineering in plants: Use of *Agrobacterium tumefaciens* and A. rhizogenes, Ti plasmids, Strategies for gene transfer to plant cells, Direct DNA transfer to plants, Gene targeting in plants, Use of plant viruses as episomal expression vectors.

UNIT V

S.No.	CLASS	**PAPER NAME**	**PAPER CATEGORY**	**CREDIT**
BT- 502	**BSc. BIOTECHNOLOGY SEM-5**	Environmental Biotechnology	DSE	04

Environmental Biotechnology

UNIT I

Basic concepts of Environment: Basic concept of Environment & its component

(Origin of earth, atmosphere, life & ecosystem), Scope & importance of environmental biotechnology.

Global Environmental Problems: Ozone depletion, UV- B, Green House Effect, Acid Rain, Climate change

UNIT II

Environmental Monitoring: Methods for sampling & measurement of air pollution, methods for sampling & measurement of water pollution, methods for sampling & measurement of soil pollution, permissible limits & indices for pollution.

Environmental Pollution & Control: sources, effects & control of air pollution, noise pollution, thermal pollution, water pollution, soil & solid waste pollution.

UNIT III

Bioremediation: Bio-remediation of inorganic & organic pollutants, bioremediation of xenobiotics, phytoremediation.

Solid & liquid waste Treatment: Microbial treatment of solid waste, liquid waste (Example sewage) waste water treatment, biotechnology for enhanced oil recovery.

UNIT IV

Clean Technology: Integrated pest management, biopolymer production & bioplastic technology, biotechnology for energy (production of biofule, biogas, microbial hydrogen).

Bio-fertilizers: vermin compost, green manure, use of microbes for improving soil fertility.

UNIT V

Restoration Technology: Reforestation through micro-propagation, Soil restoration, Lake Restoration, Biodiversity conservation.

Biosensor and Bio-reporter Technology: Principle types and application of biosensor, bio- reporter (Reporter Gene System).

S.No.	CLASS	PAPER NAME	PAPER CATEGORY	CREDIT
BT- 503	**BSc. BIOTECHNOLOGY SEM-5**	Animal Biotechnology	SEC	04

Animal Biotechnology

UNIT I

Animal cell and tissue culture: History and scope of animal biotechnology and genomics, advantage and Laboratory Facilities for Cell and Tissue Culture, Substrate, Culture Media and Procedures for Cell and Tissue Culture, Primary cell Culture and Cell Lines,

Stem Cells: Introduction, Origin, Types and functions of Stem Cells, Therapeutics, cloning for embryonic stem cells, Stem Cell Therapy.

UNIT II

Organ/Embryo Culture: Primary Tissue Explanation Techniques, Organ Culture, Embryo Culture.

Cell and Tissue engineering: Approaches and Bio-Materials for tissue engineering, Tissue engineering of skin (Skin Graft), Engineering of Bone Crafts and Artificial Nerve Crafts, Future Limitations and Possibilities of Tissue Engineering.

UNIT III

In Vitro Fertilization and Embryo Transfer: In Vitro Fertilization in Human, Embryo Transfer (ET) in Humans, Super Ovulation and Embryo Transfer in Farm Animals (e.g. Cow).

Cloning of Animals: Method, Types and utility of cloning animals, Cloning for Production of Transgenic Animals, Human Cloning and Ethical issues and Risk.

UNIT IV

Transgenic Animals: Gene Transfer or Transfection (Transfection of embryo, unfertilized eggs, culture of mammalian cells), Transgenic Animals, Cryopreservation.

UNIT V

Molecular Maps: Genetic Maps Using Molecular Markers, Cytogenetic Maps Using Molecular Markers, Physical Maps Using Molecular Markers.

Genomics and Proteomics: Human Genome project, Progressing Genomic Research (*Drosophila*, Mouse, Rat, Chimpanzee), Integrated Genomic Maps and Linkage Disequilibrium, Maps of the Future, Introduction types and application of proteomics.

S.No.	CLASS	**PAPER NAME**	**PAPER CATEGORY**	**CREDIT**
BT- 601	**BSc. BIOTECHNOLOGY SEM-6**	Developmental Biology	Major	06

DEVELOPMENTAL BIOLOGY

UNIT I: Gametogenesis and Fertilization

Definition, scope & historical perspective of development Biology, Gametogenesis –

Spermatogenesis, Oogenesis Fertilization - Definition, mechanism, types of fertilization.Different types of eggs on the basis of yolk.

UNIT II: Early embryonic development

Cleavage: Definition, types, patterns & mechanism Blastulation: Process, types & mechanism Gastrulation: Morphogenetic movements– epiboly, emboly, extension, invagination, convergence, de-lamination. Formation & differentiation of primary germ layers, Fate Maps inearly embryos.

UNIT III: Embryonic Differentiation

Differentiation: Cell commitment and determination- the epigenetic landscape: a model of determination and differentiation, control of differentiation at the level of genome, transcription and post-translation level Concept of embryonic induction: Primary, secondary & tertiaryembryonic induction, Neural induction and induction of vertebrate lens.

UNIT IV: Organogenesis

Neurulation, notogenesis, development of vertebrate eye. Fate of different primary germlayers Development of behaviour: constancy & plasticity, Extra embryonic membranes, placenta in Mammals**.**

S.No.	CLASS	**PAPER NAME**	**PAPER CATEGORY**	**CREDIT**
BT- 602	**BSc. BIOTECHNOLOGY SEM-6**	Forensic Science	DSE	04

FORENSIC SCIENCE

Unit I

Introduction and principles of forensic science, forensic science laboratory and its organization and service, tools and techniques in forensic science, branches of forensic science, causes of crime, role of modus operandi in criminal investigation. Classification of injuries and their medico-legal aspects, method of assessing various types of deaths.

Unit II

Classification of fire arms and explosives, introduction to internal, external and terminal ballistics. Chemical evidence for explosives. General and individual characteristics of handwriting, examination and comparison of handwritings and analysis of ink various samples.

Unit III

Role of the toxicologist, significance of toxicological findings, Fundamental principles of fingerprinting, classification of fingerprints, development of finger print as science

for personal identification,

Unit IV

Principle of DNA fingerprinting, application of DNA profiling in forensic medicine, Investigation Tools, eDiscovery, Evidence Preservation, Search and Seizure of Computers, Introduction to Cyber security.

S.No.	CLASS	**PAPER NAME**	**PAPER CATEGORY**	**CREDIT**
BT- 603	**BSc. BIOTECHNOLOGY SEM-6**	Medical Microbiology	DSE	04

MEDICAL MICROBIOLOGY

UNIT I

Introduction: Normal microflora of human body, nosocomial infections, carriers, septic shock, septicemia, pathogenicity, virulence factors, toxins, biosafety levels.

Morphology, pathogenesis, symptoms, laboratory diagnosis, preventive measures and chemotherapy of gram positive bacteria: *S.aureus, S.pyogenes, B.anthracis, C.perferinges, C.tetani, C.botulinum, C.diphtheriae M.tuberculosis, M. leprae.*

UNIT II

Morphology, pathogeneis, symptoms, laboratory diagnosis, preventive measures and chemotherapy caused by gram negative bacteria: *E.coli, N. gonorrhoea, N. meningitidis, P. aeruginosa, S. typhi, S. dysenteriae, Y. pestis, B. abortus, H. influenzae, V. cholerae, M. pneumoniae, T. pallidum M. pneumoniae, Rickettsiaceae, Chlamydiae.*

UNIT III

Diseases caused by viruses- Picornavirus, Orthomyxoviruses, Paramyxoviruses, Rhabdoviruses, Reoviruses, Pox virus, Herpes virus, Papova virus, Retro viruses (including HIV/AIDS) and Hepatitis viruses.

UNIT IV

Fungal and Protozoan infections. Dermatophytoses (*Trichophyton, Microsporun and Epidermophyton*) Subcutaneous infection (*Sporothrix, Cryptococcus*), systemic infection (*Histoplasma, Coccidoides)* and opportunistic fungal infections (*Candidiasis, Aspergillosis*), Gastrointestinal infections (Amoebiasis, Giardiasis), Blood-borne infections (Leishmaniasis, Malaria)

S.No.	CLASS	**PAPER NAME**	**PAPER CATEGORY**	**CREDIT**
BT-701	**BSc. BIOTECHNOLOGY SEM-7**	Enzymology	MAJOR	06

ENZYMOLOGY

UNIT - I

Isolation, crystallization and purification of enzymes, test of homogeneity of enzyme preparation, methods of enzyme analysis.

Enzyme classification (rationale, overview and specific examples) Zymogens and their activation (Proteases and Prothrombin).

Enzyme substrate complex: concept of E-S complex, binding sites, active site, specificity, Kinetics of enzyme activity, Michaelis-Menten equation and its derivation,

Different plots for the determination of Km and Vmax and their physiological significance, factors affecting initial rate, E, S, temp. & pH. Collision and transition state theories, Significance of activation energy and free energy.

UNIT – II

Two substrate reactions (Random, ordered and ping-pong mechanism) Enzyme inhibition types of inhibition, determination of Ki, suicide inhibitor.

Mechanism of enzyme action: General mechanistic principle, factors associated with catalytic efficiency: proximity, orientation, distortion of strain, acid-base, nucleophilic and covalent catalysis. Techniques for studying mechanisms of action, chemical modification of active site groups, specific examples-: chymotrypsin, Iysozyme, GPDH, aldolase, RNase, Carboxypeptidase and alcohol dehydrogenase.

Enzyme regulation: Product inhibition, feed backcontrol, covalent modification.

UNIT – III

Allosteric enzymes with special reference to aspartate transcarbomylase and phosphofructokinase.

Qualitative description of concerted and sequential models. Negative co- operativity and half site reactivity. Enzyme - Enzyme interaction, Protein ligand binding,measurements analysis of binding isotherm, cooperativity, Hill and scatchard plots, kinetics of allosteric enzymes. Isoenzymes– multiple forms of enzymes with special reference to lactate dehydrogenase. Multienzyme complexes. Ribozymes. Multifunctional enzyme-eg Fatty Acid synthase.

UNIT – IV

Enzyme Technology: Methods for large scale production of enzymes.

Immobilized enzyme and their comparison with soluble enzymes, Methods for immobilization of enzymes. Immobilized enzyme reactors. Application of Immobilized and soluble enzyme in health and industry. Application to fundamental studies of biochemistry. Enzyme electrodes.

Thermal stability and catalytic efficiency of enzyme, site directed mutagenesis and enzyme engineering– selected examples, Delivery system for protein pharmaceuticals, structure function relationship in enzymes, structural motifs and enzyme evolution.

Methods for protein sequencing. Methods for analysis of secondary and tertiary structures of enzymes. Protein folding *invitro* & i*nvivo*.

S.No.	CLASS	**PAPER NAME**	**PAPER CATEGORY**	**CREDIT**
BT-702	**BSc. BIOTECHNOLOGY SEM-7**	**Bioethics & Bio-safety**	**DSE**	**04**

Bioethics & Bio-safety

UNIT-I

Introduction to Indian Patent Law. World Trade Organization and its related intellectual propertyprovisions. Intellectual/Industrial property and its legal protection in research, design and development. Patenting in Biotechnology, economic, ethical and depository considerations.

UNIT II

Entrepreneurship: Selection of a product, line, design and development processes, economics on material and energy requirement, stock the product and release the same for making etc. The basic regulations of excise: Demand for a given product, feasibility of its production under given constraints of raw material, energy input, financial situations export potential etc.

UNIT III

Bioethics – Necessity of Bioethics, different paradigms of Bioethics – National & International. Ethical issues against the molecular technologies.

UNIT IV

Biosafety– Introduction to biosafety and health hazards concerning biotechnology. Introduction to the concept of containment level and Good Laboratory Practices (GLP) and Good Manufacturing Practices (GMP).

S.No.	CLASS	**PAPER NAME**	**PAPER CATEGORY**	**CREDIT**
BT-703	BSc. BIOTECHNOLOGY SEM-7	Research Methodology	Minor	04

Research Methodology

Unit 1.

Identification and defining of the Research Problem:

Familiarization of research areas; Review of literature using appropriate resources – reviews, research papers, books and patents; Use of tools for searching literature through electronic databases; Defining a research problem.

Unit 2.

Experimental Approaches and Methodology

Experimental designs to address the research problem; different experimental strategies; Finalization of experimental design; Tools and techniques to execute experiments; Means to validate and analyze data;

Unit 3.

Ethics in Biological Research

Guidelines for Biosafety and Bioethics; Institutional Biosafety Committee – Handling of Genetically modified organisms, Institutional Human and Animal Ethics Committee - compliance, concerns and approval

Unit 4.

Presentation, Publication and Protection of Research Data.

Skills for scientific writing and research presentation – Term paper, Research project, Research report, Thesis, Research article and Review; Organization of the research document in to different sections (Introduction, Methodology, Results, Discussion, and Summary and Conclusions, Bibliography); Use of electronic tools for bibliographic

formatting and checking Plagiarism; Oral presentation skills; Patents and Intellectual property rights

Unit 5.

Statistical analysis and Biosafety in research

Safety practices and disposal of Bio-waste in the laboratory; Radioactivity and safety precautions; Handling and disposal of flammable and hazardous chemicals.

Use of statistical tools for analyzing the significance and interpretation of the data; Methods of recording observations and documentation

S.No.	CLASS	**PAPER NAME**	**PAPER CATEGORY**	**CREDIT**
BT-801	BSc. BIOTECHNOLOGY SEM-8	Medical Biotechnology	MAJOR	06

Medical Biotechnology

UNIT I

Biotechnology in medicine: History, scope & importance of Biotechnology in medicine Disease Diagnosis (DNA, RNA probes, Monoclonal Antibodies auto Antibodies), Detection and Treatment of genetic Diseases.

Genetic Counseling and Forensic Medicine: Fertility control, Genetic counseling, (Chance of having child with congenital defects, choice of Baby sex), DNA Fingerprinting in Forensic Medicines.

UNIT 1I

Gene therapy: Definition and types of Gene therapy, Initial success and future of Gene therapy, Vectors and other delivery system of gene therapy, Target tissue for

gene therapy system, Gene therapy of genetic diseases(Neurological Disorders, Cystic Fibrosis),Gene therapy of Acquire diseases(Infectious Diseases, Cardiovascular diseases, cancer), Nanobiotechnology for drug targeting and gene therapy.

UNIT III

Pharmaceutical Biotechnology: Drug development, drug manufacturing processes, manufacturing processes of antiviral drugs, drug designing, Novel drug delivery systems, Antimicrobial drugs.

Pharmacogenetics: Pharmacogenetics and personalized medicine, genetics and genomics in medical practice, use of SNPs in pharmocogenomics.

UNIT IV

Genetic Engineering: Genetic and recombinant vaccines; Edible vaccines production of therapeutic proteins; Genetic engineering for production of Factor VIII, tissue plasminogen activator, Interferon.

Tissue Engineering: Tissue engineering of skin and cartilage and their applications, properties and types of stem cells, culture and applications of stem cells, Transplant rejection, Intellectual property issues in using human embryonic stem cells.

UNIT V

Biological Database : Introduction, History and applications of Bio-Informatics, Sequences and Nomenclature (DNA sequences, Amino acid sequences of proteins, Types of sequences in nucleotide sequence database), Database and search tool (FASTA, BLASTA Nucleotide sequence database, protein database), GCG: The Wisconsin pacakage of sequence analysis programe, Detection of genes, Protein structure prediction, Large scale Bio-informatics genome projects.

S.No.	CLASS	**PAPER NAME**	**PAPER CATEGORY**	**CREDIT**
BT-802	BSc. BIOTECHNOLOGY SEM-8	Biostatistics & Bioinformatics	MINOR	04

Biostatistics & Bioinformatics

UNIT I

Types of Data, Collection of data; Primary & Secondary data, Classification and Graphical representation of Statistical data. Measures of central tendency and Dispersion. Measures of Skewness and Kurtosis.

UNIT II

Probability classical & axiomatic definition of probability, Theorems on total and compound probability), Elementary ideas of Binomial, Poisson and Normal distributions.

UNIT III

Methods of sampling, confidence level, critical region, testing of hypothesis and standard error, large sample test and small sample test. Problems on test of significance, t-test, chi-square test for goodness of fit and analysis of variance (ANOVA)

UNIT IV

Correlation and Regression. Emphasis on examples from Biological Sciences.

UNIT V

Sequence and Phylogeny analysis, Detecting Open Reading Frames, Outline of sequence Assembly, Mutation/Substitution Matrices, Pairwise Alignments, Introduction to BLAST, using it on the web, Interpreting results, Multiple Sequence Alignment, Phylogenetic Analysis, Sequence Similarity Searches-BLAST,FASTA, Data Submission.

SCHOOL OF ENVIRONMENTAL BIOLOGY
CENTRE FOR BIOTECHNOLOGY & MICROBIOLOGY STUDIES,
A.P.S.UNIVERSITY, REWA (M.P.)

B.Sc. (Hon's) Microbiology

PROGRAMME OUTCOME

PO#	PROGRAMME OUTCOME
PO1	Bachelor course in Microbiology offers the basic concepts of microbiology, pathology, histological aspects, growth , metabolism and their physiology im microbial world and bioinformatics with their environmental applications.
PO2	The main objective of this degree course is to produce graduates with enhanced skills, knowledge and research aptitude to carry out higher studies, entrepreneurship or research and development in the various health, research and industrial areas.
PO3	Develop proficiency in application of current trends of microbial relationship with humans to their environmental interaction. Prepares the students for immediate entry to the workplace with sound theoretical, experimental knowledge in the area of health and pharmaceuticals, biochemicals, biofuel, environment related, food and dairy, cosmetics, biopolymers and related multidisciplinary fields.
PO4	Overall, the course offers basic foundation in microbiology which enables the students to understand the concepts in biochemistry of microbial growth, microbiology in daily life , genetic engineering and related industrial technology.
PO5	Students will be able to design, execute, record and analyse the results of experiments in field of microbiology, genomics, Recombinant DNA technology, biochemistry, microbiology and genetic engineering.
PO6	Students will be able to work effectively in a group in the classroom, laboratory, industries and fieldbased situations.
PO 7	Become efficient in using standard operating procedures and will be well versed with the regulations for safe handling and use of chemicals as well as IPR and biosafety issues related to experiments in field of biochemistry, microbiology and genetic engineering.

(Program Outcomes)

PSOs

(Program Specific Outcomes)

PSO #	**PROGRAMME SPECIFIC OUTCOME**
PSO 1	Critical Thinking- Students will demonstrate an understanding of major concepts in all disciplines of biology, biochemistry, biotechnology microbiology and bioinformatics. Understand the basic concepts, fundamental principles, and the scientific theories related to various scientific phenomena and their relevancies in the day-to-day life.
PSO 2	Effective Communication- Development of various communication skills such as reading, listening, speaking, etc., which will help in expressing ideas and views clearly and effectively.
PSO 3	Social Interaction- Development of scientific outlook not only with respect to science subjects but also in all aspects related to life
PSO 4	Effective Citizenship- Imbibe moral and social values in personal and social life leading to highly cultured and civilized personality.

Course Outcome (COs)

S.No.	Course Name	Course Code
	Semester-I	
101	Cell Biology and Microbial World	C1
	Course Outcome	
CO1	Develop an understanding of the Cytoskeleton, Microtubules, microfilaments and Cell Membrane.	
CO2	Distinguish between the cellular organization of prokaryotic and eukaryotic cells	
CO3	Would demonstrate a clear understanding of the signal transduction, secondary messengers.	
CO4	Would have deeper understanding of cell at structural and functional level.	
CO5	Would have broad knowledge on the molecular interaction between cells.	
102	**Animal Biodiversity 1**	C2
	Course Outcome	
CO1	To understand diversity in animal kingdom	
CO2	will be able to understand role of protozoa in human and bacterial disease	
CO3	Study of Insects belongs to largest Phyllum Arthropoda and associated diseases.	
CO4	Student will be able to identify the zoological samples belongs to different phyllums.	
CO5	Students will study the habitat and adaptations found in organisms.	
103	**Chemistry -1**	**GEC1**
	Course Outcome	
C01	Students will be informed about atomic structure	
C02	After studying this course students will have better understanding of chemical bonding	
C03	Students will be informed about periodic table and s p d block elements	
C04	Students will be aware about thermodynamics and solid state	
104	**Environmental Studies**	**AECC1**

	Course Outcome	
C01	Have knowledge of the Modern fuels and their environmental impact – Methanogenic bacteria, Biogas, Microbial hydrogen Production, Conversion of sugar to alcohol Gasohol.	
C02	Comprehend the Structural and Functional dynamics of microbes, their diversity, activity and growth, community profiling their uses as biosensors, bioreporters, Microchips. Also know about Methanogenesis: methonogenic, acetogenic and fermentive bacteria	
C03	Have knowledge of treatment of municipal waste and Industrial effluents, Biofertilizers: Role of symbiotic and asymbiotic nitrogen fixing bacteria in the enrichment of soil, algal and fungal biofertilizers (VAM).	
C04	Have basic understanding of Enrichment of ores by microorganisms (gold, copper, and Uranium), Environmental significance of Genetically modified microbes, plants and animals.	
C05	Students will be aware from the diversity ratios of natural resources	
	SEMESTER -II	
201	**Bacteriology and Systematic**	C3
	Course Outcome	
C01	Will aware from the classification and taxonomy of bacteriology.	
C02	DNA replication and regulation in prokaryotes and eukaryotes	
C03	Transcription in prokaryotes and eukaryotes, Translation in prokaryotes and eukaryotes	
C04	Post translation and transcriptional mechanism.	
C05	Gene expression in prokaryotes using Lac operon and Trp operon.	
202	**Animal Biodiversity 2**	**C4**
	Course Outcome	
CO1	To understand higher animal kingdom	
CO2	will be able to understand phyllum chordata	
CO3	Study of mammals	
CO4	Student will be able to identify the zoological samples belongs to different phylum.	

CO5	Will be aware from physiology of species.	
203	**Chemistry 2**	**GEC2**
	Course Outcome	
C01	Students will be informed biomolecules	
C02	After studying this course students will have better understanding of carbohydrate lipid protein	
C03	Students will be informed about structure of DNA/RNA	
C04	students will be aware about thermodynamics and solid state	
CO5	students will aware from biomolecules	
204	**English**	**AECC2**
	Course Outcome	
C01	To enhance all the four communication skills in the students-- listening, speaking, reading and writing.	
C02	To familiarize the students with the nature and importance of effective communication skills in their professional life.	
C03	To make the students capable of actively participating in various individual/group communications such as group discussion, debate, meeting, presentation etc.	
C04	To enrich the vocabulary of the students to make them efficient communicators.	
CO5	To strengthen the Grammar of the students.	
	SEMESTER-III	
301	**Advanced Instrumentation: Principle and Application**	**C5**
	Course Outcome	
C01	Concept of electromagnetic radiation, absorption spectrum, Beer's law and Lamberts law, Principle, working and applications of spectrophotometer and AAS	
C02	Concepts of chromatography and concept of partition coefficient	
C03	Principle, methodology and application of various chromatographic techniques	
C04	Centrifugation and Electrophoresis-Principles and applications	
CO5	Importance of radioactivity in biological studies, GM counters and	

	Scintillation counting.	
302	**Basic Biochemistry**	**C6**
	Course Outcome	
C01	Have a strong foundation of basics of botany. Study of physiology of plants.	
C02	The students will get proper knowledge about the media preparation for In-vitro propagation of plants and different aseptic techniques used during preparation.	
C03	The students will learn the role of techniques haploid plant production and its significance.	
C04	The students will learn about the protoplast isolation and somatic hybridization of protoplast and its application.	
C05	The students will learn about the transgenic plants and different strategies to make recombinant and its application.	
303	**Genetic Engineering and Advanced Microbiology**	**GEC3**
	Course Outcome	
C01	Characteristic of Enzymes, enzyme inhibition and kinetics	
C02	Carbohydrate metabolism, significance of glycolysis and ETC, untreated diabetes	
C03	Lipid metabolism and production of ketone bodies	
C04	CO4 Protein metabolism, role of urea cycle and errors of protein metabolism	
C05	Basics Biomolecules and secondary metabolism	
304	**Microbial Diagnostics and Public Health**	**SEC1**
	Course Outcome	
C01	Understand the basics of industrial fermentation technology	
C02	Have knowledge of fermentation medium and sterilization techniques	
C03	Have knowledge of Industrial fermentation process, types of fermentation	
C04	Know the process development, upstream and downstream processing	
C05	Understand the production of Industrial fermented products	
	SEMESTER-IV	
401	**Immunology**	**C7**
	Course Outcome	

C01	Know the history and scope of Immunology.	
C02	Understand the types of Immunity: Passive, Active, Innate and Acquired immunity, Humoral and Cell Mediated Immunity and the cell and organs of immune responses and their functions, B & T cells.	
C03	Have basic knowledge of Antigens as haptens, epitopes and Factors influencing immunogenicity, and Antibodies as their Structure, types, production and functions of immunoglobulins also about Clonal selection theory and Antigen Antibody reactions as Precipitation, Immunoelectrophoresis, Haem-agglutination, RIA and ELISA.	
C04	Comprehend Histocompatibility, structure of MHC class I, II & III antigens and their mode of antigen presentation, MHC restriction Complement system: Components, Classical and alternate pathways of complement activation, Hypersensitivity, Autoimmunity	
C05	Understand Passive and Active immunization, Types of Vaccines: Inactivated, Attenuated, Recombinant and Sub Unit Vaccines, Peptide and DNA Vaccines	

402	**Microbial Physiology and Metabolism**	**C8**
	Course Outcome	
CO1	Study of Basics of microbiology & Basics of Recombination in Prokaryotes	
CO2	General Classification of microbes	
CO3	Basics of Control of Microorganisms	
CO4	Study of bacteriophages and microbes in extreme environments and microbial interactions	
CO5	Know the process development, upstream and downstream processing	
403	**Human Microbial Diseases**	**GEC4**
	Course Outcome	
CO1	Get knowledge about classification of pathogenic microbes, protozoal parasites, and medical bacteriology.	
CO2	Get to know about viral diseases and medical mycology and preventive measures.	
CO3	To understand how blood cell are formed, blood cancer, about brain as well as brain tumour. Pathology of AIDS, Japanese encephalitis, yellow fever, dengue	

	and TB.	
CO4	To understand various therapeutics measures including antibiotics.	
CO5	To get knowledge about medico-legal aspects of medical biotechnology	
404	**Food Fermentation Technology**	**SEC2**
	Course Outcome	
C01	Understand the basics of industrial fermentation technology	
C02	Have knowledge of fermentation medium and sterilization techniques	
C03	Have knowledge of Industrial fermentation process, types of fermentation	
C04	Know the process development, upstream and downstream processing	
CO5	Understand the production of Industrial fermented products	
	SEMESTER -V	
501	**Virology**	**C9**
	Course Outcome	
C01	Students get proper knowledge about the DNA manipulative enzymes: Restriction enzymes and DNA ligases, and Gene cloning vectors.	
C02	learn about screening and selection of recombinant host cells, Gene Libraries, cloning techniques, Expression of cloned DNA	
C03	Learn about the basics of Electrophoretic techniques, Polymerase chain reaction (PCR), Site directed mutagenesis (SDM), Nucleic acid sequencing: Blotting techniques.	
C04	Students will have knowledge of Application of r-DNA technique in human health, Production of Insulin, Production of recombinant vaccines: Hepatitis B, Production of human growth hormone.	
CO5	Will aware from types of viral infection.	
502	**Plant Pathology and Disease Management**	**DSE1**
	Course Outcome	
C01	Have knowledge of the Modern fuels and their environmental impact – Methanogenic bacteria, Biogas, Microbial hydrogen Production, Conversion of	

	sugar to alcohol Gasohol.	
C02	Comprehend the Structural and Functional dynamics of microbes, their diversity, activity and growth, community profiling their uses as biosensors, bioreporters, Microchips. Also know about Methanogenesis: methonogenic, acetogenic and fermentive bacteria- technical processes and conditions	
C03	Gain insight on Bioremediation and Phytoremediation of soil & water contaminated with oil spills, heavy metals and detergents and use of microbes in degradation of lignin and cellulose using and of pesticides and other toxic chemicals by micro-organisms, Degradation of aromatic and chlorinated hydrocarbons and petroleum products.	
C04	Have knowledge of treatment of municipal waste and Industrial effluents, Biofertilizers: Role of symbiotic and asymbiotic nitrogen fixing bacteria in the enrichment of soil, algal and fungal biofertilizers (VAM).	
CO5	Will have the knowledge of heavy metals and detergents and use of microbes in degradation of lignin and cellulose using and of pesticides and other toxic chemicals by micro-organisms,	
503	**Microbial Quality Control in Food and Pharmaceutical Industries**	**SEC3**
	Course Outcome	
C01	Students get proper knowledge about the history and Scope of Animal Tissue Culture, Culture Media, Simulating natural conditions for growth of animal cells. Have knowledge of Production and Applications of monoclonal antibodies, and Transgenic Animals	
C02	gain knowledge about Primary Culture, cell lines and Secondary Culture, transformed animal cells and continuous cell lines. Monolayer formation, Synchronization.	
C03	learn about transfection of animal cell lines, Selectable makers and Transplantation of Cultural Cells. Microinjection, In vitro fertilization and Stem cell technology.	
CO4	Learn about the product formation and recovery a techniques.	
C05	Learn about the basics of expression of Cloned proteins in animal cell and Production of Vaccines in animal Cells.	
	Field Project & Training-1	

	(Bioprocess Technology)	
	Course outcome	
CO1	Bioprocess technology itself is very important and job oriented branch of Biotechnology. The student will be aware of fermentation and its basics	
CO2	The student will have hands on experience in drug/antibiotic production at industrial level.	
CO3	The student will be able to understand product formation	
.CO4	The student will understand the industrial production of commercial products	
CO5	The student will have hands on experience in amino acid ,enzyme etc production at industrial level.	
	SEMESTER-VI	
601	**Medical and Veterinary Microbiology**	**C10**
	Course Outcome	
C01	Student will learn how a single cell becomes an organized grouping of cells that is then programmed at specific times to become specialized for certain tasks.	
C02	While embryonic development involves a series of highly controlled and coordinated steps, cancer exhibits a lack of cellular control. Understanding the key regulatory pathways behind development may point the way towards therapies designed to modulate disrupted pathways.	
C03	Part of the "nature vs. nurture" paradigm involves non-genetic mechanisms that play a role in switching on and off various genes during development. IRP scientists are at the forefront of research into the importance of chromatin and epigenetics in many aspects of development and disease, including potential uses in gene therapies.	
CO4	Students will learn research into the importance of chromatin and epigenetics in many aspects of development and disease, including potential uses in gene therapies.	
CO5	Understanding the key regulatory pathways behind development may point the way towards therapies designed to modulate disrupted pathways.	
602	**Microbial Enzyme Technology**	**DSE2**
	Course Outcome	

C01	Study of basics of Forensic sciences Human DNA quantitation Miniaturization and automation	
C02	Alternative genetic markers & Compromised DNA evidence	
C03	Mitochondrial DNA and Non-human DNA	
C04	Y-chromosome analysis, Microbial analysis, Sperm detection and separation	
CO5	Students will learn enzyme activity during reaction	
603	**Microbiological Analysis of Air, Water and Soil**	**DSE3**
	Course Outcome	
C01	Get knowledge about classification of pathogenic air microbes, protozoal parasites, and medical bacteriology.	
C02	Get to know about viral diseases and medical mycology and air water and soil	
C03	To understand how blood cell are formed, blood cancer, about brain as well as brain	
C04	tumour. Pathology of AIDS, Japanese encephalitis, yellow fever, dengue and TB.	
CO5	Students will be aware different microbiological Analysis of Air, Water and Soil	
604	**Field Project & Training 2** **(Genomics & Proteomics)**	
	Course Outcome	
C01	This course will consolidate the learning, knowledge and skills in the area of genomics and proteomics that have already taken place as well as developing the capability of the students to undertake and complete an academic research to apply what is learned in theory.	
C02	The course will develop the critical thinking, , problem solving, research and communication skills of the participants.	
C03	They will be able to raise a research question, answer it and write about its	

	findings	
C04	Development of crucial skills among the participants will help them in boosting their employability	
CO5	They will develop the capability of the students to undertake and complete an academic research.	
	SEMESTER-VII	
701	**Microbial Genetics and Molecular Biology**	**C11**
	Course Outcome	
CO1	To describe the different models of enzyme catalysis and the mechanisms for its assessment	
CO2	To explain various methods for identifying active site residues	
CO3	To illustrate the several methods for the enzyme regulation	
CO4	To appreciate the applicability of enzymology in various industries for growth and sustainability	
CO5	To develop skill for analyzing kinetic data of enzyme substrate reaction	
702	**Bioethics & Bio-safety**	**DSE4**
	Course Outcome	
CO1	Students will learn about the basics of ethics related to research.	
CO 2	To evaluate, understand and become aware of the risk factors and ethical issues associated with inbreeding in humans and pre-natal diagnosis of genetic diseases.	
CO3	Students will be informed about the safety measures and levels of laboratory.	
CO4	Students will be aware about the ethical issues and laws associated with laboratory and research	

CO5	Student will also able to know the difficulties level of patients in research	
	Research Methodology	
CO1	To enable to promulgate the understanding of formulating, pursuing and analyzing research benefitting human development	
CO2	To sensitize students regarding the ethics of conducting research by enabling in-depth understanding of plagiarism	
CO3	To impart necessary traits to analyze, compare, logically criticize and evaluate biological data	
CO4	To developing competitive acumen to use modern-age computer programs to analyze and represent research data	
CO 5	To be able to develop and elevate skills of scientific writing to present research interpretations in a form of research paper, presentation, book chapters and short communication	
	Field Project & Training	
CO1	The students will be supervised to go to the fields of their interest and learn the basics of research work	
C03	They will be able to raise a research question, answer it and write about its findings	
C04	Development of crucial skills among the participants will help them in boosting their employability	
	SEMESTER-VIII	
801	**Agriculture, Food and Dairy Microbiology**	**C12**
	Course outcome	
CO1	Importance of agriculture food and dairy products development .	

CO2	Role of microbes in development of products	
CO3	Production of genetic and recombinant vaccines.	
CO4	Production and uses of monoclonal antibodies	
CO5	Basics of gene therapy and research in the area	
	Biostatistics & Bioinformatics	C13
CO1	To expose students to use computational power to evaluate biological information	
CO2	Acquire skills to retrieve information from biological data-bases, analyze it and further remodel protein and genes to create their phylogeny	
CO3	To impart necessary traits to analyze, compare, logically criticize and evaluate biological data	
CO4	To developing competitive acumen to use modern-age computer programs to analyze and represent research dat	
CO5	Will learn different methods to analyze results of research and further remodel to create their phylogeny	
	Research Project	
CO1	students would be able to learn how to design the objectives or experiment.	
CO2:	students would be able to learn the different techniques through experimental design.	
CO 3:	students would be able to analyze the data through statistical software.	
CO 4:	students would be able to gain the knowledge of basic research.	
CO5:	students would be able to think independently in various research areas and design of experiment so that they will absorb in various pharmaceutical industries and research lab in the country and abroad.	

SCHOOL OF ENVIRONMENTAL BIOLOGY
CENTRE FOR BIOTECHNOLOGY & MICROBIOLOGY STUDIES,
A.P.S.UNIVERSITY, REWA (M.P.)

BSc Microbiology SEM-1st				
S.No.	**Paper Code**	**Paper Name**	**Paper Category**	**Credit**
1	MB-C1	Cell Biology and Microbial World	Major	06
2	MB-C2	Plant Diversity-1	Minor	06
3	MB-GEC 1	Chemistry-1	GEC	04
4	MB-AECC 1	Environmental Studies	AECC	04
BSc Microbiology SEM-2nd				
S.No.	**Paper Code**	**Paper Name**	**Paper Category**	**Credit**
1	MB-C3	Bacteriology and Systematic	Major	06
2	MB-C4	Plant Diversity-2	Minor	06
3	MB-GEC 2	Chemistry-2	GEC	04
4	MB-AECC 2	English	AECC	04
BSc Microbiology SEM-3rd				
S.No.	**Paper Code**	**Paper Name**	**Paper Category**	**Credit**
1	MB-C5	Advanced Instrumentation: Principle and Application	Major	06
2	MB-C6	Basic Biochemistry	Minor	06
3	MB-GEC3	Genetic Engineering and Advanced Microbiology	GEC	04
4	MB-SEC1	Microbial Diagnostics and Public Health	SEC	04
BSc Microbiology SEM-4th				
S.No.	**Paper Code**	**Paper Name**	**Paper Category**	**Credit**
1	MB-C7	Immunology	Major	06
2	MB-C8	Microbial Physiology and Metabolism	Minor	06
3	MB-GEC4	Human Microbial Diseases	GEC	04
4	MB-SEC2	Food Fermentation Technology	SEC	04

BSc Microbiology SEM-5th				
S.No.	**Paper Code**	**Paper Name**	**Paper Category**	**Credit**
1	MB-C9	Virology	Major	06
2	MB-DSE1	Plant Pathology and Disease Management	DSE	04
3	MB-SEC3	Microbial Quality Control in Food and Pharmaceutical Industries	SEC	04
		Field Project and Training 1(Bioprocess Technology)		06
BSc Microbiology SEM-6th				
S.No.	**Paper Code**	**Paper Name**	**Paper Category**	**Credit**
1	MB-C10	Medical and Veterinary Microbiology	Major	06
2	MB-DSE2	Microbial Enzyme Technology	DSE	04
3	MB-DSE3	Microbiological Analysis of Air, Water and Soil	DSE	04
		Field Project and Training 2(Genomics and Proteomics)		06
BSc Microbiology SEM-7th				
S.No.	**Paper Code**	**Paper Name**	**Paper Category**	**Credit**
1	MB-C11	Microbial Genetics and Molecular Biology	Major	06
2	MB-DSE4	Bio-safety and IPR	DSE	04
3		Research Methodology		04
		Field Project and Training 3(…….)		06
BSc Microbiology SEM-8th				
S.No.	**Paper Code**	**Paper Name**	**Paper Category**	**Credit**
1	MB-C12	Agriculture, Food and Dairy Microbiology	Major	06
2	MB-C13	Biostatistics and Bioinformatics	Minor	04
3		Research Project		10

Abbreviation:

CC-Core Course (Major/Minor) DSE- Discipline Specific Elective GEC- Generic Elective Course
SEC- Skill Enhancement Course AECC- Ability Enhancement Compulsory Course

Details of the Courses
CORE COURSES (CC)
CC1: Cell Biology and Microbial World
CC2: Plant Diversity-1
CC3:Bacteriology and Systematics
CC4: Plant Diversity-2
CC5: Advanced Instrumentation: Principle and Application
CC6: Basic Biochemistry
CC7: Immunology
CC8: Microbial Physiology and Metabolism
CC9: Virology
CC10: Medical and Veterinary Microbiology
CC11: Microbial Genetics and Molecular Biology
CC12: Agriculture, Food and Dairy Microbiology
CC13: Biostatistics and Bioinformatics
CC14:Advanced Microbiology

ABILITY ENHANCEMENT COMPULSORY (AECC) COURSES
AECC1: Environmental Science
AECC2: Communication Skills (English/MIL)

DISCIPLINE SPECIFIC ELECTIVE COURSES (DSE)
DSE 1:Plant Pathology and Disease Management
DSE 2: Microbial Enzyme Technology
DSE 3: Microbiological Analysis of Air,Water and Soil
DSE 4: Biosafety and IPR

GENERIC ELECTIVE COURSE (GEC)
GEC1: Chemistry-1
GEC2: Chemistry-2
GEC3: Genetic Engineering and Advanced Microbiology
GEC4: Human Microbial Diseases

SKILL ENHANCEMENT COURSE (SEC): Any Two
SEC1: Microbial Diagnostics and Public Health
SEC2: Food Fermentation Technology
SEC3: Microbial Quality Control in Food and Pharmaceutical Industries

Course Learning Outcomes
&
Contents of the Courses
CORE COURSES (CC)

CC1:Cell Biology and Microbial World (6 Credits)		
Unit – 1:	Introduction, Scope and Importance, History of Cytology. Prokaryotic cell, Eukaryotic cell (Plant and Animal Cell). Structure and functions of Cell wall, Plasma membrane**:** (simple diffusion, facilitated diffusion, active transport, endocytosis, pinocytosis, phagocytois, and exocytosis), mitochondria, chloroplast, Endoplasmic reticulum,(Endoplasmic reticulum targeting proteins, protein folding and processing in ER, Targeting of lysosomal protein.), Golgi complex(Protein Glycosylation within the Golgi), Ribosome, Lysosome and Inracellular digestion, Nucleus and nucleolus. Chromosomes structure and its types. Lampbrush and Polytene Chromosomes.	
Unit – 2:	Cell cycle- mitosis and meiosis. Cell Motility and Shape : Structure and function of microfilaments and Intermediate Filaments. Molecular Mechanisms of Cell-Cell Adhesions. Extracellular Matrix of animals, Cell signaling. Introduction and application of stem cells.General introduction of Cancer, Apoptosis and necrosis. **Techniques in cell biology:** chromosomal banding techniques. Principles and applications of light microscope and electron microscope (Scanning and transmission). Karyotyping and Idiogram.	
Unit – 3:	History and Scope of microbiology and introduction to the microbial world. Germ theory of disease, Contributions of Antony von Leeuwenhoek, Louis Pasteur, Robert Koch, Joseph Lister, Alexander Fleming, Martinus W. Beijerinck, Sergei N. Winogradsky, Selman A. Waksman, Paul Ehrlich, Elie Metchnikoff and Edward Jenner. Binomial Nomenclature, Baltimore classification.,Molecular identification(16S rRNA typing), Haeckel's Three Kingdom system, Whittaker's five kingdom and Carl Woese's three Domain classification systems and their utility.	

Unit – 4:	Difference between prokaryotic and eukaryotic microorganisms **A. General characteristics** of different groups: **B. Acellular** microorganisms (Viruses, Viroids, Prions) and **Cellular** microorganisms (Bacteria, Archaebacteria, Algae, Fungi and Protozoa), **C. Wall-less forms** - MLO (mycoplasma and spheroplasts), with emphasis on distribution and occurrence, morphology, mode of reproduction and economic importance. Actinomycetes with special reference to its application in medicine, Agriculture and industry.	
Unit – 5:	**Bacterial Cell organization** Cell size, shape and arrangement, glycocalyx, capsule, flagella, endoflagella, fimbriae and pili. **Cell-wall:** Composition and detailed structure of Gram-positive and Gram-negative cell walls, Archaebacterial cell wall, Gram and acid fast staining mechanisms, lipopolysaccharide (LPS), sphaeroplasts, protoplasts, and L-forms. Effect of antibiotics and enzymes on the cell wall. Cell Membrane: Structure, function and chemical composition of bacterial and archaeal cell membranes. **Cytoplasm:** Ribosomes, mesosomes, inclusion bodies, nucleoid, chromosome and plasmids Endospore: Structure, formation, stages of sporulation.	

CC2: Plant Diversity-1 (6 Credits)		
Unit – 1	**Fungi**: General Characteristics, classification, cellular & thallus organization, cell ultra- structure, Cell wall and nutritional requirements of fungi. Historical developments in the field of Mycology including significant contributions of eminent mycologists.,asexual reproduction, sexual reproduction, General features, structure, nutrition, reproduction and life cycle of different fungi group – Phycomycetes :*Allomyces*(Chytridiomycota), *Phytophthora(*Oomycota*)* Zygomycetes : *Mucor* Ascomycetes: *Aspergillus, Peziza*, Basidiomycetes: *Puccinia, Alternaria, Agaricus*, Deuteromycetes: *Cercospora,Fusarium*	
Unit – 2	Heterothallism and Para- sexuality. Sex hormones in fungi, Lichens: Classification, occurrence, systematic position, mode of nutrition, reproduction and economic importance. Role of fungi in biotechnology, Application of fungi in foodindustry (Flavour & texture, Fermentation, Baking, Organic acids, Enzymes, Myco -proteins); Secondary metabolites (Pharmaceutical preparations); Agriculture (Biofertilizers); Mycotoxins; Biodeterioration Biological control (Mycofungicides, Mycoherbicides, Mycoinsecticides). Mushroom and its cultivation.	
Unit – 3	Algae: General characteristics and evolution of algae. Occurrence, habitat a thallus organization, algal cell ultra-structure, pigments, flagella, eye- spot food reserves and vegetative, asexual and sexual reproduction. Classification of algae. Different types of life cycles in algae with suitable examples: Haplobiontic, Haplontic, Diplontic, Diplobiontic and Diplohaplontic life cycles. Chlorophyta - *Volvox, , Chara.* Xanthophyta**:** *Vaucheria.* Bacillariophyta: Pennate and centric Diatoms. Phaeophyta: *Ectocarpus.*	

	Rhodophyta: *Polysiphonia* Introduction to cyanobacteria , occurrence, salient features, thallus organization and reproduction in Nostoc. Applications of algae in agriculture, industry, environment and food *(Chlamydomonas*, *Chlorella*, Diatoms, *Microcystis*, *Oscillatoria*, *Spirulina*, *Anabaena*, *Nostoc*, *Rivularia* and *Scytonema)* Mass cultivation of algae as a source of protein.	
Unit – 4	General characters and classification of Bryophyta Hepaticopsida : *Marchantia* Anthoceropsida : *Anthoceros* Bryopsida : *Polytricum*	
Unit – 5	Pteridophyta : Important Characteristics and Classification Psilophytopsida : *Rhynia* Lycopsida : *Lycopodium* Sphenopsida : *Equisetum*	

Reference Books

1 Alexopoulus, C.J., Mims,C.W. and Blackwel, M, Introductory Mycology. John Wiley, New York.

2. Mehrotra, R.S. and K.R.Aneja An Introduction to Mycology. New Age International Press, New Delhi.

3. Webster, J. Introduction to fungi. Cambridge University Press. Cambridge, U.K. (1985).
4. Bessey E.A. Morphology and Taxonomy of fungi. Vikas Publishing House Pvt. Ltd., New Delhi.
5. Jhon Webster and R W S Weber. Introduction to Fungi. Cambridge University Press2007.
6. A. V. S. S. .Sambamurty. A Textbook of Algae. I.K. International Publishing House Pvt.Limited, 2010
7. H.D. Kumar and H.N. Singh.A Textbook on Algae (Macmillan international collegeedition)

GEC 1: Chemistry-1 THEORY COURSE (Credits)		
Unit – 1:	**Atomic Structure:** Idea of de Broglie matter wave, Heisenberg uncertainty principle, atomic orbitals, Quantum numbers, shapes of s, p, d orbitals, Trends in periodic table and applications in predicting and explaining the physical and chemical behaviors. Atomic radii, ionic radii, ionizationenergy, electron affinity and electro negativity.	
Unit – 2:	**Chemical Bonding**: Valence bond theory and its limitations ,directional characteristics of covalentbond, various types of hybridization and shapes of simple inorganic molecules and ions, Valence shell electron pair repulsion (VSEPR) theory to NH3 , H3O+,SF4, and H2O MO theory, homonuclear and heteronuclear (CO and NO) diatomic molecules, Weak interactions, Hydrogen bonding, van der Waal forces.	
Unit – 3:	**Different States**: Structural differences between - solids, liquids and gases. Intermolecular forces, Definition of space lattice, unit cell. Bragg's equation. crystal structure of NaCl, KCl and CsCl, Ideal and non ideal solutions, methods of expressing concentration of solutions, Acid-Base concept. **s - Block elements**: Comparative study, diagonal relationships, salient features of Hydrides, Solvation and complexation tendencies. **p-Block elements:** Comparative study of groups 13–17 elements, compounds like hydrides, oxides, halides of group 13-16, basic properties of halogens, inter halogens and polyhalides. **Chemistry of d- blocks elements**: First transition series -Properties of the elements of the first transition series, stability of their oxidation states, coordination number. Second and Third transition series – General characteristics, comparative treatments with their 3d-analogues in respect of ionic radii, oxidation state and magnetic property.	
Unit – 4:	Thermodynamics- Principles, The Hender-Hasselbatch equation, of thermodynamics, Enthalpy, Second law of thermodynamics, Entropy free energy, chemical equilibrium, law of mass sction, principle Law of Thermodynamics, Concept of Entropy and enthalpy, Kirchhoff's equation, calculation of w,q, ΔU, ΔH.	
Unit – 5:	Chemical kinetics & its scope, Rate of reaction, factors influencing the rate of reactions, zero order, second order, pseudo order, half life & mean life, various theories of chemical kinetics, Arrhenious equation & catalysis.	

AECC 1: Environmental Studies THEORY COURSE (4 Credits)		
Unit – 1:	The multidisciplinary nature of Environmental Studies, Definitions, scopes & importance, need forpublic awareness. Natural resources:, renewable & non renewable resources, natural resources & associated problems of forest, water, minerals, food, energy & land resources. Conservation of natural resources, Environmental Ethics:, issues & possible solutions, water conservation, rain water harvesting & watershed management, resettlements & rehabilitation of peoples.	
Unit – 2:	**Ecosystems**; Concept of an ecosystem, structure & function of an ecosystem, energy flow in the ecosystem, ecological succession, food chain, food webs & ecological pyramids. Types, characteristic features, structure & function of following ecosystem; forest ecosystem, grassland ecosystem, desert ecosystem, aquatic ecosystem (ponds, streams, lakes, rivers, oceans, estuaries etc.)	
Unit – 3:	Concepts of Biodiversity**:** Definition of Genetic species & ecosystem diversity, biogeographical classification of india- value of diversity: consumptive use, productive use, social, ethical, Aesthetic & option values. Biodiversity at global, national & local levels. Hotspot of diversity, threats to biodiversity: habitat loss, poaching of wild life, man wild life conflicts. Endangered & endemic species of india, conservation of biodiversity.	
Unit – 4:	Definition of environmental pollution, causes, effects, & control measures of air, water, soil, marines, thermal & noise pollution. Climate Change: global warming, acid rain, ozone layer depletion & nuclear accidents. Solid Waste management: causes, effect & control measures of urban & industrial wastes. Role of an individual in prevention of pollution.	
Unit – 5:	Disaster managements: Floods, earthquakes, cyclones, & landslides. Waste lands reclamation, Consumerism & waste product. Population explosion: family welfare programmes, environment & human health, HIV/AIDS: Role of information technology in environmental & human health. Environmental legislation: environment protection act. Air(prevention & control of pollution) Act. Water (prevention & control of pollution) Act. Wild life protection Act. Forest conservation Act.	

BSc Microbiology SEM-2 C3: Bacteriology & Systematic		
Unit 1	**Methods of studying microorganism**; Staining techniques: simple staining, Gram staining, negative staining and acid-fast staining. **Sterilization techniques** (physical & chemical sterilization). **Culture media**: components of media, natural and synthetic media, chemically defined media, complex media, selective, differential, indicator, enriched and enrichment media, Pure culture isolation: Streaking, serial dilution and plating methods; cultivation, maintenance and preservation of pure cultures.	
Unit 2	Nutritional requirements in bacteria and nutritional categories; **Reproduction in Bacteria** Concept of Amitosis. Asexual methods of reproduction, logarithmic representation of bacterial populations, phases of growth, calculation of generation time and specific growth rate.	
Unit 3	**Bacterial Systematics** Aim and principles of classification, systematics and taxonomy, concept of species, taxa, strain; conventional, molecular and recent approaches to polyphasic bacterial taxonomy, evolutionary chronometers, rRNA oligonucleotide sequencing, signature sequences, and protein sequences. Differences between eubacteria and archaebacteria	
Unit 4	**Important archaeal and eubacterial groups No. of Hours: 16 Archaebacteria**: General characteristics, phylogenetic overview, genera belonging to Nanoarchaeota (*Nanoarchaeum*), Crenarchaeota (*Sulfolobus*, *Thermoproteus*) and Euryarchaeota [Methanogens (*Methanobacterium*, *Methanocaldococcus*), thermophiles (*Thermococcus*, *Pyrococcus*, *Thermoplasma*), and Halophiles (*Halobacterium*, *Halococcus*)	
Unit 5	**Important eubacterial groups** **Eubacteria:** Morphology, metabolism, ecological significance and economic importance of following groups: ***Gram Negative:*** Non proteobacteria: General characteristics with suitable examples Alpha proteobacteria: General characteristics with suitable examples Beta proteobacteria: General characteristics with suitable examples Gamma proteobacteria: General characteristics with suitable examples Delta proteobacteria: General characteristics with suitable examples Epsilon proteobacteria: General characteristics with suitable examples Zeta proteobacteria: General characteristics with suitable examples ***Gram Positive:*** Low G+ C (Firmicutes): General characteristics with suitable examples High G+C (Actinobacteria): General characteristics with suitable examples ***Cyanobacteria*:** An Introduction	

C4:Plant Diversity-2		
Unit 1	**Gymnosperm:-** General characters and Classification of Gymnosperms. Heterospory and Origin of Seed Habit. Diversity of Gymnosperm: Geological Time Scale and Fossilization. Fossil Gymnosperms: *Lyginopteris* and *Lagenostoma. Morphology, Anatomy Reproduction and life cycle,of Cycas, Pinus and Ephedra.*	
Unit 2	**Angiosperms-:** Origin and Evolution of Angiosperms. Terminology for plant description in semi technical language: Principles and rules of Botanical Nomenclature, Herbarium and Botanical gardens; Classification of Angiosperms: Bentham and Hooker, Hutchinson, and Engler & Prantals Modern trends inTaxonomy	
Unit 3	**Taxonomy:** Diagnostic characteristics and Economic Importance of Families – Ranunculaceae, Brassicaceae, Malvaceae, Rutaceae, Fabaceae, Apiaceae, Asteraceae, Asclepiadaceae, Solanaceae, Lamiaceae, Euphorbiaceae, Liliaceae and Poaceae.	
Unit 4	**Plant Physiology: -** Plant Water Relations: Properties of water, Importance of water in plant life, Diffusion, Osmosis & Osmotic relation to plant cell. Water Absorption, Ascent of Sap. Transpiration: Structure & Physiology of Stomata, Mechanism of Transpiration, Factors affecting the rate of transpiration. **Photosynthesis:-** Chloroplast, Photosynthetic pigments, Red drop, Emerson' effect, Concept of two Photosystems, Light reaction, Dark reaction – Calvin cycle, Hatch & Slack cycle, CAM cycle, Factors affecting rate of photosynthesis & Photorespiration.	
Unit 5	**Embryology:** Concept of flower as a modified shoot. Structure of Anther, Microsporogenesis and Male Gametophyte. Structure of Pistil, Ovules, Megasporogenesis and Development of Female Gametophyte (Embryo Sac) and its types. Pollination– Mechanism and Agencies of Pollination, Pollen Pistil interactions and Self incompatibility. Double Fertilization and triple fusion. Development and types of endosperm and its morphological nature, Development of Embryo in Monocot and Dicot. Fruit development and maturation. Seed structure and dispersal. Mode of Vegetative Propagation.	

GEC2: Chemistry-2		
Unit 1	Structure of Organic compounds, bond length, bond angle, Hydrogen bond, Resonance, Electroniceffects, inductive, Mesomeric, Electromeric & Hyperconjugation. Nucleophiles and Electrophiles, Reaction intermediates Carbonium ions, Carbanions, Free radicals and Carbenes, Homolytic fissionand Heterolytic fission.	
Unit 2	Introduction, Nomenclature, Isomerism, Preparation and General Properties of Aliphatic hydrocarbons, Alkanes, Alkenes and Alkynes, Cycloalkanes,	
Unit 3	Introduction, Nomenclature, Preperation and general properties of Alcohols, Phenols, Aldehydeand Ketones. Aromaticity.	
Unit 4	Carbohydrates (monosaccarides, diasaccarides and polysaccharides): classification and general properties, Glucose and fructose (open chain and cyclic structure), Overview of primary, secondary, tertiary and Quaternary structure of proteins. Introduction, glycerides, synthetic detergents, Introduction, classification of amino acids.	
Unit 5	Stereochemistry: Simple molecules , Hybridization, conformation & configuration, Geometrical isomerism, optical isomerism, Chirality, Enantiomers and optical activity	

AECC2: English		
Unit 1	**Introduction**: Theory of Communication, Types and modes ofCommunication	
Unit 2	**Language of Communication**: Verbal and Non-verbal (Spoken and Written) Personal, Social and Business Barriers and Strategies Intra-personal, Inter-personal and Group communication	
Unit 3	**Speaking Skills**: MonologueDialogue Group Discussion Effective Communication/ Mis- CommunicationInterview Public Speech	
Unit 4	**Reading and Understanding** Close Reading Comprehension Summary Paraphrasing Analysis and Interpretation Translation (from Indian language to English and vice-versa)Literary/Knowledge Texts	
Unit 5	**Writing Skills** Documenting Report Writing Making notesLetter writing	

C5:Advanced Instrumentation: Principle and Application		
Unit 1	**Microscopy:** Bright field and dark field microscopy, Fluorescence Microscopy, Phase contrast Microscopy, Confocal Microscopy, Electron Microscopy (Scanning and Transmission Electron Microscopy) and Micrometry.	
Unit 2	**Chromatography:** Principles and applications of paper chromatography (including Descending and 2-D), Thin layer chromatography. Column packing and fraction collection. Gel filtration chromatography, ion-exchange chromatography and affinity Chromatography, GLC, HPLC.	
Unit 3	**Electrophoresis:** Principle and applications of native polyacrylamide gel electrophoresis, SDS- polyacrylamide gel electrophoresis, 2D gel electrophoresis, Isoelectric focusing, Zymogram preparation and Agarose gel electrophoresis.	
Unit 4	**Spectrophotometry:** Principle and use of study of absorption spectra of bio molecules. Analysis of bio molecules using UV and visible range. Colorimetry and turbidometry.	
Unit 5	**Centrifugation:** Preparative and analytical centrifugation, fixed angle and swinging bucket rotors. RCF and sedimentation coefficient, differential centrifugation, density gradient centrifugation and Ultracentrifugation.	

C6: Basic Biochemistry		
Unit 1	**Concept of bio-molecules -** Building blocks of life, Macromolecules.	

	Concept of Bioenergetics - First and second laws of Thermodynamics. Definitions of Gibb's Free Energy, enthalpy and Entropy and mathematical relationship among them, Standard free energy change and equilibrium constant Coupled reactions and additive nature of standard free energy change, Energy rich compounds, ATP, amino acids the building blocks of proteins. Titration curve of amino acid and its Significance, Classification, biochemical structure and notation of standard protein amino acids Ninhydrin reaction. General formula of amino acid and concept of zwitterion. Natural modifications of amino acids in proteins hydrolysine, cystine and hydroxyproline, Non protein amino acids: Gramicidin, beta-alanine, alanine and D-glutamic acid.	
Unit 2	**Carbohydrate: Families of monosaccharides** – aldoses and ketoses, trioses tetroses, pentoses, and hexoses. Stereo isomerism of monosaccharides, epimers, mutarotation and anomers of glucose. Furanose and pyranose forms of glucose and fructose, Haworth projection formulae for glucose; chair and boat forms of glucose, sugar derivatives, glucosamine. Disaccharides; concept of reducing and non-reducing sugars, occurrence and Haworth projections of maltose, lactose, and sucrose, polysaccharides, storage polysaccharides, starch and glycogen. Structural polysaccharides, cellulose, peptidoglycan and chitin	
Unit 3	**Protein:** Primary, secondary, tertiary and quaternary structures. Enzymes: Structure of enzyme, Apoenzyme and cofactors, prosthetic group-TPP, coenzyme -NAD, metal cofactors, Classification of enzymes, Mechanism of action of enzymes: active site, transition state complex and activation energy. Lock and key hypothesis, and Induced Fit hypothesis. Significance of hyperbolic, double reciprocal plots of enzyme activity, Km, and allosteric mechanism Definitions of terms – enzyme unit, specific activity and turnover number, Effect of pH and temperature on enzyme activity. **Enzyme inhibition**:competitive- sulfa drugs; non-competitive-heavy metal salts.	
Unit 4	**Lipids:** Definition and major classes of storage and structural lipids. Storage lipids. Fatty acids structure and functions. Essential fatty acids. Triacylglycerols structure, functions and properties. Saponification Structural lipids. Phosphoglycerides: Building blocks, general structure, functions and properties. Structure of phosphatidylethanolamine and phosphatidylcholine, Sphingolipids: building blocks, structure of sphingosine, ceramide. Special mention of sphingomyelins, cerebrosides and gangliosides Lipid functions: cell signals,cofactors, prostaglandins, Introduction to lipid micelles, monolayers, bilayers	
Unit 5	Nucleic acids and vitamins. Biosynthesis of nucleotides. Base composition. A+T and G+C rich genomes. Structure and functions of DNA and RNA. Basic concept of nucleic acids protein interactions. Concept and types of vitamins and their role in metabolism.	

GEC3: Genetic Engineering and Advanced Microbiology

Unit 1	**Introduction to genetic engineering**: Restriction modification systems: Mode of action, applications of Type II restriction enzymes in genetic engineering. DNA modifying enzymes and their applications: DNA polymerases.Terminal deoxynucleotidyl transferase, kinases and phosphatases, and DNA ligases. **Cloning**: Use of linkers and adaptors: Transformation of DNA: Chemical method, Electroporation**.**	
Unit 2	**Methods of DNA, RNA and Protein analysis**: Agarose gel electrophoresis, Southern - and Northern - blotting techniques, dot blot, DNA microarray analysis,SDS-PAGE, and Western blotting. **Cloning Vectors:** Plasmid vectors: pBR and pUC series, Bacteriophage lambda and M13 based vectors Cosmids, BACs, YACs, Expression vectors: *E.coli*lac and T7, promoter-based vectors, yeast YIp, YEp and YCp vectors, Baculovirus based vectors, mammalian SV40-based expression vectors	
Unit 3	**DNA Amplification and DNA sequencing**: PCR: Basics of PCR, RT-PCR, Real-TimePCR Genomic and cDNA libraries: Preparation and uses, Genome sequencing Sanger's method of DNA Sequencing: traditional and automated sequencing	
Unit 4	**Application of Genetic Engineering and Biotechnology:** Gene delivery: Microinjection, electroporation, biolistic method (gene gun), liposome and viral-mediated delivery, *Agrobacterium* - mediated delivery. **Products of recombinant DNA technology**: Products of human therapeutic interest - Insulin, hGH, antisense molecules. Bt transgenic - cotton, brinjal, flavosavo tomato, Gene therapy, Recombinant vaccine, Protein engineering	
Unit 5	**Metagenomics:** Metagenomics of viral metagenome, metatranscriptomics,metaproteomics and metabolomics. Understanding bacterial diversity using metagenomics approach, **Biofilms**: types of microorganisms, molecular aspects and significance in environment, health care, virulence and antimicrobial resistance. Quorum sensing in bacteria, Microbiomes and importance of microbial communities, VBNC (viable but not culturable bacteria). Genetically modified organisms and their uses. Modern methods of rapid identification of microbes (PCR, mass spectrometry, fluorescence based techniques). CRISPR-Cas system.	

SEC1: Microbial Diagnostics and Public Health		
Unit 1	**Importance of Diagnosis of Diseases**:Bacterial, Viral, Fungal and Protozoan Diseases of various human body systems, Disease associatedclinical samples for diagnosis	
Unit 2	**Collection of Clinical Samples :**How to collect clinical samples (oralcavity, throat, skin, Blood, CSF, urine and faeces) and precautions required. Method of transport of clinical samples to laboratory and storage.	
Unit 3	**Direct Microscopic Examination and Culture.Examination of sample by staining -** Gram stain, Ziehl-Neelson staining for tuberculosis, Giemsa- stained thin blood film for malaria. Preparation anduseofculturemedia-Bloodagar,Chocolateagar,Lowenstein-Jensenmedium,MacConkey agar, Distinct colony properties of various bacterial pathogens.	
Unit 4	**Serological and Molecular Methods:** **Serological Methods**-Agglutination,ELISA immunofluorescence, **Nucleic acid based methods** - PCR, Nucleic acid probes. **Kits forRapid Detection of Pathogens**:Typhoid, Dengue and HIV, Swine flu.	
Unit 5	**Testing for Antibiotic Sensitivity in Bacteria:** Importance, Determination of resistance /sensitivity of bacteria using disc diffusion method, Determination of minimal inhibitory concentration (MIC) of an antibiotic by serial double dilution method	

C7:Immunology

Unit 1	**Immunity and Immune response**: Innate immune and characteristics of adaptive immune Responses, Hematopoiesis. Anatomical organization of Immune System: Primary Lymphoid Organs, Secondary Lymphoid Organs.Cell of immune system: Mononuclear cells and granulocyte, Antigen presenting cells, lymphocytes and their subsets.	
Unit 2	**Inflammation**: mediator and the process, cell-adhesion molecules and their role inInflammation, role of anaphylatoxins, granulocyte in inflammatory Process .Major histocompatibility systems:	
Unit 3	**Antigen:** Properties, types and determinants of antigenicity, Heptanes: Factor affecting immunogenicity, Super antigen. **Antibody:** Nature, Types and Structure of Immunoglobulin and Their Functions. Antigen-Antibody interaction avidity and affinity.	
Unit 4	**Monoclonal antibodies**: production, characterization and application . Compliment System, components, Activation pathway and regulation. Hypersensitivity and its types.	
Unit 5	**Autoimmunity and Immunodeficiency SyndromeVaccines:** Active and passive immunization. **Immunotechniques**: Immunodifusion, Immunoprecipitation, ELISA, RIA.	

C8:Microbial Physiology and Metabolism

Unit 1	Definitions of growth, measurement of microbial growth, Batch culture, Continuous culture, generation time and specific growth rate, synchronous growth, diauxic growth curve. Microbial growth in response to environment - Temperature (psychrophiles, mesophiles, thermophiles, extremophiles, thermodurics, psychrotrophs), pH (acidophiles, alkaliphiles), solute and water activity (halophiles, xerophiles, osmophilic), Oxygen (aerobic, anaerobic, microaerophilic, facultative aerobe, facultativeanaerobe),barophilic.	
Unit 2	**Microbial growth in response to nutrition and energy** – Autotroph/Phototroph, heterotrophy, Chemolithoautotroph, Chemolithoheterotroph, Chemoheterotroph, Chemolithotroph, photolithoautotroph, Photoorganoheterotroph. Passive and facilitated diffusion. Primary and secondary active transport, concept of uniport, symport and antiport Group translocationIron uptake	
Unit 3	Concept of aerobic respiration, anaerobic respiration and fermentation Sugar degradation pathways i.e. EMP, ED, Pentose phosphate pathway TCA cycle. Electron transport chain: components of respiratory chain, comparison of mitochondrial and bacterial ETC, electron transport phosphorylation, uncouplers and inhibitors. Fermentation - Alcohol fermentation and Pasteur effect; Lactate fermentation (homofermentative and hetero fermentative pathways), concept of linear and branched fermentation pathways	
Unit 4	Introduction to aerobic and anaerobic chemolithotrophy with an example each. Hydrogen oxidation (definition and reaction) and methanogenesis (definition and reaction). Introduction to phototrophic metabolism - groups of phototrophic microorganisms, anoxygenic vs. oxygenic photosynthesis with reference to photosynthesis in green bacteria, purple bacteria and Cyanobacteria	
Unit 5	Anaerobic respiration with special reference to dissimilatory nitrate reduction (Denitrification; nitrate/nitrite and nitrate/ammonia respiration; fermentative nitrate reduction). Introduction to biological nitrogen fixation Ammonia assimilation. Assimilatory nitrate reduction, dissimilatory nitrate reduction, denitrification.	

GEC4: Human Microbial Disease		
Unit1	**Human Diseases**:Infectious and non-infectious diseases, microbial and non-microbial diseases, Deficiency diseases, occupational diseases, Incubation period, mortality rate, nosocomial infections Sign and Symptoms of common diseases	
Unit2	**Microbial diseases:** Respiratorymicrobialdiseases,gastrointestinalmicrobialdiseases,Nervous system diseases, skin diseases, eye diseases, urinary tract diseases, **Sexually transmitted diseases:** Types, route of infection, clinical systems and general prevention methods, study of recent outbreaks of human diseases (SARS/ Swine flu/Ebola) – causes, spread and control, Mosquito borne disease – Types and prevention.	
Unit3	**Therapeutics of Microbial diseases :**Treatment using antibiotics: beta lactam antibiotics (penicillin, cephalosporins), quinolones, polypeptides and aminoglycosides**.** Judicious use of antibiotics, importance of completing antibiotic regimen, Concept of DOTS, emergence of antibiotic resistance, current issues of MDR/XDR microbial strains.	
Unit4	**Treatment using antiviral agents**: Amantadine, Acyclovir, Azidothymidine. Concept of HAART. **Vaccines:** Importance, types, vaccines available against microbial diseases, vaccination schedule (compulsory and preventive) in the Indian context	
Unit5	**Prevention of Microbial Diseases:** General preventive measures, Importance of personal hygiene, environmental sanitation and methods to prevent the spread of infectious agents transmitted by direct contact, food, water and insect vectors.	

SEC2: FOOD & FERMENTATION TECHNOLOGY		
Unit1	Brief history and developments in industrial microbiology. Sources of industrially important microbes and methods for their isolation, preservation and maintenance	

	of industrial strains, strainimprovement, **Crude and synthetic media**; molasses, corn- steep liquor, sulphite waste liquor, whey, yeast extract and protein hydrolysates. **Fermentation & Types of fermentation processes** - Solid-state and liquid-state(stationary and submerged) fermentations; batch, fed-batch (e.g. baker's yeast) and continuous fermentations. Components of a typical bio-reactor, **Types of bioreactors**-Laboratory, pilot- scale and production fermenters, constantly stirred tank and air-lift fermenters, **Measurement and control of fermentation parameters** - pH, temperature, dissolved oxygen, foaming and aeration	
Unit2	**Down-stream processing**; Cell disruption, filtration, centrifugation, solvent extraction, precipitation, lyophilization and spray drying. Microbial cells as food. SCP -mushroom cultivation,	
Unit3	**Microbial production of industrial products** (micro-organisms involved,media, fermentationconditions, downstream processing and uses)- Citric acid, ethanol, penicillin, glutamic acid, Vitamin B12. Enzymes (amylase, protease, lipase) wine, beer. Methods of immobilization, advantages and applications of immobilization, large scale applications of immobilized enzymes(glucose isomerase and penicillin acylase). Role of Microbes in Medicine and textile industry.	
Unit4	**Fermented Foods:** Definition, types, advantages and health benefits, fermented foods used by Common public, domestication, **Milk Based Fermented** Foods**:** Dahi, Yogurt, Buttermilk (Chhachh) and cheese: Preparation of inoculums, types of microorganisms and production process.	
Unit5	**Grain Based Fermented Foods:** Soy sauce, Bread, Idli and Dosa: Microorganisms and production process, Preparation and preservation. **Vegetable Based Fermented Foods:** Pickels, Saeurkraut: Microorganisms and production process. Preparation and preservation methods **Fermented Meat and Fish:**Types, microorganisms involved, fermentation process Probiotic Foods:Definition, types, microorganisms and health benefits .	
C9: VIROLOGY		
Unit1		

	Virology: Discovery of viruses, nature and definition of viruses, general properties, concept of viroids, virusoids, satellite viruses and Prions. Theories of viral origin; Structure of Viruses. Viral taxonomy- Classification and nomenclature of different groups of viruses. Baltimore system of classification.	
Unit2	Isolation, purification and cultivation of bacterial viruses. Study of one step growth curve of bacterial viruses. Types of bacteriophages, lytic and lysogenic phages (lambda phage) concept of early and late proteins, regulation of transcription in lambda phage. T even, T odd ϕX174 and M13 phages.	
Unit3	**Modes of viral transmission:** Persistent, non- persistent, vertical and horizontal. Replication Assembly, maturation and release of viruses. Salient features of viral nucleic acid and the presence of unusual bases. Influenza and Hepatitis B virus, HIV, polio virus, Vaccinia virus, Rabies Virus. TMV, Cauliflower Mosaic Virus.	
Unit4	Introduction to oncogenic viruses. Types of oncogenic DNA and RNA viruses: Concepts of oncogenes and proto-oncogenes.	
Unit5	Antiviral compounds and their mode of action Interferon and their mode of action; Viral vaccines; Introduction to use of viral vectors in cloning and expression, and gene therapy.	

DSE1: PLANT PATHOLOGY AND DISEASE MANAGEMENT

Unit1	**Concept of plant disease**- definitions of disease, disease cycle & pathogenicity, symptoms associated with microbial plant diseases, types of plant pathogens, economic losses and social impact of plant diseases. **Significant landmarks in the field of plant pathology**- Contributions of Anton DeBary, Millardet, Burrill, E. Smith, Adolph Mayer, Ivanowski, Diener, Stakman, H.H. Flor,VanDer Plank, molecular Koch'spostulates .Contributions of eminent Indian plant pathologists.	
Unit2	Infection, invasion, colonization, dissemination of pathogens and perennation. Concepts of monocyclic, polycyclic and polyetic diseases, disease triangle &disease pyramid, forecasting of plant diseases and its relevance in Indian context. **Microbial Pathogenicity:** Virulence factors of pathogens: enzymes, toxins (host specific and non specific) growth regulators, virulence factors in viruses (replicase, coat protein, silencing suppressors) in disease development. Effects of pathogens on host physiological processes(photosynthesis, respiration, cell membrane permeability, translocation of water and nutrients, plant growth and reproduction).	
Unit3	**Genetics of Plant Disease*:*** Concept of resistance (R) gene and avirulence (avr) gene; gene for gene hypothesis, types of plant resistance: true resistance– horizontal & vertical, apparent resistance. **Defense Mechanisms in Plant**:Concepts of constitutive defense mechanisms in plants, inducible structural defenses (histological- cork layer, abscission layer, tyloses, gums), inducible biochemical defenses [hypersensitive response (HR), systemic acquired resistance (SAR), phytoalexins, pathogenesis related (PR) proteins, plantibodies, phenolics, quinones,oxidative bursts]	
Unit4	Principles & practices involved in the management of plant diseases by different methods, *viz.* regulatory - quarantine, crop certification, avoidance of pathogen, use of pathogen free propagative material. cultural - host eradication, crop rotation, sanitation, polyethylene traps and mulches chemical - protectants and systemic fungicides, antibiotics, resistance of pathogens to chemicals. biological - suppressive soils, antagonistic microbes-bacteria and fungi, trap plant; genetic engineering of disease resistant plants- with plant derived genes and pathogen derived genes	

Unit5	**Study of some important plant diseases giving emphasis on its etiological agent, symptoms, epidemiology and control.** White rust of crucifers- *Albugocandida*; Downy mildew of onion - *Peronospora destructor* Late blight of potato -*Phytophthorainfestans*; Powdery mildew of wheat – *Erysiphegraminis* Ergot of rye - *Clavicepspurpurea*; Black stem rust of wheat – *Pucciniagraministritici* Loose smut of wheat - *Ustilagonuda*; Wilt of tomato - *Fusarium oxysporum*f.sp. , *lycopersici* Red rot of sugarcane - *Colletotrichumfalcatum*; Early blight of potato - *Alternariasolani*; Angular leaf spot of cotton,bacterial leaf blight of rice, crowngalls, bacterial cankers of citrus; Aster yellow, citrus stubborn; Papaya ring spot,tomat oyellow leaf curl,banana bunchy top, rice tungro; Potato spindle tuber,coconut cadang cadang	

SEC3: Microbial Quality Control in Food & Pharmaceutical Industry		
Unit1	**Microbiological Laboratory and Safe Practices:Good laboratory practices** - Good laboratory practices, Good microbiological practices. Biosafety cabinets – Working of biosafety cabinets, using protective clothing, specification for BSL- 1, BSL-2, BSL-3. Discarding biohazardous waste – Methodology of Disinfection, Autoclaving & Incineration	

Unit2	**Determining Microbes in Food / Pharmaceutical Samples**: Culture and microscopic methods - Standard plate count, Most probable numbers,Direct microscopic counts, Biochemical and immunological methods: Limulus lysate test for endotoxin, gel diffusion, sterility testing for pharmaceutical products.	
Unit3	**Molecular methods to determine microbes in samples**- Nucleic acid probes, PCR based detection, biosensors. Enrichment culture technique, **Detection of specific microorganisms** - on XLD agar, Salmonella Shigella Agar, Manitol salt agar, EMB agar, McConkey Agar, Saboraud Agar	
Unit4	Ascertaining microbial quality of milk by MBRT, Rapid detection methods of microbiological quality of milk at milk collection centres (COB, 10 min Resazurin assay)	
Unit5	**HACCP for Food Safety and Microbial Standards:** Hazard analysis of critical control point (HACCP) - Principles, flow diagrams, limitations Microbial Standards for Different Foods and Water – BIS standards for common foods and drinking water	

C10: MEDICAL &VETERINARY MICROBIOLOGY

Unit1	**Normal microflora of the human body:** Importance of normal microflora, normal microflora of skin, throat, gastrointestinal tract, urogenital tract. **Host pathogen interaction**: Definitions - Infection, Invasion, Pathogen, Pathogenicity, Virulence, Toxigenicity, Carriers and their types, Opportunistic infections, Nosocomial infections. Transmission of infection, Pathophysiologic effects of LPS. Collection, transport and culturing of clinical samples, principles of different diagnostic tests (ELISA, Immunofluorescence, Agglutination based tests, Complement fixation, PCR, DNA probes).	
Unit2	List of diseases of various organ systems and their causative agents. Symptoms, mode of transmission, prophylaxis and control of the diseases caused by Streptococcus pyogenes, *Mycobacterium,Haemophilus influenzae, tuberculosis, Bacillus anthracis, Clostridium tetani, Treponema pallidum, Clostridium difficile*, and the viruses causing Polio, Herpes, Hepatitis, Dengue, AIDS, influenza and Japanese encephalitis.	
Unit3	Study of following animal diseases with respect to etiology, symptoms, mode of transmission, prophylaxis and control: FMD, swine flu, bird flu, Rabies, bovine tuberculosis, Marek's, ranikhet, brucellosis, distemper.	
Unit4	**Mycoses**: Cutaneous mycoses: Tinea pedis (Athlete's foot) Systemic mycoses: Histoplasmosis Opportunistic mycoses: Candidiasis. Occurrence, habitat, morphology and reproduction of Protozoa. Structure and reproduction of important Protozoans- Entamoeba, Giardia, Trichomonas, Leishmania, Trypanosoma and Plasmodium	
Unit5	I**mmune system:** Structure and function of the cells, tissues and organs of immune system. **Types of immunity** - Humoral and cell-mediated, innate, acquired immunity. Complement system – function and pathways. **Antigens and Antibodies**: types, properties. Haptens, adjutants, **Immunoglobulins**: Structure types, Properties and their function - Theory of antibody production. Antigen-Antibody Interactions, Agglutination, Precipitation, Complement fixation test. Hypersensitivity reactions; IgE mediated Type I Hypersensitivity, Antibody-mediated cytotoxic (Type II) Hypersensitivity, Immune complex mediated (Type III) Hypersensitivity, DTH mediated (Type IV) Hypersensitivity.	

DSE2:MICROBIAL ENZYME TECHNOLOGY		
Unit1	**Basic concepts of Enzymes :** Nomenclature, classification, methods for determination of enzyme Activity. Isolation and purification of enzymes. **Enzyme kinetics**: Michaelis-Menten equation, effect of pH, substrate concentration, temperature and inhibitors. Isoenzymes and allosteric enzymes. Enzyme inhibition- competitive and non-competitive inhibition.	
Unit2	Enzymes from microbial sources, large scale production of enzymes, recovery of enzymes, enzyme purification methods - enzyme precipitation, separation by chromatography, enzyme reactors.	
Unit3	**Immobilized enzymes**:Physical and chemical methods of immobilizatio immobilization supports, kinetics of immobilized enzymes. Enzyme catalysis i apolar medium, reverse micellar entrapment of enzymes and its applications	
Unit4	**Application of enzymes**:synthesis of chemicals using enzymes, food technology and medicine.Enzymes in diagnostic assays. Enzyme electrodes, immunoenzyme techniques	
Unit5	**Microbial toxins**:Types, biochemical and molecular basis of toxin production, implications. Genetically engineered microbes, anti-HIV, anticancer, antifungal, antiplasmodial, anti- inflammatory compounds	

DSE3: Microbiological Analysis of Air ,Water And Soil		
Unit1	**Aero- microbiology**: Bioaerosols, Air borne microorganisms (bacteria, Viruses, fungi) and their impact on human health and environment, significance in food and pharma industries and operation theatres, allergens. Bio aerosol sampling, air samplers, methods of analysis, CFU, culture media for bacteria and Fungi, Identification characteristics. **Control Measures**: Fate of bioaerosols, inactivation mechanisms – UV light, HEPA filters, desiccation, Incineration. Precipitation, chemical disinfection,	

	filtration, high temperature, UV light	
Unit2	**Water- microbiology:** Water borne pathogens, water borne diseases. Sample Collection, Treatment and safety of drinking(potable)water, **Methods to detect portability of water samples:** (a) standard qualitative procedure: presumptive/MPN tests, confirmed and completed tests for faecal coliforms (b) Membrane filter technique and (c) Presence/absence test. **Liquid waste management**: Composition and strength of sewage (BOD and COD), Primary, secondary (oxidation ponds, trickling filter, activated sludge process and septic tank) and tertiary sewage treatment	
Unit3	**Soil- microbiology:** Soil borne pathogens, soil borne diseases, Sampling of soil, sample collection **Solid Waste management**: Sources and types of solid waste, Methods of solid waste disposal (composting and sanitary landfill). Carbon cycle: Microbial degradation of cellulose, hemicelluloses, lignin and chitin Nitrogen cycle: Nitrogen fixation, ammonification, nitrification, denitrification and nitrate reduction Phosphorus cycle: Phosphate immobilization and solubilisation. Sulphur cycle: Microbes involved in sulphur cycle Other elemental cycles: Iron and manganese	
Unit4	Principles and degradation of common pesticides, organic (hydrocarbons, oil spills) and inroganic (metals) matter, biosurfactants.	
Unit5	**Biological Interaction**: A. Microbe– Microbe Interactions- Mutualism, Synergis, Commensalism, Competition, Amensalism, Parasitism, Predation, Biocontrol agents. B. Microbe–Plant Interactions Roots, Aerial Plant surfaces, Biological Nitrogen fixation (symbiotic/nonsymbiotic - biofertilizers) C. Microbe-Animal Interactions - Role of Microbes in Ruminants, Nematophagus fungi, Luminescent bacteria as Symbiont	

C11: MICROBIAL GENETICS AND MOLECULAR BIOLOGY		
Unit 1	Importance of Genetics, Gene, allele, genotype and phenotype.	

	Mendelian laws of inheritance, Monohybrid cross, Law of Dominance and the law ofsegregation, Dihybrid cross and law of independent assortment. Interactions of genes, complementary genes, reversions , lethal genes, epistasis. Multiple alleles, Blood groups, Rh factor. **Sex** linked inheritance**:** X linkage, sex linkage in man, color blindness, Hemophilia (Bleeder's disease) and other genetic diseases. Characteristics of X linked inheritance. Y linked inheritance in Man, Inheritance of X-Y linked Genes. Human genetics (pedigree analysis, karyotypes and genetic disorder).	
Unit 2	Genome organization: *E. coli*, *Saccharomyces, Tetrahymena*. **Microbial Genetics**: **Transformation**- discovery, Griffith's experiment, mechanism of transformation; Factors affecting transformation process, Competence and development of competence in *S. Pneumonia.* **Transduction** – discovery, Lederberg and Tatum's experiment, mechanism and types of transduction- Generalized transduction, Specialized transduction, Sexduction and abortive transduction. **Conjugation-** discovery, experimental evidence, F-factor, F^+& Hfr,mechanism of conjugation, Cross between Hfr, F^+&F^- Conjugant and its application. Features of T4 genetics , Genetic basis of lytic *versus* lysogenic switch of phage lambda. Types of plasmids – F plasmid, R Plasmids, colicinogenic plasmids, Tiplasmids, linear plasmids, yeast- 2 ɜ plasmid, Plasmid replication and partitioning, Host range, plasmid- incompatibility, plasmid amplification, Regulation ofcopy number, curing of plasmids. Prokaryotic transposable elements – Insertion Sequences, compositeand non-composite transposons, Replicative and Non replicative transposition, Mutransposon.	
Unit 3	Molecular basis of life. Nucleic acids as genetic material. Structure of DNA and its alternative forms. Structure and Types of RNA. Enzymes, proteins and other factors involved in DNA replication. Mechanism of DNA replication in prokaryotes (enzymology and process)	
Unit 4	Prokaryotic gene expression: Prokaryotic transcription, Genetic code Prokaryotic translation. Regulation of gene expression: Operon concept (Lac and Trp operon) Fidelity of translation, Inhibitors of protein synthesis in prokaryotes and eukaryote	
Unit 5	Split genes, concept of introns and exons, RNA splicing, spliceosome machinery**,** concept of alternative splicing, Polyadenylation and capping, Processing of rRNA, RNA interference: si RNA, miRNA and its significance., Sporulation in *Bacillus,* Yeast mating type switching , Changes in Chromatin Structure - DNA methylation and Histone Acetylation mechanisms.	

DSE4: BIOSAFETY & IPR

Unit1	. Biosafety: Introduction; biosafety issues in biotechnology; Biological Safety Cabinets &their types; Primary Containment for Biohazards; Biosafety Level of Specific Microorganisms AERB/RSD/RES guidelines for using radioisotopes in laboratories and precautions.	
Unit2	Biosafety Guidelines: Biosafety guidelines and regulations(National and International); GMOs/LMOs- Concerns and Challenges; Role of Institutional Biosafety Committees (IBSC), RCGM, GEAC etc. for GMO applications in food and agriculture; Environmental release of GMOs; Risk Analysis; Risk Assessment; Risk management and communication; Overview of International Agreements - Cartagena Protocol.	
Unit3	IntroductiontoIntellectualProperty:Patents,Types,Trademarks,Copyright&RelatedRights, Industrial Design and Rights, Traditional Knowledge, Geographical Indications- importance of IPR – patentable and non patentables – patenting life – legal protection of biotechnological inventions – World Intellectual Property Rights Organization (WIPO)	
Unit4	Grant of Patent and Patenting Authorities: Types of patent applications: Ordinary, PCT, Conventional, Divisional and Patent of Addition; An introduction to Patent Filing Procedures; Patent licensing and agreement; Patent infringement- meaning, scope, litigation, case studies, Rights and Duties of patent owner.	
Unit5	Agreements and Treaties: GATT, TRIPS Agreements; Role of Madrid Agreement; Hague , Agreement; WIPO Treaties; Budapest Treaty on international recognition of the deposit of microorganisms; UPOV & Brene conventions; Patent Co-operation Treaty (PCT); Indian Patent Act 1970 & recent amendments.	

RESEARCH METHODOLOGY		
Unit1	. **Identification and defining of the Research Problem:** Familiarization of research areas; Review of literature using appropriate resources – reviews, research papers, books and patents; Use of tools for searching literature through electronic databases; Defining a research problem.	
Unit2	**Experimental Approaches and Methodology** Experimental designs to address the research problem; different experimental strategies; Finalization of experimental design; Tools and techniques to execute experiments; Means to validate and analyze data;	
Unit3	**Ethics in Biological Research** Guidelines for Biosafety and Bioethics; Institutional Biosafety Committee – Handling of Genetically modified organisms, Institutional Human and Animal Ethics Committee - compliance, concerns and approval	
Unit4	**Presentation, Publication and Protection of Research Data.** Skills for scientific writing and research presentation – Term paper, Research project, Research report, Thesis, Research article and Review; Organization of the research document in to different sections (Introduction, Methodology, Results, Discussion, and Summary and Conclusions, Bibliography); Use of electronic tools for bibliographic formatting and checking Plagiarism; Oral presentation skills; Patents and Intellectual property rights	

Unit5	**Statistical analysis and Biosafety in research** Safety practices and disposal of Bio-waste in the laboratory; Radioactivity and safety precautions; Handling and disposal of flammable and hazardous chemicals. Use of statistical tools for analyzing the significance and interpretation of the data; Methods of recording observations and documentation	

C12:AGRICULTURE FOOD AND DAIRY MICROBIOLOGY		
Unit1	. History of Agricultural Microbiology; Microbes and their importance in maintenance of soil, Biogeochemical cycles, role of microbes in maintaining the fertility of soil. Bio fertilizers – Bacterial, - Azotobacter and vermiform compost. Soil microorganism -association with vascular plants- phyllosphere, Rhizobium, Rhizoplane associative nitrogen fixation. Biofertilizers- Cyanobacterial and Azolla.	
Unit2	Intrinsic and extrinsic factors that affect growth and survival of microbes in foods, natural flora and source of contamination of foods in general. Principles, Spoilage of vegetables, fruits, meat, eggs, milk and butter, bread, canned Foods. Principles of food preservation: temperature, canning, drying, irradiation, microwave processing and aseptic packaging, chemical methods of food preservation: salt, sugar, organic acids, SO2, citrates, benzoates nitrite and nitrates etc.	
Unit3	Dairy starter cultures, fermented dairy products: yogurt, acidophilus milk, kumiss, kefir, dahi and cheese, other fermented foods: dosa, sauerkraut, soy sauce and tampeh, Probiotics: Health benefits, types of microorganisms used, probiotic foods available in market. Utilization and disposal of dairy by-product – whey.	

Unit4	Food borne diseases (causative agents, foods involved, symptoms and preventive measures)- Food intoxications: Staphylococcus aureus, Clostridium botulinum and mycotoxins; Food infections: Bacillus cereus, Vibrio parahaemolyticus, Escherichia coli, Salmonellosis, Shigellosis, Yersinia enterocolitica, Listeria monocytogenes and Campylobacter jejuni	
Unit5	Food sanitation and control; HACCP, Indices of food sanitary quality and sanitizers. Cultural and rapid detection methods of food borne pathogens in foods and introduction to predictive microbiology. Genetically modified foods, Nutraceuticals, Biosensors in food, Applications of microbial enzymes in dairy industry [Protease, Lipases].	

C13: Biostatistics & Bioinformatics		
Unit1	Types of Data, Collection of data; Primary & Secondary data, Classification and Graphical representation of Statistical data. Measures of central tendency and Dispersion. Measures of Skewness and Kurtosis.	
Unit2	Probability classical & axiomatic definition of probability, Theorems on total and compound probability), Elementary ideas of Binomial, Poisson and Normal distributions.	
Unit3	Methods of sampling, confidence level, critical region, testing of hypothesis and standard error, large sample test and small sample test. Problems on test of significance, t-test, chi-square testfor goodness of fit and analysis of variance (ANOVA)	

Unit4	Correlation and Regression. Emphasis on examples from Biological Sciences.	
Unit5	Sequence and Phylogeny analysis, Detecting Open Reading Frames, Outline of sequence Assembly, Mutation/Substitution Matrices, Pairwise Alignments, Introduction to BLAST, using it on the web, Interpreting results, Multiple Sequence Alignment, Phylogenetic Analysis, Sequence Similarity Searches-BLAST,FASTA, Data Submission.	

Syllabus

M.Sc. Microbiology : 2022-23

Four Semester Course
(Choice Base Credit System)

School of Environmental Biology

Awadhesh Pratap Singh University Rewa M. P.

Master of Science (Microbiology) Program Outcomes (POs)

Program Outcome	Description
PO1	Foster learning through accumulation of knowledge in Science.
PO2	Identify complex problems in the society which can be addressed through science.
PO3	Formulate strategies and design experiments to address the societal problems using first principles of basic sciences and applied sciences.
PO4	Adopt appropriate scientific techniques and resources to solve societal issues with an understanding of the limitations.
PO5	Critically and analytically evaluate and interpret research based data to provide valid conclusions and solutions.
PO6	Demonstrate leadership qualities by working collaboratively in a team, to set goals, communicate scientific information to stakeholders, comprehend and write reports, develop documentation, make presentation and to give and receive clear instructions.
PO7	Apply ethical principles, commit to professional ethics and responsibilities and norms of the scientific practice

Program Specific Outcomes (PSOs)

Branch	PSO	Description
Microbiology	**PSO1**	Communicate and analyze the core concepts and theories in Microbiology and allied sciences (Microbial systematic, Immunology, Biochemistry, Medical Microbiology, Molecular Biology, Genetic Engineering, Biostatistics)
	PSO2	Apply basic concepts/ theories of Life Sciences for solving current scientific and social issues in key fields such as agriculture, food, environment, human health, transgenic animals, GMOs and plant disease management
	PSO3	Plan and design systematic research activities in the field of Microbiology and allied sciences including necessary skills for collecting, processing and interpreting data and drawing logical inferences
	PSO4	Engage in life-long learning in the broadest context of scientific advancement.

Course Outcomes (COs)

Semester	Course Code	Course Name	Course Outcomes (COs)
Ist Semester	**MB.101**	**Introduction to Microbiology and General Bacteriology**	**CO1 :** Describe the morphological features of Bacteria and their types, systematics for the classification of bacteria by latest approaches **CO2 :** State the principles of various sterilization techniques. skills involved in culture media preparation, pure culturing and staining techniques to identify and evaluate the bacteria **CO3:** illustrate the metagenomic approach for the identification of uncultivable forms of bacteria **CO4:** Explain the ultra structure of bacteria, virus, viriods and Prions **CO5:** Choose different techniques for the isolation of Aerobic and anaerobic microorganisms
	MB 102	**Virology and Mycology**	**CO1 :**Gain knowledge on genome and morphology of viruses and fungi . **CO2 :** Understand the methods of infection and exploitation of host cells by viruses and fungi for reproduction, their interaction with host organism physiology and immunity. **CO3:** Learn how disease viruses and fungi cause, the techniques to isolate and culture them, and their use in research and therapy. **CO4:** Analyse the ecology and classification of fungi and viruses.Evaluate the fields where fungi can be applied. **CO5:** Assemble the knowledge of fungal and phage genetics and the structure and function of YACs and YIPs with their applications in genetic engineering.
		Cell Biology and Biochemistry	**CO1 :** Distinguish molecular level detailed structure of cells and organelles present in cells. **CO2:** Illustrate the genome organization in prokaryotes and eukaryotes. **CO3 :**Interpret structure and concentration of carbohydrates, protiens and nucleic acids present in

			biological sample with the preparation of buffers with appropriate concentrations. **CO4:** Determine the saponification value and iodine number of Lipids and proteins. **CO5:** Assemble the concepts of various techniques for solving a research problem.
	MB 104	**Microbial Genetics and Molecular Biology**	**CO1 :** State the fundamentals of microbial genetics, processes behind mutations and other genetic changes. **CO2 :** Discuss the basic structure and function of gene in prokaryotes and bacteriophages. **CO3:** Illustrate the genome organization in prokaryotes and eukaryotes. **CO4:** Differentiate between the process of DNA replication in bacteria and viruses. **CO5:** Recommend the significance of gene transfer techniques in bacteria.
IInd Semester	**MB 201**	**Bioinstumentation**	**CO1 :** State the principles of various microbiological techniques. **CO2 :** Discuss the requirements and skills involved in purification of biomolecules. **CO3:** Demonstrate the steps involved in different techniques used to analyze biomolecules from different sources. **CO4:** Examine the quality/activity of purified biomolecules **CO5:** Assess the application of each technique.
	MB 202	**Immunology**	**CO1 :** Name the components of the immune system and their biological functions. **CO2 :** Discuss the concepts behind blood grouping and Rh incompatibilities. **CO3:** Demonstrate the technical know-how of diagnostic techniques in immunology. **CO4:** Distinguish the immunological disorders among human population. **CO5:** Recommend the medical applications of immunology in disease diagnosis and immunotherapy.
	MB 203	**Microbial Technology**	**CO1 :** List the isolation and screening of cultures for new microbial products; and features of inoculum development.

			CO2 : Discuss the strategies for various culture preservation techniques, microbial strain improvement methods and industrial media formulation. **CO3:** Illustrate the kinetics of microbial growth and features of different industrial bioreactors. Describe the fermentative production of alcohol and amylase/protease (SSF). **CO4 :** Discuss the citric acid and penicillin production by SmF andSSF and their respective bioassays. **CO5:** Compare the immobilization techniques and concepts pertaining to the downstream processing of microbial metabolites.
	MB 204	**Biostatistics,Computer Fundamentals and Bioinformatics.**	**CO1 :**Gain knowledge on statistical tests that can be conducted for the data **CO2 :** Employ statistical method for data collected **CO3:** Operate various softwares to examine the data collected **CO4:** Assess different biological databases, sequence alignment and phylogenetics **CO5:** Assemble the concepts of immunology in vaccine development.
IIIrd Semester	**MB 301**	**Medical Microbiology**	**CO1 :** State the significance of normal human flora, various host-pathogen interactions, and human microbiome project. **CO2 :** Discuss the pathogenicity, epidemiology, laboratory diagnosis, treatment, and prevention of important bacterial diseases. **CO3:** Illustrate the pathogenicity, epidemiology, laboratory diagnosis, treatment, and prevention of significant viral diseases. **CO4:** Compare the features of several human diseases caused by fungi. **CO5:** Assess the mode of action, target organisms, toxicity of antibiotics, antifungals and antiviral drugs.
	MB 302	**Recombinant DNA Technology**	**CO1 :** Explain difference between conventional cloning and modern cloning methods. **CO2 :** Interpret the technical know-how of versatile techniques in recombinant DNA technology. **CO3:** Examine the current applications of RDT in biotechnology and advances in the different areas like medical, microbial, environmental, bioremediation, agricultural, plant, animal, and forensic. **CO4:** Appraise the genetic engineering techniques

			and applications with their regulatory and ethical implications in basic and applied experimental biology. **CO5:**Assemble the knowledge of patent laws, their legal implications, handling and disposal of bio-hazardous materials, good laboratory and manufacturing practices.
	MB 303A	**Environmental Microbiology**	**CO1 :** Gain knowledge on the microorganisms present in the environment **CO2 :** Examine the types of microorganisms in the environment **CO3:** Prioritize the methods of making pollution free environment **CO4:** Formulate methods for exploiting microorganisms for human benefit . **CO5:** Recommend the current applications of microorganisms in biodegradation of environmental pollutants, in agriculture as biofertilizers and biopesticides, and in the development of alternate fuels.
	MB 303 B	**Microbial Diagnosis in health clinics**	**CO1 :** Understand the various types of diseases caused by pathoges and types of samples.Assemble the concept of collection, transport. **CO2 :**Learn processing of major clinical samples and immunomolecular diagnostic . **CO3 :** List out the routes of transmission of infections. **CO4 :** Explain the usage of disinfectants and sterilants **CO5:** Interpret the risks involved in a hospital environment and their management practices
	MB 304	**Microbial Physiology and Metabolism**	**CO1:**Determine the growth curve and generation time of bacteria as well as determine the concentration of phosphates. **CO2:** Outline the fundamentals of membrane transport and quorum sensing **CO3:**Explain the fundamentals of Carbohydrate metabolism and lipid metabolism and Mechanism of ATP synthesis. and bioleuminescence in bacteria. **CO4:** Differentiate the mechanism behind the oxygenic photosynthesis and anooxygenic photosynthesis **CO5:** Access the fundamentals of Amino acid metabolism and nucleic acid metabolism

IVth Semester	**MB 401**	**Agriculture Microbiology**	**CO1 :** Describe the types of biogeochemical cycles, physical and chemical characteristics of soil **CO2 :** Illustrate the different plant microbe interactions in rhizosphere, Phyllosphere and Spermosphere **CO3:** Illustrate the importance of Bacterial, fungal and Viral biological control agents **CO4:** Outlinethe different types of fungal, bacterial, viral, mycoplasma and viroid diseases caused in plants and control of these diseases **CO5:** Examine different types of post harvest diseases caused during the storage of food commodities
	MB 402A	**Food Microbiology**	**CO1:** Illustrate the production and spoilage of different fermented foods **CO2:** Distinguish the features of several food-borne infections and intoxications caused by microorganisms. **CO3 :** Name the processing methods used in food industry. **CO4 :** Describe the concepts behind microbial examination of food. **CO5:** Employ techniques to improve the shelf life of food products.
	MB 402B	**Enzyme Technology**	**CO1:**Examine the basic concepts of enzymology which includes the classification and mechanism of action . **CO2:**Demonstrate the steps involved in immobilization of whole cells and enzymes. **CO3:** Understand the production and commertial application of enzymes. **CO4:** Rate the quality of fermented food products **CO5:** Propose the role of regulatory agencies in food safety.

M. Sc. Microbiology (Choice Base Credit System)
A. P. S. University Rewa (M. P.)
Syllabus for Session 2021-22
The Scheme of Examination

M.Sc. Microbiology –I						
No. of papers.	**Name of papers**	**Course type**	**Theory**	**I. A.**	**Total**	**Total Credit.**
MB:101	Introduction to Microbiology and GeneralBacteriology	Core	60	40	100	4
MB:102	Virology and Mycology	Core	60	40	100	4
MB:103	Cell Biology and Biochemistry	Core	60	40	100	4
MB:104	*Microbial Genetics and Molecular Biology.	Generic elective	60	40	100	4
MB:105	practical		100		100	4
MB:106	Comprehensive viva voce		100		100	4
Total					**600**	**24**

M.Sc. Microbiology –II						
No. of papers.	**Name of papers**	**Coursetype**	**Theory**	**I. A.**	**Total**	**Total Credits**
MB:201	Bioinstrumentation	Core	60	40	100	4
MB:202	Immunology	Core	60	40	100	4
MB:203	Microbial Technology	Core	60	40	100	4
MB:204	*Biostatistics , Computer Fundamentals and Bioinformatics.	Generic elective	60	40	100	4
MB:205	practical		100		100	4
MB:206	Comprehensive viva voce		100		100	4
Total					**600**	**24**

M.Sc. Microbiology –III						
No.of papers.	**Name of papers**	**Coursetype**	**Theory.**	**I. A.**	**Total**	**Total Credits**
MB:301	Medical Microbiology	Core	60	40	100	4
MB:302	Recombinant DNA Technology	Core	60	40	100	4
MB:303	**(A) Environmental Microbiology **Or**	Discipline centric elective	60	40	100	4
	**(B)Microbial diagnosis in health clinics	Discipline centric elective				
MB:304	Microbial Physiology and Metabolism	Generic elective	60	40	100	4
MB:305	practical		100		100	4
MB:306	Comprehensive viva voce		100		100	4
Total					**600**	**24**

M.Sc. Microbiology –IV						
No.of papers	**Name of papers**	**Coursetype**	**Theory**	**I. A.**	**Total**	**Total Credit.**
MB:401	Agriculture microbiology	Core	60	40	100	4
MB:402	**(A) Food microbiology **Or**	Discipline centric Elective	60	40	100	4
	**(B) Enzyme technology	Discipline centric Elective				
MB:403	Project work of 3-4 months duration		100		100	4
MB:404	Comprehensive viva voce		100		100	4
			Total		400	16
	GRAND TOTAL				**2200**	**88**

M.Sc. Ist Semester

MB: 101- INTRODUCTIONS TO MICROBIOLOGY AND GENERAL BACTERIOLOGY

UNIT-I

1. Introduction and history of Microbiology and scope of Microbiology.
2. Microorganism: their general characteristics and composition of microbial world; Prokaryotes and Eukaryotes.
3. Classification of Microorganisms: Haekel's three kingdom concept, Whittaker's five kingdom concept, three domain concept of Carl Woese , classification and salient features of bacteria according to Berger's Manual of Determinative Bacteriology.
4. Nomenclature and modern method of Bacterial taxonomy.

UNIT-II

1. Morphology and ultra structure of bacteria : size, shape, and arrangement of bacteria, ultra structure of bacterial cell wall of eubacteria and archeobacteria , relation of Gram staining tobacterial cell wall. Protoplast and spheroplast formation and L-form.
2. Structure and function of flagella, fimbriae and pilli, capsule- type, composition and function , slimelayers, S-layers.
3. Cell membrane- structure and function of bacteria and archeobacteria , mesosomes , ribosomes, nucleoid ,cytoplasmic inclusion bodies- polyhydroxy butyrate, polyphosphate granules, oil droplets, cynophycin granules.
4. Endospore: structure, formation and germination of bacterial endospore . Chemotaxis and phototaxis.

UNIT-III

1. Bactrial nutrition: Basic nutritional requirements, growth factors, nutritional categories, physical requirements of bacterial growth.
2. Bacteriological media: types (complex, synthetic, differential and selective media) and their uses, culturecharacteristics of bacteria on different media.
3. Cultivation of bacteria: aerobic and anaerobic culture, shaker and still culture, maintenance and preservation of microbial culture.
4. Bacterial growth: growth kinetics, growth curve. Batch, continuous and synchronous culture. Measurement of growth and influence of environmental factors affecting growth.

UNIT-IV

1. General concept of rokaryotic and Eukaryotic genome. E.coli chromosome.
2. Genetic recombination and transformation.
3. Transduction : generalized and specialized transduction, phage conversion.
4. Plasmid: types and their significance. Conjugation and chromosomal mobilization. E.coli as a model prokaryotes.

UNIT-V

1. Control of microorganisms: Microbial death curve, concept of bioburden, thermal death time and decimalreduction time. Factors influencing the effectiveness of antimicrobial agents.
2. Control of microorganisms by physical agents: heat , filtration andradiation.
3. Chemical control of microorganisms : Halogens, phenol and other phenolic compounds, heavy metals,alcohols, ethylene oxide and aldehydes.
4. Antibiotics: properties and mode of action, drug resistance and its significance. Antimicrobial sensitivitytest.

M.Sc. Ist Semester

MB: 102 : VIROLOGY AND MYCOLOGY

UNIT-I

1. Brief outline on discovery and origin of viruses.
2. General properties of viruses, morphology and ultra structure of viruses, capsid and their arrangements, types of envelopes and their composition, measurement of viruses.
3. Viral genome; their types and structure, viral related agents-viroids and prions.
4. Classification and general properties of major families of viruses including detail account of their mode of replication.

UNIT-II

1. Cultivation of viruses- in embryonated eggs, experimental animals and cell lines; primary andsecondary cell lines, diploid cell culture.
2. Assay of viruses: physical and chemical methods (protein , nucleic acid, radioactivity tracers,electron microscopy, plaque method, pock counting and end point method.)
3. Serological methods: hemagglutination, hemagglutination inhibition, neutralization test, complement fixation, ELISA, RIA and immunoflourescence assay (IFA)
4. Purification of viruses: gradient centrifuge, electrophoresis, and chromatography.

UNIT-III

1. Plant viruses: recent advance in classification of plant viruses. Structure and pathgenicity of TMV.
2. Transmission of plant viruses with vector (insect, nematodes and fungi) and without vector (contact,seed and pollens). Biochemical changes induced by virus in plant cell.
3. Animal viruses: nomenclature and classification of animal viruses. Host responses to viral infection.
4. General idea about Cyanophage, Actinophage, and Mycophage.

UNIT-IV

1. Bacteriophage: classification, morphology and ultra structure.
2. One step growth curve (latent period, eclipse period, and burst of size.)
3. Life cycle : lytic and lysogenic life cycle of bacteriophages.
4. Brief account of M13, Mu, T3, T4, f x 174 and lamdaphage.

UNIT-V

1. Structure, reproduction and classification of fungi, general characteristics of Zygomycetes, Ascomycetes, Basidiomycetes, and Duteromycetes.
2. Cultivation of fungi, culture media for fungal growth, effects of environment on growth, isolation, identification and preservation of fungi.
3. Dimorphic fungi, yeast morphology, general characteristics and reproduction. Lichens, Micorrhiza, and Actinomycetes.
4. Ecology of fungi: concept of fungistatis, fungicidal, antagonism, symbiosis andSynergism.

M.Sc. Ist Semester

MB: 103- CELL BIOLOGY AND BIOCHEMISTRY

UNIT-I

1. Cell: size, shape, types & chemical composition of the cell.
2. Structural organization and function of intracellular organelles of eukaryotic cell: nucleus, mitochondria, golgi body, lysosomes, endoplasmic reticulum, peroxisomes, plastids, chloroplast, vacuole, cytoskeleton.
3. Membrane structure and function: molecular organization of cell membrane, membrane models, mechanisms of intracellular transport.
4. Cellular interaction: differentiation of cell membrane and intracellular communication and Gap junction.

UNIT-II

1. Cell differentiation: general characteristics of cell differentiation and cytoplasmic factors, differential gene action.
2. Cell signaling: cell surface receptors, G-protein, signal transductionpathways.
3. Cell cycle: mitosis and meiosis and their regulation. Programmed cell death andappoptosis.
4. Cancer biology: characteristics of cancer cell, types of cancer, oncogene andTumor markers.

UNIT-III

1. Carbohydrates: structure of sugars, classification, properties, chemical reactions, stereoisomerism and optical isomers of sugars.
2. Structure, properties and function of disaccharides, oligosaccharides, and polysaccharides, carbohydrate derivatives; peptidoglycan, glycoproteins,glycolipids.
3. Lipids : classification, structure, properties and functions of fatty acids, triacylglycerols, phospholipids, sterols and terpenes.
4. Lipids with specific biological functions, micelles and liposomes.

UNIT-IV

1. Amino acids: structure, classification, properties and functions.
2. Proteins : structural and functional proteins, synthesis of peptide bonds.Primary, secondary, tertiary and quaternary structure ofproteins.
3. Nucleic acids: structure and properties of purines and pyrimidine bases, nucleosides and nucleotides.
4. Basic structure and types of DNA and RNA.

UNIT-V

1. Enzymes: basic concept as a biocatalyst, specificity, active sites, activityunit and isoenzymes, enzyme classification.
2. Enzyme kinetics- Michaelis-Menton equation for simpleenzymes, determination of kinetic parameters.
3. Enzyme inhibition: competitive, noncompetitive and uncompetitive inhibition, allosteric enzymes.
4. Vitamins and cofactors: structure, distribution and biological properties.

M.Sc. Ist Semester

MB : 104 - MICROBIAL GENETICS AND MOLECULAR BIOLOGY (Generic Elective)

UNIT-I

1. Organization of genetic material in prokaryotes and eukaryotes.
2. Concept of gene, genome, genome size, C-value, and C-value paradox.
3. Nucleic acid as a genetic information carriers; experimental evidence. DNA denaturation and renaturation.
4. Gene is a unit of mutation and recombination; molecular basis of mutations, physical and chemical mutagens, spontaneous and induced mutation, selection of mutant.

UNIT-II

1. DNA damage and repair: types of DNA damage (deamination, oxidative damage, alkylation and pyrimidine diamers.), repair mechanism; mismatch repair, nucleotide excision repair, recombination repair, SOS repair.
2. Structure of DNA, super helicity of DNA, linking number, topological properties and role of topoisomerase.
3. DNA replication: general principle, various mode of replication, unwinding of DNA Helix, continuous and discontinuous synthesis of leading and lagging strands.
4. Enzymes of DNA replication in prokaryotes and eukaryotes; DNA polimerases, DNA ligase, primase.

UNIT-III

1. Structural features of RNA (rRNA, tRNA, mRNA) and polycistronic andmonocistronic RNA.
2. Transcription: general principle and processes of transcription; initiation, elongation and termination, types of RNA polymerases, inhibitors of RNA synthesis.
3. Control of Transcription by interaction between RNA polymerases and promoterregion, use of alternate sigma factors, controlled termination; attenuation and antitermination.
4. Post transcriptional modification, maturation and splicing of RNA transcripts, catalytic RNA.

UNIT-IV

1. Genetic code: nature of genetic code, codon, anticodon, wobble hypothesis.
2. Protein synthesis: steps, details of initiation, elongation and termination.
3. Inhibitors of protein synthesis: signal hypothesis.
4. Post translational modification: covalent modification, phosphorylation, glycosylation, methylation. Protein targeting.

UNIT-V

1. Regulation of gene expression: operon concept; regulatory and structural gene, operator, promoter,represser , induction and repression, positive and negative control.
2. Lac-operon, ara-BAD operon, trp operon, attenuation, mechanism of regulation of transcription.
3. Regulation of gene expression in eukaryotes: Britton and Davidson's model of regulation involveHCP and NHCP and hormones.
4. Transposable elements.

M.Sc.II^{Ind} Semester

MB : 201- BOINSTUMENTATION

UNIT-I

1. Microscopy: history and principles of microscopy, magnification power, Resolution limit, resolving power, numerical aperture.
2. Principles and application of light microscopy, properties of light, bright field, dark field, phase contrast and fluorescent microscopy. Determination of size of microorganisms by micrometery.
3. Principles and application of electron microscopy- transmission and scanning electron microscopy.
4. Newer techniques in microscopy- confocal microscopy, scanning probe microscopy (scanning tunneling microscope and atomic force microscope).

UNIT-II

1. Concepts of acids and bases, pH, measurement of pH by uses of indicator and electronic meter, buffer system.
2. Chromatography: principles, types and applications of partition, adsorption, gel filtration, paper and thin layer chromatography.
3. Affinity, ion exchange, and gas chromatography.
4. High performance liquid chromatography and FPLC.

UNIT-III

1. Electrophoresis: principle, types and applications, frontal and zonal electrophoresis, paper, starch gel, Polyacrylamide and agarose gel electrophoresis.
2. Isoelectric focussing and Isotachophoresis.
3. Two dimentional gel electrophoresis and pulse field gel electrophoresis.
4. Immunological techniques: immunoelectrophoresis , immunodiffusion, immuno fluoroscence.

UNIT-IV

1. Spectroscopy: basic principles, low of absorption and radiation, principles and application of visible, ultraviolet, infrared and mass spectroscopy.
2. Principles and application of NMR and ESR.
3. Principles and application of colorimetry, fluorscence flame photometry.
4. Fluorimetry , polarimetry and turbidometry.

UNIT-V

1. Centrifugation: basic principles of analytical and preparative centrifuge, differential and density gradient, zonal and isopycinic centrifuge. Sedimentation coefficient, factors affecting sedimentation coefficient and application.
2. Radioisotope techniques: half life, radioactive decay, radioactive assay methods based on ionization and excitation of gases.
3. Geiger Muller counter, liquid scintillation counter and gamma counter.
4. Quenching and use of radioisotopes in biological systems. Autoradiography- principles and applications.

M.Sc.II[Ind] Semester

MB: 202- IMMUNOLOGY

UNIT-I

1. Infection: types of infection, sources of infection, reservoirs and vehicles of infection, predisposingfactors.
2. History of immunology, development of immunology as disciples.
3. Immune response: mechanism of innate and adaptive immune response.
4. Hematopoiesis: development of immune cells, regulation of hematopoiesis and stem cell technology.

UNIT-II

1. Structure, composition and types of cells involve in immune response: mononuclear cells, granulocytes,antigen presenting cells , lymphoid cells.
2. Anatomical organization of immune system: primary and secondary lymphoid organs: structureand function.
3. Antigens- structure and properties, factors affecting the immunogenicity , properties of B and T-cell epitopes, haptens, mitogens, superantigen.
4. Antibody : stucture, properties, types and function of antibodies, antigenic determinants on immunoglobulin; isotypes, allotypes, and idiotypes.

UNIT-III

1. Hybridoma technology and monoclonal antibody production and characterization.
2. Application of monoclonal antibodies in diagnosis, therapy and basis research, antibody engineering.
3. Antigen- antibody interaction : avidity and affinity measurements, detection of antigen-antibodyinteraction by precipitation, agglutination, RIA, ELISA, immunodiffusion.
4. Major histocompatibility complex: organization of MHC genes, types and function of MHCmolecules, MHC polymorphism, MHC related diseases.

UNIT-IV

1. Complement system: components, activation pathways, regulation of activation pathways, role ofcomplement system in immune response.
2. Cytokines: types, structure and functions, cytokines receptors, cytokine regulation of immunereceptors.
3. Immune response to infectious diseases: viral infection, bacterial infection, protozoan diseases,helminthes related diseases.
4. Vaccines: Active and passive immunization, whole organ vaccine, purified macromolecule as avaccine, DNA vaccine, recombinant vaccine.

UNIT-V

1. Hypersensitivity: type I, II, III and types IV hypersensitivity. Immunodeficiency diseases: primaryand secondary immunodeficiency.
2. Autoimmunity: organ specific autoimmune diseases, mechanism of autoimmune diseases and therapeutic approaches.
3. Transplantation immunology: immunologic basis of graft rejection, clinical manifestation of graftrejection and clinical transplantation.
4. Cancer immunology: tumor antigen, immune response to tumor, oncogene and induction, cancerimmunotherapy.

M.Sc.II^{Ind} Semester

MB: 203 -MICROBIAL TECHNOLGOY

UNIT-I

1. Industrial important strains of bacteria, fungi, and actinomycetes .Novel microbes for future industry.
2. Isolation and screening of the industrially important strain from diverse ecosystem.
3. Method of strain improvement, mutagenesis, strain breeding by protoplast fusion, sexual andpara sexual recombination.
4. Fermentation technology: principles of fermentation. Fermenter and bioreactors: monitoringand control of parameters, designing, operation and application.

UNIT-II

1. Downstream processing: filtration of fermentation broths recovery of biological products bydistillation, superficial fluid extraction.
2. Detection, analysis and quality control of fermentation products and raw materials.
3. Industrial production of alcohols: vinegar, wine and alcohol.
4. Industrial production of solvents-glycerol, acetone, and Butanol.

UNIT-III

1. Industrial production of citric acid and glutamic acid.
2. Microbial production of enzyme of industrial important: amylase andproteases.
3. Methods of whole cell immobilization, enzyme immobilization and application.
4. Industrial production of antibiotics, penicillin and streptomycin.

UNIT-IV

1. Hygiene and safety in fermentation industries.
2. Microbial production of Vitamin B and $B_{12.}$
3. Microbial production of Interferon, Insulin, flavours and fragrances.
4. Bioelectronics : Biochips and biosensors.

UNIT-V

1. Microbial production of vaccines.
2. Microbial production of polymers : Dextran and xanthan.
3. Microbial transformations : Steroid biotransformation
4. Intellectual property rights (IPR) and protection (IPP)

M.Sc.II[Ind] Semester

MB: 204- Biostatistics, Computer Fundamentals and Bioinformatics
(Generic Elective)

Unit I

1. Introduction to Biostatistics, Common terms, notions and Applications
2. Statistical population and Sampling Methods
3. Classification and tabulation of Data
4. Diagrammatic and graphical presentation
5. Frequency Distribution, Measures of central value
6. Measures of variability; Standard deviation, standard Error, Range, Mean Deviation, Coefficient of variation, Analysis of variance

Unit II

1. Basic tests, Test of significance; t-test, chi-square test.
2. Correlation and Regression; Basic of regression, regression analysis, Estimation, Testing, prediction, Checking and residual analysis.
3. Multivariate Analysis.
4. Design of Experiments, randomization, replication, local control, complimentary Randomized, randomized block design
5. Statistical Packages: SPSS, Graph pad etc

Unit III

1. Introduction to Information technology and computer
2. Office applications: MS- Office, MS- Word, MS- Excel and MS- PowerPoint
3. Introduction to data mining
4. Internet- introduction and application

Unit IV

1. Classification and Discriminant Analysis Tools: CART, Random forests,
2. Fisher's discriminant functions.
3. Neural networks.
4. Multilayer perception, predictive ANN model building using back propagation algorithm, exploratory data analysis.

Unit V

1. Databases, Plant Genome Databases, Retrieving and installing a programme (Tree Tool), Multiple sequence alignment programme - Clustal W , X. Genome analysis programs; BLAST, FASTA, CGC, Motif and profile Sequence search.
2. Phylogenetic analysis: Phylogenetic reconstruction, distance matrices, Parsimony, Philip.
3. Methods of prediction of Proteins, DNA, RNA, fold recognition, structure prediction
4. Computer aided drug designing: Basic principles, docking, ADME/TOX
5. Genome mapping applications: EST and Functional genomics
6. Use of genome analysis programs, primer designing tools.

M.Sc.IIIrd Semester

MB : 301 -MEDICAL MICROBIOLOGY

UNIT-I

1. Early discovery of pathogenic microorganisms, development of bacteriology as scientific discipline,contribution made by eminent scientists.
2. Host-parasite relationship governing the infection and establishment of disease, factors affectingvirulence.
3. Normal microflora of human body; normal flora of skin, respiratory, gastrointestinal, genital tract, roleof resident flora
4. Mode of spread of infection; Respiratory, skin, wound & burn infection, venereal infections, alimentary tract infection, blood born infection.

UNIT-II

1. Source of infection, Pathogenicity, Epidemiology & Lab diagnosis of Pneumococcus, Neisseria ,Corynebacterium, & Clostridium.
2. Source of infection, Pathogenicity, & Epidemiology & Lab diagnosis of members of the familyEnterobacteriaceae, Coliform; Proteus, Shigella, Salmonella .
3. Vibrio, Mycobacterium, Staphylococcus, Pseudomonas, Pasteurella, Yersenia, Brucella.
4. Actinomycetes, Rickettsiaceae , Clamydiae, Spirocheates.

UNIT-III

1. Morphology , pathogenesis, immune response, diagnosis and prevention of
2. Pox viruses , Herpes Simplex type I and type II, Picorna viruses.
3. Paramyxo viruses, Measles & Mumps viruses & Rhabdo viruses.
4. Hepatitis viruses, Arboviruses, Orthomyxoviruses.
5. Oncogenic viruses & HIV viruse & Prions.

UNIT-IV

1. Pathogenesis, Life Cycles, Immunity, Disease produced, Diagnosis & Prophylaxis of
2. Plasmodium vivax, falciparum, malariae.
3. Entamoeba histolytica & Coli
4. Toxoplasmosis , Trypanosomiasis & Leishmaniasis.
5. Roundworm & Tapeworm; Taenia solium & segineta.

UNIT-V

1. Fungal infection: description & classification of pathogenic fungi
2. Infection caused by dermatophytes (Microsporum, Trichophyton & Epidermatophyton)
3. Definition, Causative agent, Source of infection, Epidemiology, Symptomatology & Diagnosis ofAspergillosis & Candidiasis
4. Source of infection, Epidemiology, Symptomatology, & Diagnosis of Blastomycosis, Histoplasmosis

M.Sc.IIIrd Semester

MB: 302- RECOMBINANT DNA TECHNOLOGIES

UNIT-I

1. Enzymes used in DNA technology: Restriction and modification enzymes, nucleases, polymerases, ligase, kinases and phosphatases .
2. Cloning vectors: Plasmids , Phagmids, Cosmids, Artificial chromosomes, Shuttle vectors , Expression vectors
3. Cloning Techniques: Isolation & purification of genomic & plasmid DNA & RNA ,Gel electrophoresis of nucleic acids (RNA & DNA); Pulse field gelelectrophoresis.
4. Construction of genomic and cDNA libraries.

UNIT-II

1. Screening of clones from libraries :Expression based screening , Interaction basedscreening ,Preparation of probes , Restriction mapping.
2. Principles of hybridizations and hybridization based techniques: Colony, plaque, Southern, Northern and in situ hybridizations.
3. Western and southwestern blotting ,Microarray based detections and RNA interferon.
4. Characterization of clones : DNA sequencing , S1 nuclease and RNase mapping.

UNIT-III

1. Oligonucleotide synthesis.
2. Principles & applications of Polymerase Chain Reaction (Types).
3. DNA fingerprinting.
4. Mutagenesis : Site directed mutagenesis, Transposon mutagenesis.

Unit IV

1. Gene transfer techniques: Electroporation and microinjection, Transfection of cells: Principles and methods.
2. Germ line transformation in Drosophila and transgenic mice: Strategies and methods.
3. Construction of knockout mutants.
4. Promoter characterization: promoter analysis through reporter genes, electrophoretic mobility, shift assay, DNA foot-printing.

UNIT-V

1. Applications of Recombinant DNA Technology : Monitoring of gene expression in livecells, Crop and livestock improvement .
2. Molecular diagnostics, Biosafety & ethical considerations.
3. Gene therapy: somatic and germ line gene therapy; DNA drugs and vaccines.
4. Transgenic technologies and there use in microbial technology.

M.Sc.III[rd] Semester

MB: 304- M ICROBIAL PHYSIOLOGY AND METABOLISM
(Generic elective)

UNIT-I

1. Basic concept of bioenergetics and metabolism.
2. First and second law of thermodynamics, concept of free energy, entropy andenthalpy.
3. High energy phosphate compounds, role of ATP, ATP cycle, structural basis offree energy change during hydrolysis of ATP.
4. Biological oxidation and reduction reaction, role of reducing power.

UNIT-II

1. Carbohydrate metabolism: glycolysis and its regulation, Feeder pathway of glycolysis and carbohydrate –homo and heterolactic fermentation. Glycogenesis, Glycogenolysis. Gluconeogenesis ; pathways and regulation.
2. Pentose phosphate pathway, kreb's cycle and glyoxalate pathway.
3. Substrate level phosphorylation and oxidative phosphorylation, electron transfer reaction in mitochondria,electron carriers and multienzyme complex I to IV.
4. ATP synthesis: chemiosmotic theory, shuttle system, regulation of oxidative phosphorylation and uncouplers, inhibitors of oxidative phosphorylation.

UNIT-III

1. Photosynthesis: structure of chloroplast, light reaction and dark reaction; Kelvin cycle, C3 and C4 pathway.
2. Mechanism of energy generation in cyanobacteria, green bacteria and purple sulphur bacteria and chemolithotrops.
3. Lipid metabolism digestion absorption; oxidation of unsaturated fatty acid and odd chain fatty acid, ketone bodies.
4. Lipid biosynthesis: biosynthesis of fatty acids, triacylglycerol and phospholipids and regulation of fatty acid metabolism.

UNIT-IV

1. Amino acid metabolism: biosynthetic families of amino acids.
2. Breakdown of amino acids into six common intermediates and urea cycle and regulation of amino acid metabolism.
3. Nucleotide metabolism; biosynthesis of purines and pyrimidines nucleotide by denovo and salvage pathways.
4. Degradation of purines and pyrimidines nucleotides.

UNIT-V

1. Nitrification, denitrification and pathways of nitrate and ammonia assimilation.Nitrogen cycle.
2. Assimilation of nitrogen: denitrogen fixation- free living and symbiotic,diazotrophic organisms.
3. Biochemistry of nitrogen fixation: nitrogenase complex, function of nitrogenase, regulation of nitrogenaseby oxygen and combined nitrogen sources.
4. Genetics of nitrogen fixation; nif genes and their regulation.

. **M.Sc.IIIrd Semester**

MB: 303 (A) ENVIRONMENTAL MICROBIOLOGY. (Discipline Centric Elective)

UNIT-I

1. **M**icrobial ecology: basic concepts, types and microbial habitats, factors affecting microbial population.
2. Microbial interactions: competition, amensalism, parasitism, mutualism, commensalisms, synergism.
3. Biogeochemical cycles: carbon, nitrogen, phosphorus and sulphur cycle
4. Conservation and management of microbial diversity: biodeterioration and biodegradation.

UNIT-II

1. Microbiology of air: microorganism of air, enumeration of air micro flora.
2. Significance of air micro flora.
3. Brief account of air borne transmission of bacteria, fungi , pollens and viruses.
4. Air borne diseases and their prevention.

UNIT-III

1. Soil microbiology: microflora of soil: soil microorganisms associated with plants: rhizosphere, mycorrhizae.
2. Role of microorganisms in organic matter decomposition (cellulose, hemi cellulose, lignin).
3. Bioleaching; introduction, application of bacterial leaching leaching techniques, properties of bioleaching.
4. Microbial degradation of xenobiotics , petroleum and oil spilles in environmental decay behaviours and degradative plasmid.

UNIT-IV

1. Water microbiology: aquatic microorganisms; fresh water and sea water microflora. Microorganisms and water quality, water pollution.
2. Water purity test and indicator organisms, method used in environmental studies –BOD, COD, DO.
3. Common water born disease and their control measure.
4. Water purification: flocculation, chlorination and purification.

UNIT-V

1. Microbiology of waste water and effluent treatments, aerobic process : primary , secondary and tertiary treatment : trickle filter ,oxidation ponds and stabilization ponds , principle of aerobic digestion.
2. Bioremediation of contaminations.
3. Extremophiles –acidophilic, alkalophilic, thermophilic microbes with adaptation and application in ecosystem.
4. Microbial biofilms : physiology ,morphology, biochemisty of microbial biofilms, mechanism of microbial Adherence , beneficial and harmful role ofbiofilms.

M.Sc. IIIrd Semester

MB 303: (B) MICROBIAL DIAGNOSIS IN HEALTH CLINICS (Discipline Centric Elective)

UNIT-1

Importance of Diagnosis of Diseases

Bacterial, Viral, Fungal and Protozoan Diseases of various human body systems. Disease associated clinical samples for diagnosis.

UNIT-2

Collection of Clinical Samples

How to collect clinical samples(oral cavity,throat,skin,blood,CSF,urine and faeces) and precautions required. Method of transport of clinical samples to laboratory and storage.

UNIT-3

Direct Microscopic Examination and Culture

Examination of sample by staining-Gram's stain, AFB stain, Giemsa stained thin blood film for Malaria. Preparation and use of Culture media- Blood agar, Chocolate agar, Lowenstein-Jensen medium, MacConkey agar, Cooked meat media for anaerobic culture. Distinct colony properties of various bacterial pathogens.

UNIT-4

Serological and Molecular Methods

Serological Methods- Agglutination, ELISA, Immuno fluorescence Nucleic acid based methods-PCR, Nucleic acid probes, Western blotting

UNIT-5

Kits for Rapid detection of Pathogens

Typhoid, Dengue, Malaria and Blood groups.

Importance, Determination of resistance/sensitivity of bacteria using Disc diffusionmethod.

Determination of Minimal Inhibitory Concentration(MIC)of an antibiotic by serial double dilution method.

M.Sc.IV Semester

MB: 401 -AGRICULTURAL MICROBIOLOGY

UNIT I

1. Microorganisms of soil
2. Rhizosphere and phyllosphere microflora
3. Brief account of Microbial interactions: antagonism, symbiosis, mutualism, commensalisms, synergism and parasitism.
4. Nutrient cycle : Carbon cycle , nitrogen cycle, phosphorous cycle and sulphur cycle.

UNIT II

1. Role of enzymes and toxins in pathogenesis.
2. Fungal diseases of plants: Rusts of wheat, linseeds; late blight of potato; red rot ofsugarcane.
3. Bacterial diseases of plats : Citrus canker, blight ofrice
4. Viral diseases of plants : Leaf curl of Papaya, vein clearing of lady's finger

UNIT III

1. Physical and chemical control of plant diseases.
2. Bacterial control of insect pests : Bacillus thuringiensis as bacterial insecticide
3. Viral control of insect pests : Nuclear polyhedrosis visuses (NPV) and cytoplasmic polyhedrosisviruses (CPV)
4. Fungal control of insect pests : Entomopathogenic fungi : Metarhinium anisopliae, Beauveria bassiana, Verticillium lecani, Hirsutella thompsoni

UNIT IV

1. Storage fungi : Categories of storage fungi, conditions during storage in relation to damage of seeds, harmful effects
2. Mycotoxins and their effect on human being.
3. General idea about quarantine
4. Production of biogas and alcohol from agricultural wastes

UNIT V

1. Biofertilizers : Types, production and application
2. Mycorryzae : Types and their application in agriculture and forestry.
3. Vermicomposting
4. Reclamation of waste agricultural land by microorganisms.

M.Sc.: IV Semester

MB: 402: (A) FOOD MICROBIOLOGY (Discipline Centric Elective)

UNIT I

1. Microorganisms important in food microbiology: molds, yeast and bacteria –general characteristics, classification and importance.
2. Principles of food preservation, preservation by use of high temperature, lowtemperature, drying and dessication.
3. Chemical preservatives and additives.
4. Preservation by radiation.

UNIT II

1. Factors influencing microbial growth in food: Extrinsic and intrinsic factors.
2. Microbial spoilage of food. Chemical changes caused by the microorganisms during spoilage.
3. Spoilage of fish, meat, poultry, eggs, fruits and vegetables.
4. Detection of spoilage and characterization.

UNIT III

1. Classification of food borne diseases.
2. Food borne infections : Brucella, Bacilllus, Clostridium perfringens, vibrio, yersinia Escherichia, Salmonella, Shigella.
3. Food intoxication: Staphylococcal intoxication, Clostridial poisoning.
4. Food adulteration and prevailing food standards in India .

UNIT IV

1. Microbiology of Milk : Sources of microorganisms in milk and types of microorganisms in milk.
2. Microbiological examination of milk (standard platecount, direct microscopic count, reductase, and phosphatase test).
3. Dehydration and pasteurization of milk.
4. Dairy products from microorganisms : Butter , yoghurt and cheese .

UNIT V

1. Microorganisms as source of food : Single Cell Protein (SCP)
2. Mushrooms and food value of mushrooms
3. Food conversions : Lactic acid conversions, soyabean conversions and Bakery
4. Microbiological estimation of food : Sample collection,

M.Sc. IV Semester

MB: 402 (B) Enzyme Technologies(Discipline Centric Elective)

UNIT-1

Introduction to enzymes -Enzyme classification and nomenclature, Characteristics of enzymes production . Mode of action and kinetics of enzyme catalyzed reactions (K_{min} V_{max}) .Types of mechanism of enzyme inhibition ,Biotechnological importance of enzymes.

UNIT-2

Microbial sources of enzymes- Primary and Secondary screening of Microorganisms for enzyme production .Qualitative and Quantitative assay of enzyme activity. Enzymes units Amylases , Cellulases , Hemicellulases ,Proteases . Natural and Synthetic substrates for enzyme assay .

UNIT-3

Microbial enzyme production ; submerged and solid state fermentation (SSF). Important parameters in enzyme production . Enzyme purification Techniques – Precipitation chromatographic separation –gel filtration ,anion and cation exchange ,zymography.

UNIT-4

Techniques used in characterization of enzymes- determination of molecular weight (SDS PAGE ,Gel filtration) . Isolelectric point,pH & temperature optima and stability . Inhibition pattern , Product analysis of enzyme action using TLC HPLC and MALDI – TOF

UNIT -5

Molecular Biology of enzymes- aminoacid sequencing ,structure and function relationship. Protein engineering and directed evolution . Cloning and over expression of microbial enzymes in heterologous host.

SYLLABUS

M. Sc. Biotechnology

2021-22

IV Semester Course

(Choice Base Credit System)

School of Environmental Biology

Awadhesh Pratap Singh University Rewa M. P.

PO#	PROGRAMME OUTCOME
PO1	**Critical Thinking**: This program places a strong emphasis on the value of being conscious of our presumptions, challenging their accuracy, and approaching concepts and choices from several angles. It entails having the capacity to recognize, assess, and make sensible choices based on logical reasoning.
PO2	**Effective Communication:** This program helps participants improve their communication skills and makes sure they can express themselves accurately in written, spoken, and technological mediums. It also encompasses the capacity to link individuals, concepts, literature, media, and technology, as well as the capacity to communicate effectively and interpret the world.
PO3	**Social Interaction:** It emphasizes on the capacity to solicit the opinions of others, resolve conflicts, and aid in reaching decisions in group settings. It entails having the capacity to collaborate with others, forge agreement, and settle disputes.
PO4	**Effective Citizenship:** The necessity of sympathetic social concern and equity-focused national development is emphasized. It entails being aware of the problems that society faces, being involved in civic affairs via volunteering, and behaving in a way that reflects a thorough understanding of these problems.
PO5	**Ethics:** It emphasizes the significance of appreciating many value systems, comprehending the moral implications of choices, and taking accountability for them. It entails being conscious of ethical concerns and basing judgments on ethical principles.
PO6	**Environment and Sustainability:** Understanding environmental surroundings and sustainable development are the main objectives. It entails being conscious of how human behavior affects the environment and acting to advance sustainability.
PO 7	**Self-directed and Life-long Learning:** gaining the capacity to participate in independent, ongoing learning in light of socio-technical developments. It entails having the capacity to learn on one's own, adjust to new technology, and consistently acquire new abilities and information.

Programme Specific Outcomes

PSO1 Understanding and proposing experimental designs, develop problem solving abilities of the protocols developed for commercially viable biotechnology products

PSO2 Learning bioprocessing techniques used in large-scale production units

PSO3 Developing skill sets for research, employability and entrepreneurship

PSO4 Finding sustainable solutions to issues pertaining to environment, health, agriculture etc.

M. Sc. Biotechnology (Choice Base Credit System)
A. P. S. University Rewa (M. P.)
Syllabus for Session 2021-22
The Scheme of Examination

M.Sc. Biotechnology -I						
Paper Code	**Paper Name**	**Course Type**	**THEORY**	**I. A.**	**Total Marks**	**Total Credits.**
101	Cell Biology	Core	60	40	100	4
102	Biochemistry	Core	60	40	100	4
103	Molecular Biology	Core	60	40	100	4
104	*Applied Microbiology	Generic Elective	60	40	100	4
105	Practical	-	100		100	4
106	Comprehensive viva-voce	-	100		100	4
			Total		**600**	**24**

M.Sc. Biotechnology -II						
Paper Code	**Paper Name**	**Course Type**	**THEORY**	**I. A.**	**Total Marks**	**Total Credits**
201	Bioinformatics and Biostatistics	Core	60	40	100	4
202	Immunotechnology	Core	60	40	100	4
203	Plant Biotechnology	Core	60	40	100	4
204	*Biophysical and Molecular Techniques	Generic Elective	60	40	100	4
205	Practical	-	100		100	4
206	Comprehensive viva-voce	-	100		100	4
			Total		**600**	**24**

M.Sc. Biotechnology –III

Paper Code	Paper Name	Course Type	THEORY	I. A.	Total Marks	Total Credits.
301	Genetic Engineering	Core	60	40	100	4
302	Metabolism: Basic Concept And Design	Core	60	40	100	4
303	**(A)Bioprocess Engineering and Technology **OR**	Discipline centric elective	60	40	100	4
	**(B)Medical Biotechnology	Discipline centricelective				
304	*Environmental Biotechnology	Generic Elective	60	40	100	4
305	Practical	-	100		100	4
306	Comprehensive viva-Voce	-	100		100	4
			Total		**600**	**24**

M.Sc. Biotechnology –IV

Paper Code	Paper Name	Course Type	THEORY	I. A.	Total Marks	Total Credits.
401	Entrepreneurship In Biotechnology & Intellectual Property Rights	Core	60	40	100	4
402	**(A)Plant Tissue culture technology **OR**	Discipline centric elective	60	40	100	4
	** (B) Animal CellCulture techniques	Discipline centric elective				
403	Dissertation and Presentation		-	-	100	4
404	Comprehensive viva-Voce				100	4
Semester Total					400	16
Grand Total					**2200**	**88**

M.Sc. Biotechnology
Semester-I
Paper-101

101: CELL BIOLOGY

Unit I

1. Concept of Cell: Prokaryotes and Eukaryotes (Plant and Animal Cell)
2. Cell Organelles (Nucleus, Mitochondria, Golgi complex, Endoplasmic reticulam (SER and RER), Chloroplast, Peroxisome and vacuoles)
3. Cell membrane: physiochemical properties; Molecular Organization- Biogenesisand Functions
4. Biogenesis of Mitochondria and Chloroplast

Unit II

1. Protein targeting and Molecular mechanisms of Vesicular transport, . Transport of small molecules across cell membranes: types and mechanisms.
2. Intracellular digestion: ultra structure and function of lysosomes Nutrient uptake and excretion. Transport by Vesicle formation: Endocytosis and Exocytosis.
3. Active transport by ATP powered pumps: types, properties and mechanisms.
4. Transport of proteins into Mitochondria and Chloroplast.

Unit III .

1. Cell Motility and Shape I: Structure and function of microfilaments, Microtubules and Intermediate Filaments.
3. Intra cellular communication through Cell Junctions: Occluding Junctions, Anchoring junctions and Communicating Junctions
4. Inorganic ions.

Unit IV

1. Molecular Mechanisms of Cell-Cell Adhesions: Ca dependent cell-cell adhesions.
2. Molecular Mechanisms of Cell-Cell Adhesions: Ca independent cell-cell adhesions.
3. Extracellular Matrix of animals: Organization and Functions.
4. Extracellular Matrix Receptors on animal cells: Integrins.

Unit V

1. Cell Signaling: Signaling via G-Protein linked and enzyme linked cell surface receptors, MAP kinase pathways, Interaction and Regulation of signaling pathways. Bacterial chemo taxis and quorum sensing.
2. Eukaryotic Cell Division Cycle: Different Phases and Molecular Events.
3. Control of Cell Division Cycle: In yeast and mammalian cells.
4. Apoptosis: Phases and significance, Morphological and Biochemical changes associated

   With apoptotic cells, Apoptotic Pathways and regulators
5. Cancer: Molecular basis of carcinogenesis, carcinogens (Physical, Chemical and Biological)

Course Outcome

By the end of the paper, a student would be able to:

CO 1: To describe the molecules of life and conserved structures; recount how the working of cell was discovered through model organisms.

CO 2: To be able to recognize and identify the importance and functions of cell membrane

CO 3: To develop capacity to distinguish signaling pathways for regulation of various cellular mechanisms

CO 4: To be able to explain mechanism of development across species

CO 5: To evaluate the use of various model organisms to relate the development of vertebrates

M.Sc. Biotechnology
Semester-I
Paper-2

102. Biochemistry

UNIT-1

1. Biochemistry: The molecular logic of living organisms
2. The cell and its biochemical organization
3. Intra and inter molecular forces electrostatic interactions and Hydrogen bonding interaction.
4. Vander Waals and Hydrophobic interactions, Disulphide bridges
6. Role of water and weak interactions
7. Chemical foundations of Biology- pH, pK, acids, bases, buffers, weak bonds & Covalent bonds, Principles of thermodynamics

UNIT-2

1. Carbohydrates: classification, structure, functions; homo and hetero polysaccharides,animal, plant and microbe specific polysaccharides.

2. Lipids: Classification, nomenclature, structure and property of fatty acids,Simple lipids- Triglisrids, fates and Waxes. Compound lipids- classification, structure, distribution, and biological importance, role of prostaglandine,leukotrins and thromboxans.

3. Sterols- Cholestrol, role in biological system. Tarpenes and phenols.

4. Functions; Lipids associated with disease, diagnosis and treatment. Lipoproteins and biological membrane, micelles and liposomes.

UNIT -3

1. Nucleic acids: Structure, Properties of purines and pyrimidine bases,DNA : Structure, conformation, prokaryotic and eukaryotic DNA, nucleotides,Chromosomal and extrachromosomal DNA

2. RNA: Structure, types and function of mRNA, tRNA, Ribozymes: structure and functions.

3. Amino acids- classification, structure, property, Zwitter ion, titration curve and biologically important amino acids

4. Polypeptides- Conformational properties of polypeptides, protein sequencing methods.

5. Proteins: Classification, Primary structure, nature of peptide bond, Ramchandran plot, and secondary structure, hydrogen bonding, salt bridge, disulphide bonds, hydrophobic and hydrophilic interaction in proteine and role of these bonds in protein folding, α-helix, β- sheet, and beta turns structures etc.Tertiary and quaternary structure. Biological role of proteins. Proteins associated with diseases, diagnosis and treatment. Separation, purification and criteria of homogeneity, End group analysis Folding-unfolding equilibrium and denaturation of proteins

6. Prions- Structure role and association with disease

.

UNIT-4

1. Enzymes; General characteristics and Catalytic power of enzymes and their classification, Energy considerations, Factors affecting enzyme activity, Enzyme kinetics, Michaelis-Menten equation, Allosteric enzymes and their regulation.
2. Methods of enzyme assay: Continuous & Sampling techniques, coupled kinetic assays, Significance of enzyme turn over number, Specific activity.
3. Enzyme purification techniques, Criteria of purity and tabulation of data Characterization of purified enzymes
4. Vitamins and cofactors: Structure, distribution, interaction and biologicalproperties
5. Hormones- structure, distribution and function.
6. Phenols – structure and biological property
7. Alkaloids – structure and biological properties

UNIT -5

1. Enzyme immobilization: Experimental procedures and effect on kinetic parameters
2. Uses of enzymes in Industries, textiles, leather andfood
3. Use of purified enzymes in Biosensors
4. Development of enzyme sensor for clinical diagnosis with specific examples

Course Outcome

By the end of the paper, a student would be able to:

CO 1: To identify biological importance of carbohydrates and lipids

CO 2: To distinguish between anabolic and catabolic processes of carbohydrates and lipids

CO 3: Compare and contrast metabolic pathway of complex carbohydrates in different living system

CO 4: To elucidate the role of lipids in maintaining homeostasis at cellular and systemic level

CO5: To describe the structure of protein and correlate with its functions such as like molecular motors, interaction, carriers, signalling, repair and structure.

M.Sc. Biotechnology
Semester-I
Paper-104

(*__Generic Elective__) APPLIED MICROBIOLOGY

Unit I 1 History and Scope of Microbiology, Microscopy (light microscopy, resolving power of different microscopes, ESR, ETR)

2. Classification of Microorganisms: Bacterial & Fungal Classification.
3. Morphology and fine structure of eubacteria, archebacterial cell wall and fungal cell Wall.
4. Cyanobacteria : General account and their economic importance
5. Mycoplasma and diseases caused by them

Unit II

1. Sterilization: Physical and chemical methods
2. Preparation of culture media, pure culture techniques and microbialstaining
3. Microbial growth: Bacterial growth curve, Mathematical expression, measurement of growth and factors affecting growth.
3. Microbial Nutrition: Nutritional classification of Microorganisms, Different carbon and Nitrogen sources, mode of nutrition, transport of nutrition across the bacterial membrane.
4. Oxygen toxicity: Study of catalase, peroxidase, superoxide dismutase, mechanism of oxygen toxicity
5. Taxonomic classification of microbes using molecular markers- 16 rRNA typing.

Unit III

1. Virus organization, Types, Isolation, cultivation, identification and viral replication.
2. Structure and morphology of bacteriophages, lytic and lysogenic cycle.
3. Life cycle of DNA viruses: SV 40, RNA viruses: Retroviruses.
4. Plant viruses: TMV, Gemini, CMV, Human Viruses: Influenza (SARS), Herpes Simplex virus, Rubella.

Unit IV

1. Infection and disease, types of infection, Mechanism of pathogenesis of bacterial and Viral disease and its diagnosis
2. Staphylococcal and Clostridial food Poisoning, Bacterial Diseases: Salmonellosis and Shigellosis.
3. Fungal Diseases: Histoplasmosis, Aspergillosis and Candidiasis, diagnosis and treatment
4. Viral diseases: diagnosis and treatment of Chicken Pox, Hepatitis B and Poliomyelitis.

Unit V

1. Host microbe interaction, Symbiosis, Antibiosis, Commensalisms, Competition,Mycorrhiza and its importance, Role of microbes in N, P and C cycle.
2. Aerobic and anaerobic respiration, fermentation and bioprocess engineering
3. Chemotherapeutic agents: Classification of Antibiotics, Broad and narrow spectrum antibiotics; Antibiotics from prokaryotes.
4. Anti-fungal and antiviral antibiotics, mode of action of antibiotics and mechanism of drug resistance, origin of drug resistance.

Course Outcome

By the end of the paper, a student would be able to:

CO 1: To analyse the role of microbiology in the field of Biotechnology

CO 2: To learn how to work with microbes

CO 3: To explain bioprocessing using microbes to get different products

CO 4: To evaluate the way the microbes can be improved to enhance quality and yield of products

CO 5: To appraise the techniques that have been developed in Microbial Biotechnology

M.Sc. Biotechnology
Semester-I
103- MOLECULAR BIOLOGY

Unit I

1. Mendelian Genetics-Principles
2. Human genetics (pedigree analysis, karyotypes and genetic disorder).
3. Nature of Gene Concept, Chemical Nature of Gene, Gene cistron relationship in Prokaryotes and Eukaryotes
4. DNA Replication: General features of Chromosomal Replication: and its Enzymology
5. Regulation of DNA replication

Unit II

1. Transcription in prokaryotes: Initiation, elongation and termination
2. Structure and Function of prokaryotic promoter
3. Control of transcriptional initiation in prokaryotes: Structure and function of RNA Polymerase: Sigma factors- Types and functions
4. Control of transcriptional termination: Attenuation and antitermination

Unit III

1. Regulation of gene expression in prokaryotes: Operon concept, induction and Repression, Structure and regulation of lactose, arabinose and tryptophan operons
2. Initiation of transcription in Eukaryotes: RNA Polymerases Types andproperties
3. Transcription factors- Types and properties; Enhancers- Structure and properties; Response Elements
4. Post-transcriptional Modification Eukaryotes- 5' and 3' modification ofmRNA
5. Molecular recombination

Unit IV

1. Post- transcriptional Processing of pre mRNA, pre rRNA and pre tRNA transcripts
2. Genetic Code: Evidence and properties; Wobble hypothesis; Transcriptional adaptors and amino acyl tRNA synthases.
3. Translation: Successive stages of protein synthesis in prokaryotes and its comparison with eukaryotes
4. Post-translational Modification: Types and Significance

Unit V

1. Regulation of Gene Expression in Eukaryotes: cis- acting DNA elements; Chromatin Organization and regulation of gene expression; regulation at the level of processing of Transcripts, RNA editing; Gene Alteration; DNA methylation and gene regulation; Regulation of gene expression by hormones, regulation of gene expression at translational level.
2. Transposable elements in Prokaryotes and Eukaryotes: Types and Significance
3. Oncogenes and Tumor Suppressor Genes: Properties and Significance
4. Mutation and DNA repair chromosomal aberration.

Course Outcome

By the end of the paper, a student would be able to:

CO 1: To compare the replication and repair mechanism in eukaryotic system with the Prokaryotic system

CO 2: To explain the process of transcription in eukaryotes and its multi-level regulation

CO 3: To correlate the external signaling with the changes in gene expression

CO 4: To describe gene regulation and its significance in biological sciences

CO 5: To learn to apply various molecular biology techniques in research

M.Sc. Biotechnology

Semester-II

201- BIOSTATISTICS AND COMPUTER APPLICATIONS

Unit I

1. Introduction to Biostatistics, Common terms, notions and Applications
2. Statistical population and Sampling Methods
3. Classification and tabulation of Data
4. Diagrammatic and graphical presentation
5. Frequency Distribution, Measures of central value
6. Measures of variability; Standard deviation, standard Error, Range, Mean Deviation, Coefficient of variation, Analysis of variance

Unit II

1. Basic tests, Test of significance; t-test, chi-square test.
2. Correlation and Regression; Basic of regression, regression analysis, Estimation, Testing, prediction, Checking and residual analysis.
3. Multivariate Analysis.
4. Design of Experiments, randomization, replication, local control, complimentary Randomized, randomized block design
5. Statistical Packages: SPSS, Graph pad etc

Unit III

1. Introduction to Information technology and computer
2. Office applications: MS- Office, MS- Word, MS- Excel and MS- PowerPoint
3. Introduction to data mining
4. Internet- introduction and application

Unit IV

1 . Over view of Bioinformatics: Merger of life sciences with computers.
2. Search engines: Google, Pub Med, NCBI, EMBL,
3. Protein and DNA databases: Swiss port, PIR, OMIM, Embank, ENTREZ, DDJB, MIPS,.
4. Sequence 4Databases: Contents, Structure, and annotation for Human Genome

Unit V

1. Databases, Plant Genome Databases, Retrieving and installing a programme (Tree Tool), Multiple sequence alignment programme - Clustal W , X. Genome analysis programs; BLAST, FASTA, CGC, Motif and profile Sequence search.
2. Phylogenetic analysis: Phylogenetic reconstruction, distance matrices, Parsimony, Philip.
3. Methods of prediction of Proteins, DNA, RNA, fold recognition, structure prediction
4. Computer aided drug designing: Basic principles, docking, ADME/TOX
5. Genome mapping applications: EST and Functional genomics
6. Use of genome analysis programs, primer designing tools.

Course Outcome

By the end of the paper, a student would be able to:

CO1: To enable to promulgate the understanding of formulating, pursuing and analyzing research benefitting human development

CO2: To sensitize students regarding the ethics of conducting research by enabling in-depth understanding of plagiarism

CO3: To impart necessary traits to analyze, compare, logically criticize and evaluate biological data

CO4: To developing competitive acumen to use modern-age computer programs to analyze and represent research data

CO 5: To be able to develop and elevate skills of scientific writing to present research interpretations in a form of research paper, presentation, book chapters and short communication

M.Sc. Biotechnology
Semester-II

202--IMMUNOTECHNOLOGY

UNIT I

1. Immune response: Innate immune mechanisms and characteristics of adaptive immuneresponses, Hematopoiesis.
2. Anatomical organization of Immune System: Primary Lymphoid Organs, Secondary Lymphoid Organs, Ontogeny and Phylogeny of lymphocytes, Lymphocyte traffic.
3. Cell of immune system: Mononuclear cells and granulocyte, Antigen presenting cells, lymphocytes and their subsets. Antigens, Heptanes: Factor affecting immunogenecity, Super antigen.
4. Inflammation: its mediator and the process, cell-adhesion molecules

UNIT II

1. Major histocompatibility systems: Structure of MHC I and II molecules, polymorphism,distribution variation and function. Organization of MHC complex in mouse and humans. Association MHC with disease.
2. Recognition of antigens by T and B cells: Antigen processing, Role of MHC molecules in Antigen presentation and co stimulatory signals.
3. T-Cell receptor complex, T- Cell accessory membrane molecules, activation of T –cells, organization and arrangement of T-receptor genes.
4. B-cell receptor complex, activation of B-cells, Immunoglobulins: molecular structures, types and function. Antigenic determinants on immunoglobulins.

UNIT III

1. Molecular mechanism of antibody diversity: Organization of genes coding for constantand variable regions of heavy chain and light chain. Mechanism of antibody diversity,Class Switching.
2. Antigen-Antibody interaction avidity and affinity measurement.
3. Monoclonal antibodies: production, characterization and application in diagnosis, therapyand basic research.
4. Compliment System, components, Activation pathway and regulation of activation pathway, complement deficiency, role of complement system in immune responses.

UNIT IV

1. Cytokines: Structure and functions, cytokine receptors, signal transductions mediated by cytokine receptors, cytokine regulation of immune responses, cytokine related diseases and therapeutic applications of cytokines.
2. Cytotoxic T-cell and their mechanism of action, NK cell and mechanism of target cell destruction. Antibody dependent cell mediated cytotoxicity, delayed type hypersensitivity.Techniques of Cell-mediated immunity.
3. Immunoregulation by Antigens, Antibodies, immune complexes, MHC and cytokines.
4. Hypersensitivity: definition, IgE mediated hypersensitivity, mechanism of mast cell degranulation, mediators of type I reactions and consequences. Type II reactions, immune complex mediated hypersensitivity and delayed type hypersensitivity.

UNIT V

1. Autoimmunity: Organ specific diseases, systemic disease, mechanism ofautoimmunity.
2. Immunodeficiency Syndrome: Primary Immunodeficiencies and Secondary Immunodeficiencies and their diagnosis and therapeuticapproaches.
3. Vaccines: Active and passive immunization, whole organism vaccines, macromolecules as vaccines, Recombinant vector Vaccines, DNA Vaccines, synthetic peptide Vaccines and sub-unit Vaccines.
4. Immunodiagnostics: development of Immunodiagnostic Kits for infectious and non-Infectious disease with examples. Precipitation techniques, Agglutination, Fluorescence Techniques, ELISA, RIA, Western Blotting and immuno-histochemical techniques.

Course Outcome

By the end of the paper, a student would be able to:

CO 1: To have an in depth understanding on the history of important landmarks in the mammalian immune system

CO 2: To be able to correlate the molecules and organs of immune system

CO 3: To be able to understand and infer the use of immunological for methods diagnosis and therapeutics

CO 4: To be able to analyse the negative connotations of the immune system

CO 5:Compare and contrast the response of the host immune system to different pathogens

M.Sc. Biotechnology

Semester-II

203- Environmental Biotechnology

UNIT I

1. Environment: basic concepts, Environment pollution: types, methods for measurement of pollution
2. Population ecology(R & K selection)
3. Community ecology,
4. Waste treatment & Utilization: solid waste management, Waste water management
5. Biomedical waste and its management

UNIT II

1. Xenobiotics and its degradation
2. biosurfactants and biofilms
3. Integrated pest management- An ecological approach
4. Bioremediation: In -situ and ex -situ techniques, advantages of bioremediation, Applications of genetically engineered microbes (GEM) inbioremediation.
5. Phytoremediation: Types and its applications

UNIT III

1. Environmental monitoring: Bioindicators
2. Biogeography
3. Global environmental problems (Global warming, ozone depletion and kyotoprotocol) and their management
4. Petroleum biotechnology

UNIT IV

1. Biotransformation: Steroids
2. Mushroom Cultivation
3. Biofertilizers and its applications
4. Immobilization of microbial cells (Biofilms) and their applications
5. Biopesticide and its applications.

UNIT V

1. Conservation biology (principle of conservation, Indian case studies on conservation, project tiger and biosphere reserve, National Parks and sanctuaries)
2. Microbial production of SCP
3. Bioleaching, Concept of Green Energy
4. Environmental Protection act: legal issues and current scenario

Course Outcome

By the end of the paper, a student would be able to:

CO 1: To describe the role that biotechnology concepts have helped in environment management

CO 2: To describe the innovations and development of tools in Biotechnology

CO 3: To produce biofertilizer and explain the role that biotechnology concepts have helped in environment management

CO 4: To study the role of pollutants in human health and global environmental problems

CO 5: To study the need of conservation and design of action plans.

M.Sc. Biotechnology

Semester-II
(*Generic Elective)
204- Biophysical Chemistry – Techniques

Unit-1

1. Concept of free energy of molecules. Introduction to various force fields and their relative merits and demerits. Techniques for Molecular energy minimization, Monte Carlo and Molecular Dynamics simulation.
2. Water, PH, Buffer, Handerson and Hasselblach equation.
3. Titration of weak acid and weak bases
4. Basic calculation of concentration of deferent unit
5. Mass Spectrometry

Unit-2

1. Micro calorimetry (DSC and ITC) and its application
2. Circular Dichroism spectroscopy
3. UV, visible and Fluorescence spectroscopy, IR and Raman Spectroscopy
4. X-Ray Diffraction
5. Nuclear Magnetic Resonance (NMR)
6. ESR
7. Mass Spectroscopy

Unit-3

1. Ion exchange chromatography
2. Affinity Chromatography,
3. Paper chromatography
4. Thin layer chromatography
5. Gas liquid chromatography
6. Gas chromatography
7. Column chromatography
8. HPLC
9. Exclusion chromatography
10. Isoelectrofocusing

Unit - 4

1. Analytical Ultracentrifugation: Sedimentation velocity and equilibrium, determination of molecular weights
2. Electrophoresis of DNA, proteins and enzymes.
3. Southern, northern and western blotting
4. DNA Fingerprinting
5. Tracer Techniques – Nature and types, Decay units and preparation of labeled biological compounds.

Unit-5

1. DNA sequencing
2. Gene mapping techniques
3. Functional genomics (expression profiling, transcriptome, DNA array, gene function determination , protein interaction)
4. EMSA and FACS and Flow cytometry
5. PCR and its different variations, Analysis of molecular markers(SSLP , RFLP, AFLP, RAPD, ISSR, STS)

Course Outcome

By the end of the paper, a student would be able to:

CO 1: To explain techniques used in understanding the nature of proteins

CO 2: Ability to isolate and estimate chloroplast

CO3: To learn use instruments to interpret the results

CO 4: Apply the techniques of chromatography and electrophoresis to separate bio-molecules.

CO 5: To describe the various centrifugal techniques used for fractionation of cells, cell Organelles and bio-molecules.

M.Sc. Biotechnology

Semester-III

301- GENETIC ENGINEERING

Unit I

1. The recombinant DNA Technology : General concept and principle ofcloning
2. Enzymes: Nucleases and restriction endonucleases- properties and types; phosphomonoesterases; polymerase; terminal deoxynucleotidyl transferase; poly A polymerase, Linkers, adaptors and homopolymer tailing.
3. prokaryotic host- vector system: Characteristics of E.coli as host; vectors for cloning in E.coli (plasmid, bacteriophage- EMBL, DASH, gt10/11, ZAP etc and plasmid-phage)
4. Other Prokaryotic host vector systems: BAC, Characteristics of Gram positive and Gram negative organism as host and suitable vectors for cloning; Shuttle Vectors

Unit II

1. Design and characteristics of expression vectors for cloning in prokaryotes and factorsthat affect expression.
2. Cloning in Yeast: Properties of yeast as host for cloning and different types of vectors designed for cloning in yeast
3. Cloning in animal system: Animal system as a model host, Methods of introduction of foreign DNA in animal system; Vectors for cloning in animal system- SV-40, vaccinia virus, baculovirus and retrovirus vectors ,pMal, GST, pET based vectors, Pichia basedvectors.
4. Plant transformation technology: Features of Ti and Ri plasmids, mechanism of DNA transfer.

Unit III

1. Methods for Constructing rDNA and cloning: Inserts; vector insert ligation; infection, transferring and cloning
2. Methods for screening and selection of recombinant clones
3. DNA Libraries: types, advantages and disadvantages of different types of libraries; Different methods for constructing genomic and full length cDNAlibraries
4. Gross anatomy of cloned insert- size, restriction mapping and location

Unit IV

1. Fine anatomy of DNA segment- General principle of chemical andenzymatic methods of nucleotide sequence analysis and advantages of automatic gene sequencers.
2. Localization of cloned segments in genomes- molecular and chromosomallocation
3. Methods for determination of copy number of a cloned gene ingenome
4. Mutant construction: Introduction, deletion, insertion and point mutation

Unit V

1. Principles and applications of Blotting techniques- Southern, Northern, Western and Eastern blotting; Polymerase Chain reaction and types (multiplex, nested, RT, real time, touch down PCR, hot start PCR, colony PCR), Oligonucleotide
2. Principle and applications of gel mobility shift assay, DNA fingerprinting and DNA Foot printing, restriction fragment length polymorphism, Chromosome mapping and chromosome painting
3. Application of Recombinant DNA technology in Medicine & Industry
4. Si RNA technology: Micro RNA Construction of Si RNA vectors: Gene silencing and its applications in agro industry.

Course Outcome

By the end of the paper, a student would be able to:

CO1: To explain the basic tools required in recombinant DNA technology

CO2: To explore the methods used to study gene location and structure

CO3: To know the various techniques used to study the gene expression and regulation

CO4: To assess the techniques used in analyzing transcripts and proteins

CO5: To be discuss problems associated with production of recombinant molecules

M.Sc. Biotechnology

Semester-III

302- Metabolism: Basic Concept and Design

Unit-1

1. Basic concept, laws of thermodynamics, ATP role in metabolism, oyher high energy phosphate molecule.
2. Mechanism of Enzyme catalysis and action, Enzyme inhibition, activation of enzymes
   Immobilized enzymes
3. Different mechanisms of enzyme catalysis acidbase and covalent catalysis
4. Molecular mechanism of action of chymotrypsin, Lysozyme and carboxy peptidase
5. Structure-function relationship of enzymes

Unit-2

1. Glycolysis: Key structure and reactions, formation of1,6 bisphosphate, formation of glyceraldehyde 3-phosphate, formation of pyruvate and generation of second ATP, entryof fructose and galactose into glycolysis, phosphofructokinase as key enzyme in glycolysis,hoxokinase and pyruvatekinase as regulatory enzymes, conversion of pyruvate into ethanol lactate or acetyl CoA.
2. Gluconeogenesis: Synthesis of carbohydrates by noncarbohydrate precursors, gluconeogenes is nota reversal of glycolysis, activation of pyruvatecarboxylase by acetyl CoA, oxaloacetate shuttle,energy consumption in the synthesis of glucose from pyruvate, reciprocal regulation of gluconeogenesis and glycolysis, conversion of lactate and alanine into glucose
3. Pentose phosphate pathway : Generation of NADPH and interconnection of glycolysis and pentose phosphate pathway, control of rate of pentose phosphate pathway by NADPH+, regulation of flow of glucose 6 phosphate by the need of NADPH, ribose 5 phosphate and ATP, glucose 6 phosphate dehydrogenase defficiency.

Unit-3

1. Electron transport and oxidative phospherylation, energetics of oxidative phosphorylation, enrgy yield by complete oxidation of glucose.
2. Citric acid cycle: Formation of acetyl CoA from pyruvate, condensation of oxaloacetate with acetyl CoA to form citrate, isomerization of citrate intoisocitrate, oxidative decarboxylation of succinyl CoA, generation of high energy phosphate from succinyl CoA, regeneration of oxalate, sloichiometry of citricacid cycle, pyruvate dehydrogenase complex, citric acid cycle as a source of biosynthetic precursors, control of pyruvate dehydrogenase complex, control of citric acid cycle, citric acid cycle and its high energy yield.
3. Carbohydrate Metabolism: Photosynthesis, C_3, C_4 & CAM plants.

Unit-4

1. Fatty acid oxidation
2. Digestion, mobilization and transport of fatty acids, Mobilization of stored triglycerides by hormones, activation of fatty acids and their transport tomitochondria, oxidation of saturated fatty acids, Oxidation of unsaturated fattyacids, and oxidation of odd chain fatty acids. Ketone bodies, over production of kelone bodies.
3. Biosynthesis of fatty acids
4. Formation of malony CoA, fattyacid synthase complex, fattyacid synthase multifunctional proteins, shuttling of acitate out of mitochondria as citrate, Reactions of fatty acidsynthase, regulation of fatty acid biosynthesis, Biosynthesisof triglycerols, membrane phospholipids and prostaglandins.

Unit-5

1. Amino acid degradation oxidative deemination, conversion of NH_4 into urea, linkage between ureacycle and citirc acid cycle, conversion of alanineserine and cystein into pyruvate, conversion of aspartate and asparagine into oxalocetate, conversion of several amino acid into alpha ketoglutarate through glutamate, succinyl CoA as a point of entry for some amino acids, leucine degradation to acetylCoA and acetoacetyl CoA, phenyl alanine degradation to acetoacetate and fumarate.
2. Biosynthesis of amino acids : Conversion of nitrogen to NH_4 by micro-organisms, conversion of amonia into amino acids by way of glutamata and glutamine,conversion of citric acid Intermediates to amino acids,glutamate as precursor of glutamine, proline and arginine, conversion of 3-phosphoglycerate to serine, synthesis of cystein from serine and homocysteine,feed back regulation of amino acid biosynthesis.
3. Biosynthesis and degradation of Nucleotides:
   Purine biosynthesis : formation of PRPP, Biosynthesis of IMP, Purine nucleotide interconversions, regulation of purine biosynthesis.
   Pyrimidine Biosynthesis : Assembly of the pyrimidinenucleus, synthesis of di & tri phosphates, formation of deoxyribonucleotides, thymine biosynthesis salvage pathway for purine and pyrimidine nucleotides, Degradation of purines and pyrimidines to uric acid and urea.

Course Outcome

By the end of the paper, a student would be able to:

CO 1: To distinguish between anabolic and catabolic processes of carbohydrates and lipids

CO 2: Compare and contrast metabolic pathway of complex carbohydrates in different living System

CO 3: To elucidate the role of lipids in maintaining homeostasis at cellular and systemic level

CO4: To describe the different models of enzyme catalysis and the mechanisms for its Assessment

CO5: To explain various methods for identifying active site residues

M.Sc. Biotechnology

Semester-III

(**Discipline centric elective)

Paper-303(A)

303 A : BIOPROCESS ENGINEERING AND TECHNOLOGY

UNIT I

1. Introduction to bioprocess engineering
2. Isolation, preservation and Maintenance of Industrial microorganisms.
3. Kinetics of microbial growth and death,
4. Media for industrial fermentation. Air and media sterilization

UNIT II

1. Aeration and Agitation systems for bioreactor
2. Safety in fermentation laboratory
3. Strain improvement of industrially important microorganism.
4. Bioreactors: Principle, Kinetics, types, design, and application.

UNIT III

1. Flow behaviour of fermentation fluids
2. Gas-Liquid mass transfer, significance of Ka, and Heat transfer.
3. Automation for monitoring and control.

UNIT IV

1. Downstream processing: Introduction, removal of microbial cells and solid matter, foam reparation, precipitation, centrifugation, cell disruption, chromatography
2. Extraction:-solvent, two phase, liquid extraction
3. Product recovery processes
4. Crystallization, packaging and quality assurance.
5. Classification of product formation
6. Product synthesis kinetics

UNIT V

1. Microbial Production of antibiotics: Penicillin;
2. Microbial Production of Vitamins & amino acids (Vit B12 & Glutamic acid)
3. Microbial production of enzymes: Amylase,
4. Microbial production of alcoholic beverages: Distilled alcoholic beverages-Beer, microbial production of Vinegar.
5. Microbial production of Organic acids: Citric acid & Acetic acid
6. Microbial production of solvents: Ethanol and acetone

7 Microbial production of food –SCP

Course Outcome

By the end of the paper, a student would be able to:
CO 1: To analyse the role of microbiology in the field of Biotechnology
CO 2: To learn how to work with microbes
CO 3: To explain bioprocessing using microbes to get different products
CO 4: To evaluate the way the microbes can be improved to enhance quality and yield of products
CO 5: To appraise the techniques that have been developed in Microbial Biotechnology

M.Sc. Biotechnology

Semester-III

Paper-303(B)

(**Discipline centric elective)

Medical Biotechnology

UNIT I

Biotechnology in medicine: History, scope & importance of Biotechnology in medicine Disease Diagnosis (DNA, RNA probes), Detection and Treatment of genetic Diseases.

Genetic Counseling and Forensic Medicine: Fertility control, Genetic counseling, (Chance of having child with congenital defects, choice of Baby sex)

DNA Fingerprinting in Forensic Medicines.

UNIT 1I

Gene therapy: Definition and types of Gene therapy, Initial success and future of Gene therapy, Vectors and other delivery system of gene therapy, Target tissue for gene therapy system, Gene therapy of genetic diseases(Neurological Disorders, Cystic Fibrosis),Gene therapy of Acquire diseases(Infectious Diseases, Cardiovascular diseases, cancer), Nanobiotechnology for drug targeting and gene therapy.

UNIT III

Pharmaceutical Biotechnology: Drug development, drug manufacturing processes, manufacturing processes of antiviral drugs, drug designing, Novel drug delivery systems, Antimicrobial drugs.

Pharmacogenetics: Pharmacogenetics and personalized medicine, genetics and genomics in medical practice, use of SNPs in pharmocogenomics.

UNIT IV

Genetic Engineering: Genetic and recombinant vaccines; Edible vaccines production of therapeutic proteins; Genetic engineering for production of Factor VIII, tissue plasminogen activator, Interferon.

Tissue Engineering: Tissue engineering of skin and cartilage and their applications, properties and types of stem cells, culture and applications of stem cells, Transplant rejection, Intellectual property issues in using human embryonic stem cells.

UNIT V

UNIT IV

Drug Discovery and Designing: History and molecular aspects of drug discovery, drug discovery in cancer, microbial genomics for new antibiotics, drug designing.

Metabolic engineering: Cloning and expression of heterologous genes, molecular breeding of Bio synthetic pathways, metabolomics and metabolic engineering, limitations in metabolic engineering.

Monoclonal Antibodies auto Antibodies

Course Outcome

By the end of the paper a student would be able to:

CO1: Improrrtance of Biotechnology in development of medicines

CO2: Role of genes in development of disease

CO3: Production of genetic and recombinant vaccines.

CO4: Production and uses of monoclonal antibodies.

CO5: Basics of drug designing

M.Sc. Biotechnology

Semester-III

(*Generic Elective)

304 PLANT BIOTECHNOLOGY

Unit I

1. Objectives, roles, landmark and new challenges in plant breeding.
2. Plant breeding techniques: Mutational breeding and distant hybridization.
3. Generation of genetically modified crops for resistance against biotic andabiotic stresses and nutritional quality.
4. Seed production techniques: release of new varieties.

UNIT II

1. Germplasm Conservation and maintenance
2. Plant Pathology overview and future perspectives
3. Organic farming: Methods and management
4. Hydroponics and aeroponics

UNIT III

1. Somaclonal variation and its application for plant improvement
2. Protoplast isolation and fusion, selection of hybrid cell and cybrids
3. Cryopreservation techniques and application
4. GM crops (development and future aspects.)

UNIT IV

1. Plant cloning vectors: ti Plasmid and viral vectors (CaMV based vectors, Gemini viruses,
2. TMV based vectors, Antisense RNA and ribosome technology
3. Transgenics in crop improvement: Methods for gene transfer field, Chloroplast transformation, testing and commercialization.
4. Plant physiology, plant hormones, stress physiology, secondary metabolites, photoperiodism and vernalization,solute transport and translocation.

UNIT V

1. Plant Genome mapping: Physical and molecular maps , Gene tagging
2. Insect resistance, Bt genes, Non-Bt like protease inhibitors, alpha amylase inhibitor, green House technology
3. Seed production techniques, release of new varieties and plant breeders' right: UPOV 369, 370,372.

Course Outcome

By the end of the paper, a student would be able to:

CO1 : Learn basic organic farming method.

CO2: To Learn production of GM Crops.

CO 3: To understand plant cloning vectors

CO 4: To learn basics of plant physiology

CO5: To learn techniques of plant genetic mapping

M.Sc. Biotechnology
Semester-IV

401: ENTREPRENEURSHIP IN BIOTECHNOLOGY &INTELLECTUAL PROPERTY RIGHTS

Unit 1

1. Creativity & Entrepreneurial personality and Entrepreneurship in Biotechnology Organizational structure & Management, Capital Management, Product innovation and management Government schemes for commercialization of technology (e.g. Biotech Consortium)

Unit 2

1. Basics of production management: Methods of manufacturing-Project/Jobbing, Batch Production, Flow/Continuous production, process production-Characteristics of each Method. Plant location-Importance-Factors affecting location-factory Building-Plant Layout- Installation of Facilities.
2. Operational Research: Linear Programming, PERT and CPM; Production Planning & Control-Scheduling-Gantt Charts-Documentation-Production Work Order.
3. Basics of material management
4. Personnel management E.g., Communication skills; Managerial and personal, training ,etc.

Unit 3

1. Kaizen (Continuous improvement in product & management)
2. Six Sigma
3. Biotech enterprises: Small, Medium & Large
4. Quality control in Biotech industries

Unit 4

1. Govt. regulations for biotech products
2. Public policy, regulatory and ethical challenges facing the biotechnology Entrepreneurship
3. Business development for medical products
4. Business development for consumable products

Unit 5

1. Patenting System: WTO, Paris Convention, Indian Legislations
2. Intellectual Property: A. Copy Right & Industrial Properties, Trademarks, Designs, Geographical Indications
3. IPR & Technology transfer, Role of patentee & Licensor
4. Patent process & Patent laws & e-filing

Course Outcome

By the end of the paper, a student would be able to:

CO1: To learn basics of patenting laws and regulations
CO2: To develop entrepreneurship among the students
CO3: To understand basics of working culture of biotechnology industry.
CO4: to enhance knowledge of Intellectual property rights like copyright trademark.
CO5: To learn filing of patent and associated rule regulations.

M.Sc. Biotechnology

Semester-IV

Paper-402-A

(**Discipline centric elective)

Animal Cell culture

UNIT I

Animal cell and tissue culture: History and scope of animal biotechnology and genomics, advantage and Laboratory Facilities

Introduction and organization of animal cell and tissue culture laboratory for Cell and Tissue Culture, Substrate, Culture Media and Procedures for Cell and Tissue Culture, Primary cell Culture and Cell Lines,

Stem Cells: Introduction, Origin, Types and functions of Stem Cells, Therapeutics, cloning for embryonic stem cells, Stem Cell Therapy.

UNIT II

1. Primary and established cell line cultures
2. Serum and protein free defined media and their applications
3. Introduction to balanced salt solutions and simple growth medium: rationale of composition of medium, role of CO2 and supplements

4.Organ/Embryo Culture: Primary Tissue Explanation Techniques, Organ Culture, Embryo Culture.

5.Cell and Tissue engineering: Approaches and Bio-Materials for tissue engineering, Tissue engineering of skin (Skin Graft), Engineering of Bone Crafts and Artificial Nerve Crafts, Future Limitations and Possibilities of Tissue Engineering.

UNIT III

In Vitro Fertilization and Embryo Transfer: In Vitro Fertilization in Human, Embryo Transfer (ET) in Humans, Super Ovulation and Embryo Transfer in Farm Animals (e.g. Cow).

Cloning of Animals: Method, Types and utility of cloning animals, Cloning for Production of Transgenic Animals, Human Cloning and Ethical issues and Risk.

UNIT IV

Transgenic Animals: Gene Transfer or Transfection (Transfection of embryo, unfertilized eggs, culture of mammalian cells), Transgenic Animals, Cryopreservation. Measurement of parameters of growth, Scaling up of animal cell culture, Cell synchronization, 3-D animal cell culture, 4. FISH and applications of animal cell culture

UNIT V

Molecular Maps: Genetic Maps Using Molecular Markers, Cytogenetic Maps Using Molecular Markers, Physical Maps Using Molecular Markers.

Genomics and Proteomics: Human Genome project, Progressing Genomic Research (Drosophila, Mouse, Rat, Chimpanzee), Integrated Genomic Maps and Linkage Disequilibrium, Maps of the Future, Introduction types and application of proteomics.

Course Outcome

By the end of the paper, a student would be able to:

CO 1: To demonstrate the culturing of animal cells in vitro

CO 2: Comprehend how biotechnology has helped in Drug Discovery and Development

CO 3: To explain the culturing of animal cells in vitro and its applications

CO4: To study and learn basic about human genome and molecular markers and progressive research.

CO5: Student will learn about cell ,tissue transplanting techniques and also aware with there significance for the human welfare.

M.Sc. Biotechnology
Semester-IV
Paper-402 (B)
(**Discipline centric elective)
Plant Tissue Culture

UNIT I

Plant Tissue Culture: Basic aspects of plant biotechnology (History, application, scope and importance), laboratory

Sterlization techniques

Culture media for plant tissue culture, cell Culture and its applications.

Clonal Propagation and Protoplast Culture: Micro propagation

UNIT II

Somaclonal Variation, Protoplast isolation, Regeneration of plant, Somatic Hybridization Gene Transfer in Plants: Vectors of gene transfer (Plasmids, Agrobacterium and Virus vector) Transformation technique (Agrobacterium mediated gene transfer, DNA mediated gene transfer (DMGT) Removal of selected Marker Genes from Transgenic Plants, Regulatory sequences of induced genes.

Transgenic Plant resistance against Stress: Development of herbicide resistant transgenic plant, Development of insect resistant transgenic plant, Transgenic plant resistance against virus, bacterial and fungal pathogens, transgenic plant resistance against abiotic stress.

UNIT III

Production of virus free plants

Haploid production: ovary and anther culture

Genetically Modified Crops and Floricultural Plants: Transgenic plants with improved crop productivity, Transgenic plants with improved nutritional quality, Transgenic plants for Floriculture. Molecular Farming:

Transgenic Plants for Value Added Specialty Crops, Transgenic Plants for Edible Vaccines, Transgenic Plants for Antibodies and Transgenic Plants for Biopharmaceuticals

UNIT IV

Transgenic Plants for Biosafety: Biosafety regulations of Transgenic Crops, Commercialization of Transgenic plants, quality modifications of plants (Modification of starch quality, modification and future of oil quality and modification of seed protein quality).

Choloroplast Engineering: plants Engineering of Chloroplast Genome, Transformation of choloroplast genome in higher plants, Transplastomic Plants and its applications (in Tabacco, Patato, Rice, Tomato etc.)

UNIT V

Protoplasm fusion

Construction of Molecular Maps: Preparation of Genetic Maps, (cereals, millets, sugarcane, cotton, Soyabean, Pea, Sunflower, etc.), Molecular genetics maps of high density plants, Uses of molecular genetics maps.

Genomics: Microcllinearity in DNA Sequences of Small Genomic Regions, Thale cress genome, Rice (Oryza Sativa)

Course Outcome

By the end of the paper, a student would be able to:

CO1 : Learn basic plant tissue culture method.

CO2: To Learn different culture medium, major and micronutrients.

CO 3: To understand plant breeding experiments and callus culture

CO 4: To produce transgenics and virus free plants.

CO5: To learn cryopreservation methods

M.Sc. Biotechnology
Semester-IV
Paper-403
Dissertation andPresentation

Course Outcome

By the end of the Dissertation , a student would be able to:

CO1 : students would be able to learn how to design the objectives or experiment.

CO2: students would be able to learn the different techniques through experimental design.

CO 3: students would be able to analyze the data through statistical software.

CO 4: students would be able to gain the knowledge of basic research.

CO5: students would be able to think independently in various research areas and design of experiment so that they will absorb in various pharmaceutical industries and research lab in the country and abroad.

SYLLABUS

M. Sc. Environmental Biology

2021-22

IV Semester Course

(Choice Base Credit System)

School of Environmental Biology

Awadhesh Pratap Singh University Rewa M. P.

PO#	**PROGRAMME OUTCOME**
PO1	**Critical Thinking**: This program places a strong emphasis on the value of being conscious of our presumptions, challenging their accuracy, and approaching concepts and choices from several angles. It entails having the capacity to recognize, assess, and make sensible choices based on logical reasoning.
PO2	**Effective Communication:** This program helps participants improve their communication skills and makes sure they can express themselves accurately in written, spoken, and technological mediums. It also encompasses the capacity to link individuals, concepts, literature, media, and technology, as well as the capacity to communicate effectively and interpret the world.
PO3	**Social Interaction:** It emphasizes on the capacity to solicit the opinions of others, resolve conflicts, and aid in reaching decisions in group settings. It entails having the capacity to collaborate with others, forge agreement, and settle disputes.
PO4	**Effective Citizenship:** The necessity of sympathetic social concern and equity-focused national development is emphasized. It entails being aware of the problems that society faces, being involved in civic affairs via volunteering, and behaving in a way that reflects a thorough understanding of these problems.
PO5	**Ethics:** It emphasizes the significance of appreciating many value systems, comprehending the moral implications of choices, and taking accountability for them. It entails being conscious of ethical concerns and basing judgments on ethical principles.
PO6	**Environment and Sustainability:** Understanding environmental surroundings and sustainable development are the main objectives. It entails being conscious of how human behavior affects the environment and acting to advance sustainability.
PO 7	**Self-directed and Life-long Learning:** gaining the capacity to participate in independent, ongoing learning in light of socio-technical developments. It entails having the capacity to learn on one's own, adjust to new technology, and consistently acquire new abilities and information.

Programme Specific Outcomes

PSO1- understand and evaluate the global scale of environmental problems.

PSO2- the environmental studies prepares students for carriers as leader in understanding and addressing complex environmental issues.

PSO3- Developing skill sets for research, employability and entrepreneurship

PSO4- Finding sustainable solutions to issues pertaining to environment, health, agriculture etc.

SYLLABUS

M. Sc. Environmental Biology (Choice Based Credit System)

Schemes of Examination (Session- 2020-21)

Semester-I

S.No.	Course Name & Code	Course Type	Theory	Internal Assessment	Total Marks	Credit
1.	Ecological Principles	Core	80	20	100	4
2.	*Basic Methods in Ecology	Generic Elective	80	20	100	4
3.	Populations and Biotic Community	Core	80	20	100	4
4.	Earth Environment and Climatology		80	20	100	4
5.	Practical	-	-	-	100	4
6.	Comprehensive Viva Voce	-	-	-	50	2
Semester Total					**550**	**22**

Semester-II

S.No.	Course Name & Code	Course Type	Theory	Internal Assessment	Total Marks	Credit
1.	Biodiversity Conservation	Core	80	20	100	4
2.	Ecological Statistics	Core	80	20	100	4
3.	Environmental Pollution	Core	80	20	100	4
4.	*Global Environmental Issues	Generic Elective	80	20	100	4
5.	Practical	-	-	-	100	4
6.	Comprehensive Viva Voce	-	-	-	50	2
Semester Total					**550**	**22**

Semester-III

S.No	Course Name & Code	Course Type	Theory	Internal Assessment	Total Marks	Credit
1.	Environmental Microbiology	Core	80	20	100	4
2.	Conservative & Management of Natural Resources	Core	80	20	100	4
3.	**(A). Pollution Control and Waste Management	Discipline Centric Elective	80	20	100	4
	**(B). Air Pollution Management	Discipline Centric Elective				
4.	*Environmental Law's and Policies	Generic Elective	80	20	100	4
5.	Practical	-	-	-	100	4
6.	Comprehensive Viva Voce	-	-	-	50	2
Semester Total					**550**	**22**

Semester-IV

S.No	Course Name & Code	Course Type	Theory	Internal Assessment	Total Marks	Credit
1.	Ecotoxicology	Core	80	20	100	4
2.	Environmental Biotechnology	Core	80	20	100	4
3.	**(A). Forest Ecology	Discipline Centric Elective	80	20	100	4
	**(B). Water Pollution Management	Discipline Centric Elective				
4.	Environmental Impact Assessment	Generic Elective	80	20	100	4
5.	Practical	-	-	-	100	4
6.	Comprehensive Viva Voce	-	-	-	50	2
Semester Total					**550**	**22**
Grand Total					**2200**	**88**

* Students may choose this course as a Generic Elective or may choose a Generic Elective offered by other UTDs or may choose a course offered by MOOCs through SWAYAM.

** The department offers Two- Discipline Centric Elective Courses in III and IV semester with internal choices as A or B. Students of this program will have a choice to select one course from the available internal choice in each Discipline Centric Elective course in III and IV semester.

Generic Elective Courses of this program are also available to students of other discipline/ programs of the University Teaching Departments.

M. Sc. Environmental Biology (Choice Based Credit System)

Schemes of Examination (Session- 2020-21)

Semester-I

S.No.	Course Name & Code	Course Type	Theory	Internal Assessment	Total Marks	Credit
1.	Ecological Principles	Core	80	20	100	4
2.	*Basic Methods in Ecology	Generic Elective	80	20	100	4
3.	Populations and Biotic Community	Core	80	20	100	4
4.	Earth Environment and Climatology		80	20	100	4
5.	Practical	-	-	-	100	4
6.	Comprehensive Viva Voce	-	-	-	50	2
Semester Total					**550**	**22**

M.Sc. ENVIRONMENTAL Biology

SEMESTER- I
PAPER- I (Core course)
ECOLOGICAL PRINCIPLES

Preamble: This course aims to introduce the basics of ecological principles, ecosystem's structure and functions, and the ecosystem's services provided to society.

1. Ecosystem: Concept, trophic structure, structure and functions, food chains, food webs, ecological pyramids.

2. Energy flow through food chains, productivity; primary productivity of different ecosystems, secondary productivity.

3. Biogeochemical cycling: Concept, gaseous and sedimentary cycles, recycles pathways, Ecological factors; Leibigs and shelford laws of limiting factors.

4. Ecological characteristics of forest ecosystems, grassland ecosystems, desert ecosystems, aquatic ecosystems, urban ecosystems, agricultural ecosystems, natural and managed ecosystems.

5. Ecosystems services to the Society: maintenance of gaseous composition of the atmosphere, climate control by forests and ocean systems, natural pest control, pollination of plants by insect, birds and mammals, formation and protection of soil, conservation and purification of water.

COURSE OUTCOME:

By the end of the paper, a student should be able to:

CO-1 : demonstrate and understanding of the principles of ecology.
CO 2: analyze ecological data and unit up.
CO 3: demonstrate knowledge of current approaches to the conservation of biodiversity.
CO 4: recognizing environmental gradients.
CO 5: students gain deep knowledge of various gaseous and sedimentary cycles

M.Sc. ENVIRONMENTAL Biology

SEMESTER- I
PAPER- II (Core Course)
BASIC METHODS IN ECOLOGY

Preamble: This paper deals with various methods of sampling of plants, animals, air, water, and analysis of ecological materials.

1. Terrestrial vegetation sampling techniques: Sampling of plants, determination of minimum size and minimum number of quadrates, community analysis; density, frequency, abundance, Importance Value Index (IVI), indices of species diversity, richness, and similarity index.

2. Aquatic sampling techniques: Sampling of macrophytes, phytoplanktons and zooplanktons and aquatic insects. Animal Sampling: Sampling techniques of animal population

3. Estimation of productivity: Primary productivity (chlorophyll estimation, biomass, light and dark bottle methods) and secondary productivity.

4. Analytical methods: Air pollution monitoring techniques, Gaseous and particulate matters sampling, Air samplers, water sampling techniques, water quality analysis (DO, BOD, COD, Hardness).

5. Microbial Techniques: Microbial culture sterilization techniques, culture media preparation, colony counting techniques, determination of MPN.

COURSE OUTCOME:

By the end of the paper, a student should be able to:

CO-1 : Learn ecological problems of humanity ,protection , of the nature and biological variability.
CO 2: Learn economics of environment and planning sustainable development.
CO 3: Support food security and sustain lively hood overall genetic diversity.
CO 4: students will be able to identify species characteristics, habitat requirements and life cycle of birds, fish and mammalian wild life species.
CO 5: to understand the distribution of biotic and abiotic factors of living things in the environment.

PAPER- III (Core Course)
POPULATIONS AND BIOTIC COMMUNITY

Preamble: This course introduces major themes and ecological processes of biotic communities.

1. Concept of Population: Population attributes, population growth; population fluctuation, 'r' and 'k' selection, concept of density dependent and density independent action of population regulation, Ecade and Ecotypes.

2. Concept of Biotic Community: Attributes, structure and composition, stratification, Ecotone and Edge effect, keystone species induced community changes.

3. Interspecific Interactions : Positive and negative interspecific interactions (commensalism, mutualism, predation, competition, parasitism, antibiosis), co-evolution, cooperation and complexity, allelopathy.

4. Ecological Succession : Stages and mechanism of succession, Trends and stages of community development, concept of climax, climax theories.

5. Concept of Habitat and Ecological Niche, niche types, niche width and overlap, ecological equivalent, competition and niche, niche segregation.

COURSE OUTCOME:

By the end of the paper, a student should be able to:

CO-1 : student can define population ,population size , density , geographic range, exponential growth , logistic growth and carrying capacity.
CO-2 : students will be able to learn functional and structural features of communities.
CO- 3: Learn evolutional ecology, natural selection and genetic variability.
CO-4: Learn functional and structural features of communities.
CO-5: studing population growth gives scientist insite into how organism interact with each other and with their environments.

PAPER- IV (Generic Elective Course)
EARTH ENVIRONMENT AND CLIMATOLOGY

Preamble: This course deals with dimensions of earth, atmosphere, soil, climate and major catastrophic climatic conditions confronting our present day from scientific perspective.

1. Lithosphere: Earth structure, Rocks- Sedimentary, Igneous and metamorphic rocks, weathering of rocks.

2. Soil : Soil characteristics (mineral matter, organic matters, soil air and water),soil classification, soil distribution in India, Climate and soil profile, soil formation soil forming processes, factors affecting soil formation, ecological characteristics of soils of different ecosystems.

3. Hydrosphere: Global water balance, ice sheets and fluctuation of sea levels, factors influencing the surface water, freshwater shortage and associated problems, hydrological cycle.

4. Atmosphere : Compositions and divisions of atmosphere, atmospheric pressure, atmospheric winds, clouds and precipitation, atmospheric humidity, temperature and light, Carioles' effects, Solar radiation, Solar pond.

5. Climate : Weather and climate, air circulation and climate, ocean current and climate, Seasonal winds and monsoon, climate of India; Indian monsoon, EL Nino, Tropical cyclones, Western disturbance, Weather modification.

COURSE OUTCOME:

By the end of the paper, a student should be able to:

CO-1 : this course is focused to explain developing deeper understanding of climatic variability and change and their importance to the management of the global system.
CO 2: identify the mechanism of soil formation.
CO 3: to know the methods of measurement of meteorological elements.
CO 4: to know the significance of soil conservation and methods of soil reclamation.
CO 5: students can describe the patterns of air movements in the atmosphere and how they affect the weather.

M. Sc. Environmental Biology (Choice Based Credit System)

Schemes of Examination (Session- 2020-21)

Semester -II

S.No.	Course Name & Code	Course Type	Theory	Internal Assessment	Total Marks	Credit
1.	Biodiversity Conservation	Core	80	20	100	4
2.	Ecological Statistics	Core	80	20	100	4
3.	Environmental Pollution	Core	80	20	100	4
4.	*Global Environmental Issues	Generic Elective	80	20	100	4
5.	Practical	-	-	-	100	4
6.	Comprehensive Viva Voce	-	-	-	50	2
Semester Total					**550**	**22**

M.Sc. ENVIRONMENTAL BIOLOGY
SEMESTER- II

PAPER- I (Core Course)
BIODIVERSITY CONSERVATON

Preamble: This course introduces the biodiversity at different levels of biological organization and the essential ecological and biological processes to ensure long term stability of ecosystems, and also scientific approaches of conservation of biodiversity.

1. Introduction to biodiversity: The global perspective, biogeographically regions of India, values of biodiversity, biodiversity as a sources of food and improved variety, sources of drugs and medicines, aesthetic and cultural benefits.

2. Levels of biodiversity: Community diversity (alpha, beta, and gamma diversity, genetic diversity, pattern diversity), Gradients of biodiversity (altitudinal, insular), Ecosystems diversity (biomes, mangroves, coral reefs, wetlands, and terrestrial diversity), factors related to tropical and temperate species diversity.

3. Regions of Biodiversity: Mega diversity regions of India, Hot spots of biodiversity, diversity trends of different ecosystems, diversity and distribution of wild life in India, habitat specific endemic plants and animals of India.

4. Threats to biodiversity: Human interventions and biodiversity loss, global environmental changes and biodiversity, introduction of exotic species and biodiversity, natural calamities and biodiversity, extinction of species, threatened plants and animals of India.

5. Conservation of biodiversity: Importance of biodiversity conservation, methods of biodiversity conservation; in-situ and ex-situ modes of biodiversity conservation, In-vitro conservation; germplasm and gene bank, pollen and spore bank, DNA bank.

COURSE OUTCOME:

By the end of the paper, a student should be able to:

CO-1 : students will be capable to examine the variety of life in five kingdoms.
CO-2: biodiversity supports food security and sustain livelihood through overall genetic diversity.
CO 3: to understand that ecosystems structure and functions.
CO 4: protect and restore biological system.
CO 5: support local and regional projects aimed at tackling biodiversity loss.

M.Sc. ENVIRONMENTAL BIOLOGY
SEMESTER- II

PAPER- II (Core Course)
ECOLOGICAL STATISTICS

Preamble: Environmental studies require statistical approach for data analysis. This paper introduces the students about various statistical methods used in the collection of ecological data and analysis for environmental studies.

1. Collection and Representation of Data: Collection of Data; Classification of Data; Tabulation of Data; Graphical Representation of Data Histogram, Frequency polygon, Frequency curve, Relative frequency map, cumulative frequency curve and dot (Scatter) diagram. Diagrammatic Representation of Data-Line diagram, Bar diagrams and Pie diagrams.

2. Measuring of Central Tendency: Mean, Median, Mode.

3. Measuring dispersion: Range, Standard Deviation, Mean deviation, Coefficient of variation, Normal Distribution; Measuring Standard deviation for grouped Data.

4. Standard Error, Standard Deviation, confidence limits, Correlation, Coefficient of Correlation.

5. Null hypothesis, Gaia Hypothesis, Test of Significance: Student's' t ' test, Chi-square test and F-test, Analysis of variance.

COURSE OUTCOME:

By the end of the paper, a student should be able to:

CO-1 : need for studying environmental statistics.
CO-2 : to introduce basic concepts useful for environmental data analysis.
CO-3: become aware of a wide range of application of statistics in environment and decision making.
CO-4: to develop technical skills to use statistical tools and software in environmental data analysis.
CO-5 : students will be able to know about the graphical representation of data and histogram.

PAPER- III (Core Course)
ENVIRONMENTAL POLLUTION

Preamble: The course deals with air, water, and soil pollution, solid wastes disposal techniques, pesticide pollution, and their impacts on environment, ecosystems and human health and other living organisms.

1. Environmental pollution and pollutants: Concept, definition and characteristics.

2 Air pollution : Natural and anthropogenic sources and types of air pollutants, photochemical reactions, acid rains, PAN, concept of Fog and Smog, effect of air pollution on human beings, plants and animals. Air quality standards, vehicular pollution.

3. Water pollution : Sources and types of water pollutants, Effect of water pollutants on living organisms, water pollution linked human diseases, ground water pollution, heavy metals and their effects on biota, thermal pollution, characteristics of industrial effluents.

4. Solid wastes: Source and generation of solid wastes; composition , classification and disposal techniques of solid wastes, municipal and industrial wastes, biomedical wastes, Electronic wastes, and their environmental effects.

5. Pesticides: Classification, properties, effects on living organisms.

COURSE OUTCOME:

By the end of the paper, a student should be able to:

CO-1 : it will enable students to understand environmental problems and impacts on human health.
CO-2: students will learn how to assess pollution sources and fate.
CO-3: assess environmental related risk.
CO-4: develop controls to reduce or eliminate risk.
CO-5: Plan measurement and monitoring of air pollutants.

PAPER- IV (Generic Elective Course)
GLOBAL ENVIRONMENTAL ISSUES

Preamble: This paper introduces various global as well as national environmental issues and problems, and their dimensions, causes and effects.

1. Current environmental issues in India: Air pollution in Indian cities, soil quality deterioration in Indian crop fields, pollution in major rivers of India, Namami Gange project, surface water crisis in India, forest fire, Threats to Indian forests by exotic plant species.

2. Global environmental problems: Ozone depletion, Deforestation, Green house gases and their increasing trends. Global warming, Global warming and climate change, recent records of climate change, Extreme weather events, Impact of climate change on ecological systems, Measures to cope with climate change.

3. Environmental Hazards: Geological hazards - volcanoes, Earthquakes, Tsunami, Hydrological hazards -Floods, Droughts, Hurricanes, Cyclones.

4. Disaster and Hazard management : Human and ecological impacts, risk assessment and vulnerability, analysis, National preparedness and adaptation strategies, Hazards policies and agencies, Role of GIS and remote sensing in surveillance, monitoring, risk assessment.

5. Recent international conventions on environmental problems.

COURSE OUTCOME:

By the end of the paper, a student should be able to:

CO-1 : to understand the various environmental issues and policies.
CO-2: detailed study on international conventions on environmental problems.
CO-3: to understand the concept of disaster management and its risk reduction measures.
CO-4: to identify and assess potential interventions to address environmental problems.
CO-5: to get comprehensive knowledge about causes and impacts of GHGs.

M. Sc. Environmental Biology (Choice Based Credit System)

Schemes of Examination (Session- 2020-21)

Semester-III

S.No	Course Name & Code	Course Type	Theory	Internal Assessment	Total Marks	Credit
1.	Environmental Microbiology	Core	80	20	100	4
2.	Conservative & Management of Natural Resources	Core	80	20	100	4
3.	**(A). Pollution Control and Waste Management	Discipline Centric Elective	80	20	100	4
	**(B). Air Pollution Management	Discipline Centric Elective				
4.	*Environmental Law's and Policies	Generic Elective	80	20	100	4
5.	Practical	-	-	-	100	4
6.	Comprehensive Viva Voce	-	-	-	50	2
Semester Total					**550**	**22**

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PAPER- I (Core Course)
ENVIRONMENTAL MICROBIOLOGY

Preamble: The course is aimed at providing comprehensive information on microbial habitats and applicability of microbes in various fields of ecosystems and human well beings.

1. Introduction to Microbiology: Characterization and Classification of Micro-organisms, environmental factors affecting microbial growth and microbial adaptations to extreme environments (like arctic and hot springs).

2. Soil Microbiology: Microbes in soil, role of microbes in nitrogen fixation, Microbes of waste water treatment and solid waste management, microbial biogeochemical process of nutrient cycling and biodegradation.

3. Food microbiology: Microbial flora of foods, Microbial Spoilage and examination, preservation of foods, Fermented foods, Microorganisms as food (SCP), Micro-organism in milk and milk products, Pasteurization of Milk, examination of milk micro-organisms

4. Industrial Microbiology : Industrial use of Bacteria - Lactic Acid Production, Vinegar Production, Biogas Production, Industrial use of Molds - Penicillin Production, Industrial use of Yeast - Alcohol Production; Vaccine Production

5. Microbial habitats (air, freshwater, marine and deep sea), natural microbial communities with emphasis on biofilms, plants and animals as microbial habitats and human microbiohome.

COURSE OUTCOME:

By the end of the paper, a student should be able to:

CO-1 : students will understand the microbial classification and its growth parameters.
CO-2: students will be able to understand the food processing and product fermentation techniques.
CO-3: students will also be able to understand the marine ecological significance.
CO-4: students will also be able to understand the microbial habitat relationship.
CO -5: discuss the role microbes in waste water treatment.

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PAPER- II (Core Course)
CONSERVATION AND MANAGEMENT OF NATURAL RESOURCES

Preamble: This course deals with dimension and issues of natural resources and environment. It also aims to provide adequate insight on management and conservation of natural resources.

1. Resources: Renewable and non-renewable energy resources, major resources - Surface/subsurface water in India, forest, wildlife. Bio-energy (biomass, biogas), clean energy.

2. Identification and description of various threats to different ecosystems with particular reference to Fresh water, Forest, Grassland, Estuary, and Wetlands.

3. Principles of environmental conservation and management, ecological accounting. Sustainable development: environment and development, concept of sustainability, dimension of sustainable development, framework for achieving sustainability and assessment of sustainable development.

4. Conservation and management of natural resources - Wild life; In-situ (national parks, sanctuaries) and Ex-situ conservation, energy conservation, biodiversity conservation (Biospheres Reserves), biological control and integrated pest management, aquaculture, rainwater harvesting, wild life habitat conservation.

5. Environmental Administration: Role of government and non-government organizations, environmental education and awareness.

COURSE OUTCOME:

By the end of the paper, a student should be able to:

CO-1 : to emphasize the need to conserve natural resources.
CO-2: to learn how to maintain ecological diversity.
CO-3: to learn about how to improve quality of human life.
CO-4: students will be able to apply knowledge to solve problems related to crop production and plant growth.
CO-5: students will be able to know how to conserve non-renewable resources.

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PAPER- III (Discipline Centric Elective Course - A)
POLLUTION CONTROL AND WASTE MANAGEMENT

Preamble: This course aims to provide the students an orientation to technologies that are applied to monitor and mitigate environmental pollution and solid waste.

1. Air Pollution management and control technology: Air pollution sampling and measurement, air pollution control methods, control of particulates and gaseous air pollutants, disaster management.
2. Water pollution management and control technology: Waste water sampling and analysis, waste water treatment, primary, secondary and advanced waste water treatment.
3. Marine pollution management and control technology: Sampling and measurement of marine pollution control of marine pollution, technologies to minimize and combat climate change, carbon credits and carbon trading, carbon sequestration, conventions of climate change

.

4. Solid Waste management: Municipal waste management, Hazardous waste management, recycling, characterization of hospital wastes and their management, Methane production, landfill, microbes and soil waste management, concept of 5 'R'.
5. Concept and types of bioremediation, Bio-augmentation, bioremediation of sludge, biodegradation of toxic substances by microbes, Phytoremediation of air and water pollution, Phytoextraction and Biofilteration techniques for- waste management.

COURSE OUTCOME:

By the end of the paper, a student should be able to:

CO-1 : students will be able know how to reduct the generation of waste.
CO-2: students can use GIS system for land fill site selection.
CO-3: the main outcome of this is to provide the opportunity to understand the pollution control and waste management in modern society.
CO-4: student will be known which type of remedial actions should be taken for e-waste management.
CO-5: Quantative and qualitative characterization of MSW can be done.

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PAPER- III (Discipline Centric Elective - B)
AIR POLLUTION MANAGEMENT

Preamble: This course aims to introduce the students about techniques of sampling and analysis of air pollutants, and management and control of air pollution.

1. Sources of air pollution, principles of air pollution management, effect of meteorological parameters on transport and diffusion of air pollutants, wind roses, and ambient concentrations of air pollutants.

2. Strategies of sampling and analysis of air pollutants; sampling of particulate matters (TSPM, PM10, and PM2.5) and gaseous pollutants, ambient air quality monitoring, stack monitoring, bio-monitoring, indices in air quality monitoring.

3. Measurement of air pollutants; dust fall measurement, measurement of particulate matters, SO_2, NOx, oxidants, ozone, carbon monoxide, hydrocarbons and smoke density.

4. Air pollution control; control at source, control of particulate matters (Settling chambers, Cyclones, Settling towers, Scrubbers, Electrostatic precipitator), control of gaseous air pollutants (Absorption, Adsorption, Combustion, Collection and Recovery system), control of vehicular emission (catalytic recovery devices).

5. Air quality management; identification of specific problems, source-emission inventory, air quality criteria, air quality standards, legislation in India, environmental criteria for sitting industries and green belts.

COURSE OUTCOME:

By the end of the paper, a student should be able to:

CO-1: Students will be able to list common atmospheric air pollutants and their sources.

CO-2: students will gain knowledge about sampling and monitoring of air pollutants

CO-3: students can select best sampling methods according to properties and location of air pollutants.

CO-4: gain knowledge about heat balance of the earth.

CO-5: students will know about emission inventory.

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PAPER- IV (Generic Elective Course)
ENVIRONMENTAL LAWS AND POLICIES

Preamble: The aim of this course is to introduce the students about various laws to protect the environment from damage and also to explain the legal consequences of such damages.

1. Environmental protection issues and problems. international and national efforts of environmental protection, environment and constitution.
2. Environmental policy resolutions and legislation, The water (Prevention and Control of Pollution) Act 1974 as amended up to 1988 and Rules 1975, The Air (Prevention and Control of Pollution) Act 1981 as amended by 1987 and rules 1982, Motor Vehicle Act 1988.
3. The Environmental Protection Act 1986 and Rules 1986, Hazardous waste management and handling rules 1989 amendments thereof 2000, Disaster management Act 2005.
4. Hospital waste management and Handling rules 1998, Solid Waste management Rules 1999, Public Liability Insurance Act 1991 and Rules 1991, Electronic Waste management Rules 2016.
5. Wildlife Protection Act 1972, Amended 1991, Forest Conservation Act 1980, Indian forest Act (revised) 1982, Biodiversity Rules 2004.

COURSE OUTCOME:

By the end of the paper, a student should be able to:

CO-1: to understand juridical response to environmental issues in India.
CO-2: to save guard the better environment and environmental conditions.
CO-3: to ensure that GOs, NGOs and corporate do not cause harm to environment or its ecosystem.
CO-4: students will be know the Law's related to air,water and Wild Life Protection Act.
CO-5: knowing about importance of public participation through Right To Information Act

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M. Sc. Environmental Biology (Choice Based Credit System)

Schemes of Examination (Session- 2020-21)

Semester-IV

S.No	Course Name & Code	Course Type	Theory	Internal Assessment	Total Marks	Credit
1.	Ecotoxicology	Core	80	20	100	4
2.	Environmental Biotechnology	Core	80	20	100	4
3.	**(A). Forest Ecology	Discipline Centric Elective	80	20	100	4
	**(B). Water Pollution Management	Discipline Centric Elective				
4.	Environmental Impact Assessment	Generic Elective	80	20	100	4
5.	Practical	-	-	-	100	4
6.	Comprehensive Viva Voce	-	-	-	50	2
Semester Total					**550**	**22**
Grand Total					**2200**	**88**

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M.Sc. ENVIRONMENTAL BIOLOGY
SEMESTER- IV

PAPER- I (Core Course)
ECOTOXICOLOGY

Preamble: The course introduces the students on natural and anthropogenic toxic chemicals, their transport and toxicity to the constituents of ecosystems, and their fate in ecosystems.

1. Principles and mechanisms of toxicity, Basic problems of toxicology, factors affecting concentration of Toxicants in environment, Toxicity test, Dose-effect and dose response.
2. General aspects of fate and effects: Media and compartments, entry pathways, environmental fate, sinks, surface water compartment, soil compartment, bioavailability, effects, uptake, types of effects; Acute and chronic.
3. Cellular response profile to chemical stress: Interaction with membrane process, Intracellular fate of chemicals, Intracellular receptors, reaction with nuclear structures and functions, protective molecules and processes, Cell injury and death.
4. Fate of pollutants in Ecosystems : Biotransformation, bioaccumulation, biomagnifications, ecotoxicology of pesticides and herbicides, toxicity of hydrocarbons, target and non-target organ toxicity, hepatotoxicity, neptrotoxicity, neurotoxicity, respirotoxicity.
5. Toxicity of heavy metals : Pb, Hg, Cd, AS, CO and Ni, carcinogens and carcinogenesis and mutagens, Immunotoxic agents.

COURSE OUTCOME:

By the end of the paper, a student should be able to:

CO-1: Ecotoxicologist help to protect the environment and existing ecosystems for future generation.
CO-2: Ecotoxicologist contribute to protect food resources in agriculture, aquaculture around the world.
CO-3: forensic toxicologist are important to regulatory agencies.
CO-4: students can give data for toxin and poisons that may harm humans directly.
CO-5: students can gain knowledge about pesticides on natural communities and ecosystems.

M.Sc. ENVIRONMENTAL BIOLOGY
SEMESTER- IV

PAPER- II (Core Course)
ENVIRONMENTAL BIOTECHNOLOGY

Preamble: This course is aimed at providing comprehensive knowledge to develop potential solution for remedy of environment using microbes and molecular technologies.

1. Gene morphology and structure, concept of genetic engineering, DNA technology, application of biotechnology in environmental management.
2. Pollution control using engineered microorganisms, Role of microbes in control of air pollutants, Biomass and Biofual, biofilters for air pollution control, Biosensors.
3. Waste water Treatment : Anaerobic and aerobic process, Methanogenesis, bioreactors, cell and protein immobilization techniques, treatement scheme for waste water, dairy, distillary, tannery, sugar and antibiotic industries.
4. Biodegradation of xenobiotics, hydrocarbons, Oil spills, pesticies, varmicullare and vermi-composting, biopesticides, biofertilizers.
5. Plant and animal tissue culture, organ culture, applications of tissue culture, in vitro conservation of germplasm, gene bank, clean gene technology.

COURSE OUTCOME:

By the end of the paper, a student should be able to:

CO-1: students will able to learn about the application of biotechnology in environmental management.
CO-2: students will know about the role of microbes in different types pollution.
CO-3: students will able to learn about different treatment methods for waste management's.
CO-4: students will be able to know the consequences of non degradable substances and also to treatment strategies.
CO-5: it will help the students to understand about the conservation of gene and organ samples for future.

M.Sc. ENVIRONMENTAL BIOLOGY
SEMESTER- IV

PAPER- III (Discipline Centric Elective Course - A)
FOREST ECOLOGY

Preamble: This paper introduces the students about different forest types, their distribution, structure, functions and ecological characters.

1. Forest types of India, distribution of Indians forests, factor governing distribution of Indian forests.
2. Forest as an ecosystem: Structural attributes: Dominant plant species of different forests, phytosociological attributes; density and dominance relations of different forest communities, forest stratification and canopy structure, microclimate.
3. Functional Attributes:
   (a) Energy flow: process, importance of food chains, , productivity of different forests.
   (b) Material cycling: Process of nutrient cycling in forests, nutrient cycling in temperate and tropical forests, litter production and decomposition.
4. Forest Ground floor ecology: Ecology of seed placement and germination in forests, seedlings growth, seedling establishment strategies, characteristics of soils of different forests.
5. Ecological characteristics of tropical and temperate forests of India, important wild life of India, man-forest interactions.

COURSE OUTCOME:

By the end of the paper, a student should be able to:

CO-1: students will demonstrate the complex interaction of humans and forest ecosystem.
CO-2: students will be able to interpretate forest conservation, forest ecology and resource management .
CO-3: students will be able to exhibits forest menstruation skills , techniques for ecological measurements.
CO-4: students will be capable for data collection, analysis and interpretation of forest ecology.
CO-5: students will be able to prepare written and verbal technical reports of forest conservation.

M.Sc. ENVIRONMENTAL BIOLOGY
SEMESTER- IV

PAPER- III (Discipline Centric Elective -B)
WATER POLLUTION MANAGEMENT

Preamble: This course introduces the aspects of water pollution of aquatic ecosystems, characteristics of sewage and industrial effluents, various techniques applied for treatment of sewage and effluents, and water management strategies.

1. Classification of water bodies, physico-chemical and biological properties of fresh water, water quality standards, major sources of water pollution, physico-chemical and biological properties of sewage.
2. Quality of industrial effluent produced from textile, leather, dairy, thermal power and chemical industries, changes in water quality due to discharge of city sewage, industrial effluent from textile, leather, dairy, thermal power and chemical industries.
3. Effects of water pollutants on phytoplankton's productivity and other organisms of food chains, bio-indicators of water pollution.
4. Stages of treatment of sewage - primary treatment and secondary treatment (activated sludge, oxidation ponds, and trickling filters), advanced waste water treatment, biological treatment of waste water, treatment of industrial effluent released from textile, dairy, leather, thermal power and chemical industries.
5. Water management strategies, rain water harvesting, recharging of ground water, use of domestic waste water, recycling of ground water, recycling of effluent after treatment.

COURSE OUTCOME:

By the end of the paper, a student should be able to:

CO-1: students will be able to know the main sources of water pollution.
CO-2: students can identify the criteria for drinking water acceptability.
CO-3: students will be able to know how sewage may be treated before discharge to the environment.
CO-4: students can describe the chemical composition of natural waters ,and explain how and why these composition
CO-5: students will be capable to know the main types of pollutant and how each type may be controlled.

PAPER- IV (Generic Elective Course)
ENVIRONMENTAL IMPACT ASSESSMENT

Preamble: This course aims to give insight on systematic process that examines the environmental consequences of development actions, in advance. This process is firmly on the agenda of all environmental agencies as a result of introduction of legislations in various countries.

1. Nature and purpose of Environmental Impact Assessment, Origin and Development, EIA Development in India, Frame work of EIA, EIA guidelines 1994 and 2006
2. Requirement for Impact Assessment, main steps of Impact Assessment, the pre study, the study period and the post study period activities.
3. Methods of Environmental Impact Assessment (I) Adhoc method, Check lists, Matrix methods, Networks , (II) Evaluation systems, modelling and computer aided assessment
4. Prediction and Assessment of Impacts on air and water environment, energy, noise, socioeconomic and biological components
5. Concept of Environmental Auditing (EA), Environmental Impact Statement (AIS) and Environmental management plan (EMO), Cost - Benefit analysis, case studies with particular reference to mining project, cement industry, and thermal power plant.

COURSE OUTCOME:

By the end of the paper, a student should be able to:

CO-1: to understand and overview of the concepts, methods, issues and stages of EIA.
CO-2: students will be able to know the methodologies adopted for conducting EIA studies.
CO-3: students can describe the EIA notification 2006 and its requirements.
CO-4: students can develop their own perspectives on impact assessment.
CO-5: students can explain EIA as a decision making tool in project planning and management.
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Awadhesh Pratap Singh University
Rewa (M.P.)

Ph.D. Course Work Structure

BIOTECHNOLOGY

2019-2020

Ph.D. 101	Research Methodology	4	100 (80+20)	55
Ph.D. 102	Review of published research in the Relevant field	3	100	55
Ph.D. 103	Computer applications	3	100 (80+20)	55
Ph.D. 104	Animal and Plant Biotechnology	3	100 (80+20)	55
Ph.D. 105	Comprehensive Viva-Voce	3	100	55
	Total		16 Credits	

A.P.S. University, Rewa
Syllabus for Ph.D. Course work 2019-20
Subject: Biotechnology
Paper 1 Research Methodology

Unit-1

- Meaning, objectives and types of research. Scope and significance of Research, historical review, search and research problem, reference and literature search, records and presentation of data, scientific research papers writing, abstracts and other literature, rules for maintaining biosafety in the laboratory, research journal, impact factor and paper citation index. Experimental design. Interpretation and Report Writing.
- Science of sampling, need of sampling, sample size and its determination. Random and non-random sampling.
- Population genetics, hardy-Weinberg law, genotype and allele frequency distribution, genetic drift.

Unit-2

- Analytical & chromatographic methods: Micrometry, gravimetry, chromatography, affinity chromatography, paper and thin layer Chromatography, size exclusion chromatography, HPLC, GLC. Gas chromatography.
- Spectroscopic technique of Analysis, Spectrophotometer- single and double beam. UV Visible spectrophotometry, IR-Spectroscopy, NMR, Mass spectroscopy, Raman spectrophotometer, Atomic Absorption Spectrophotometer, Flame photometer.
- Centrifugation technique, Immunological technique, hniqElectrophoretic technique electrophoresis Sequencing of DNA and Protein, Blotting tecues, pH meter.

Unit-3

- Microbial culture sterilization techniques, Culture media- types and preparation, colony counting techniques.
- Identification and enumeration of microorganisms, Preservation and storage and maintenance of microorganisms.
- DNA Damage analysis, Comet assay, cloning and transformation techniques
- Microscopic study of blood cells, cell organelles, spores etc.
- Animal cell culture technique and ethical issues. Bio safety level.
- Microscopic Technique: Light microscope, compound microscope, Phase-contrast microscope, Electron Microscope: TEM and SEM

Unit-4

- Basic elements and tools of statistical analysis, Measures of central tendencies- mean, mode, median, standard deviation, Planning and execution of survey, Test of significance, students't'-test, chi-square test, correlation and regression analysis. Probability distribution, Analysis of variance- one and two way classification.
- Bioinformatics; Genomics, proteomics, NCBI, Pubmed, BLAST, FASTA.

A.P.S. University, Rewa
Syllabus for Ph.D. Course work 2019-20
Subject: Biotechnology
Paper II (Ph.D. 102)
Review of published research in the relevant field

Objective: To learn the preparation of research proposal through review of literature in choosen field of research, will be under-taken under the supervisor or the regular teacher of the centre of course work. at the end of course work the candidate has to submit a **brief report** on the literature review for evaluation, which will be done by two examiners.

A.P.S. University, Rewa
Syllabus for Ph.D. Course work 2019-20
Subject: Biotechnology
Paper IV Animal and Plant Biotechnology

Unit I:

Mendelian genetics-principles, Human genetics (pedigree analysis, karyotypes and genetic disorder). Nature of Gene Concept, Chemical Nature of Gene, Nucleotide, Genome, Prokaryotes and Eukaryotes Genome. DNA Replication: General features of Chromosomal Replication: and its Enzymology. Transcription in prokaryotes and Eukaryotes: Initiation, elongation and termination. Regulation of gene expression in prokaryotes: Operon concept, induction and Repression, Structure and regulation of lactose, tryptophan operons. Genetic Code: Evidence and properties; Wobble hypothesis; Transcriptional adaptors and amino acyl tRNA synthases. Translation: Successive stages of protein synthesis in prokaryotes and its comparison with eukaryotes. chromosomal aberration. Molecular technique: Electrophoresis of DNA, SDS-PAGE, Blotting, DNA Fingerprinting, Foot-printing, DNA sequencing, Gene mapping, PCR, Sequencing, Genome Mapping .

Unit II:

The recombinant DNA Technology: General concept and principle of cloning Enzymes: Nucleases and restriction endonucleases- properties and types; phosphomonoesterases; polymerase; terminal deoxynucleotidyl transferase; poly A polymerase, Linkers, adaptors and homopolymer tailing. prokaryotic host- vector system: Characteristics of E.coli as host; vectors for cloning in E.coli (plasmid, bacteriophage- EMBL, DASH, gt10/11, ZAP etc and plasmid-phage) Other Prokaryotic host vector systems: BAC, Introduction and organization of animal cell and tissue culture laboratory, Primary and established cell line cultures, Serum and protein free defined media and their applications, role of CO2 and supplements, Stem cell basics , culture and their application. Embryo transfer technology, principles and application

Unit III:

Plant Tissue Culture: Basic aspects of plant biotechnology (History, application, scope and importance), laboratory and culture media for plant tissue culture, cell Culture and its applications. Clonal Propagation and Protoplast Culture: Micro propagation, uses of Haploids, Protoplast isolation, Regeneration of plant, Somatic Hybridization. Gene delivery method in intact and cultured tissues and cells, Agrobacterium, Ti-Plasmid, cointegration and binary vectors, viral vectors, direct DNA uptake, microinjection delivery. Techniques for production of transgenic plants resistant/ tolerant to herbicides; pathogens, pests and abiotic stresses (drought, salt, frost), transgenic plants for production of molecules of commercial importance. Antisense RNA and ribosome technology

Unit IV:

Objectives, roles and landmarks in plant breeding, Plant breeding techniques: Mutational breeding and distant hybridization, Introduction to plant tissue culture: Tissue Culture Media preparation. Initiation of callus culture and its maintenance Generation of genetically modified crops for resistance against biotic and abiotic stresses and nutritional quality, Seed production techniques: release of new varieties, Somaclonal variation and its application for plant improvement Anther culture: haploid and Diploid plant cell production and their applications. Protoplast isolation and fusion, selection of hybrid cell and cybrids.

A.P.S. University, Rewa
Syllabus for Ph.D. Course work 2019-20
Subject: Biotechnology
Paper 3 Computer Application

Unit I

Introduction to computer: History and Generation of computer, Characteristic to computer, Classification: digital, analogue, hybrid, Micro, mini and Super, Components of computer System.

Unit II

Introduction to Operating system: Need, functions, control programs, OS supervisor, Job control programs concurrent, C. S., popular OS for PC's. Introductions to DOS, Internal commands, External commands, (TREE, UNDELTE, CHKDSK, FDISK, FC, BACKUP, RESORE, FORMAT, UNFORMAT, JOIN, XCOPY)

Unit III

Introduction to windows: Program manager, file manager, customizing windows with control panel, print manager. File shearing. Computer languages and machine language Programming in C/C++

Unit IV

Introduction to MS office: The office manager, Starting information with MS office, The clipboard, Word, Excel, Power point. Word processing with word; word basis, Undo, redo, repeat, Insert, text, replace Text, copying form one word document to other. Printing, auto formation, autocorrect. Internet- introduction and application: LAN, WAN, MAN, WWW, Search engines, WiFi, LiFi.

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Awadhesh Pratap Singh University
Rewa (M.P.)

Ph.D. Course Work Structure

ENVIRONMENTAL BIOLOGY

2019-2020

Ph.D. 101	Research Methodology	4	100 (80+20)	55
Ph.D. 102	Review of published research in the Relevant field	3	100	55
Ph.D. 103	Computer applications	3	100 (80+20)	55
Ph.D. 104	Problems and Issues of Environment	3	100 (80+20)	55
Ph.D. 105	Comprehensive Viva-Voce	3	100	55
	Total		16 VCredits	

A.P.S. University, Rewa
Syllabus for Ph.D. Course work 2019-20
Subject: Environmental Biology
Paper 1 Research Methodology

Unit-1

objectives and types of research. Scope and significance of Research, historical review, search and research problem, reference and literature search, records and presentation of data, scientific research papers writing, abstracts and other literature, rules for maintaining biosafety in the laboratory, research journal, impact factor and paper citation index. Experimental design. Interpretation and Report Writing.

- Science of sampling, need of sampling, sample size and its determination. Random and non-random sampling.
- Plant and animal sampling, community analysis, IVI, Indices of species diversity, Richness and Similarity index.

Unit-2

- Analytical & chromatographic methods: Micrometry, gravimetry, chromatography, electrophoresis, HPLC, GLC. Gas chromatography, Mass spectroscopy
- Spectroscopic technique of Analysis, Spectrophotometer- single and double beam. UV Visible spectrophotometry, NMR, Raman spectrophotometer, Atomic Absorption Spectrophotometer, Flame photometer.
- Air Pollution monitoring technique, Gaseous and particulate sampling. High Volume air sampler. Respirable dust sampler. Water sampling technique, water quality analysis; estimation of DO, BOD, COD, Hardness, Alkalinity, Acidity etc.
- productivity: primary and secondary

Unit-3

- Microbial culture sterilization techniques, Culture media- types and preparation, colony counting techniques.
- Identification and enumeration of microorganisms, Preservation and storage and maintenance of microorganisms.
- Determination of MPN, confirmatory tests.
- Microscopic study of blood cells, cell organelles, spores etc.

Unit-4

- Basic elements and tools of statistical analysis, Measures of central tendencies- mean, mode, median, standard deviation, Planning and execution of survey, Test of significance, students't'-test, chi-square test, correlation and regression analysis. Probability distribution, Analysis of variance- one and two way classification.

A.P.S. University, Rewa
Syllabus for Ph.D. Course work 2019-20
Subject: Environmental Biology
Paper II (Ph.D. 102)
Review of published research in the relevant field

Objective: To learn the preparation of research proposal through review of literature in choosen field of research, will be under-taken under the supervisor or the regular teacher of the centre of course work. at the end of course work the candidate has to submit a **brief report** on the literature review for evaluation, which will be done by two examiners.

A.P.S. University, Rewa
Syllabus for Ph.D. Course work 2019-20
Subject: Environmental Biology

Paper III Computer Application

Unit I

Introduction to computer: History and Generation of computer, Characteristic to computer, Classification: digital, analogue, hybrid, Micro, mini and Super, Components of computer System.

Unit II

Introduction to Operating system: Need, functions, control programs, OS supervisor, Job control programs concurrent, C. S., popular OS for PC's. Introductions to DOS, Internal commands, External commands, (TREE, UNDELTE, CHKDSK, FDISK, FC, BACKUP, RESORE, FORMAT, UNFORMAT, JOIN, XCOPY)

Unit III

Introduction to windows: Program manager, file manager, customizing windows with control panel, print manager. File shearing. Computer languages and machine language Programming in C/C++

Unit IV

Introduction to MS office: The office manager, Starting information with MS office, The clipboard, Word, Excel, Power point. Word processing with word; word basis, Undo, redo, repeat, Insert, text, replace Text, copying form one word document to other. Printing, auto formation, autocorrect. Internet- introduction and application: LAN, WAN, MAN, WWW, Search engines, WiFi, LiFi.

A.P.S. University, Rewa
Syllabus for Ph.D. Course work 2019-20
Subject: Environmental Biology

Paper IV Problems and Issues of Environment

1. Greenhouse effect, Green house gases and their sources, Global warming and climate disaster, Environmental problems due to climate change, melting of ice caps and rising sea level.

2. Air pollution; sources and types of air pollutants, Ozone layer depletion, Acid rain, PAN, Urban air quality and human diseases, Effect of air pollution on living organisms, Urban sprawl, Air pollution management, control of Air pollution, Air quality criteria and Standards.

3. Water pollution; sources and types of water pollutants, Drinking water pollution and human diseases, Toxicity of Heavy metals and their effects on biota, Eutrophication, drinking water crisis. water quality standards, treatment of sewage and industrial effluents

4. Environmental degradation; Fossil fuels utilization and Environmental issues, Soil degradation, Deforestation, natural habitat degradation, Pesticides and environmental problems, Ecosystem degradation, Environmental disasters; Landslides, Flood, Cyclones, Forest fire, Drought, Avalanche. First Earth summit, second earth summit, Kyoto protocol, carbon trading, International conventions on biodiversity.

5. Solid wastes; sources, generation and composition of municipal solid wastes, Industrial wastes, Biomedical wastes, Disposal techniques of solid wastes, Electronic waste (e-waste); sources, types, recycling and environmental impacts of e-wastes. municipal solid waste management techniques, concept of 5R.

हिन्दी विभाग

अवधेश प्रताप सिंह विश्वविद्यालय, रीवा (म.प्र.)

पाठ्यक्रम संरचना

एम.ए. हिन्दी समसत्र पद्धति

(C.B.C.S.)

अध्यादेश 14 के अनुसार

प्रथम एवं द्वितीय समसत्र 2020–21

तृतीय एवं चतुर्थ समसत्र 2021–22

अवधेश प्रताप सिंह विश्वविद्यालय, रीवा (म.प्र.)

हिन्दी विभाग

अवधेश प्रताप सिंह विश्वविद्यालय, रीवा (म.प्र.)

सी.बी.सी.एस. पर आधारित सेमेस्टर पाठ्यक्रम (एम.ए. हिन्दी)

विश्वविद्यालय का दृष्टिकोण :-

विश्वविद्यालय का दृष्टिकोण एक प्रमुख संस्थान के रूप में सर्वोत्तम गुणवत्ता के शिक्षण और सीखने के कार्यक्रमों की पेशकश करना है और ऐसे स्नातक/स्नातकोत्तर छात्रों को तैयार करना है; जो चुने हुए पेशे में उत्कृष्टता प्राप्त करते हैं और अग्रणी बनकर समुदाय, राष्ट्र और दुनिया को बेहतर बनाने में अपना योगदान देते हैं।

विश्वविद्यालय का दृष्टिकोण एक ऐसे आदर्श समाज और बौद्धिक वातावरण की स्थापना करना है जो सह–अस्तित्व के मूल्यों का आरम्भ करता है, पोषण करता है और इसे स्थाई बनाता है तथा उत्कृष्टता को प्राप्त करता है।

हमारे माननीय कुलपति के गतिशील नेतृत्व में विश्वविद्यालय कुछ महत्वाकांक्षी योजनाओं पर काम कर रहा है। विश्वविद्यालय को 'नॉलेज सिटी' के रूप में विकसित करने का विचार है।

विभाग के बारे में :-

विभाग 1983 में अपने प्रारम्भिक नाम ''महाकवि केशव अध्यापन एवं अनुसंधान केन्द्र'' के साथ अस्तित्व में आया। विभाग अस्तित्व में आया मध्यप्रदेश के तत्कालीन मुख्यमंत्री माननीय कुंवर अर्जुन सिंह की ओरछा में केशव जयन्ती पर की गई उद्घोषणा से। प्रारम्भ में डॉ. नागेन्द्र सिंह, डॉ. भगवती प्रसाद शुक्ल तथा डॉ. बृजेश द्विवेदी, श्री उमेश श्रीवास्तव वर्ष 1986 में अनुसंधान केन्द्र के सदस्य के रूप में शामिल हुए। 1989 में प्रो. कमला प्रसाद पाण्डेय निर्देशक के रूप में नियुक्त हुए। 1990 से एम.फिल. हिन्दी की कक्षायें संचालित की जाने लगी। 1993 में विश्वविद्यालय अनुदान आयोग की उच्च स्तरीय समिति की सिफारिश तथा राज्य शासन के अनुमोदन के पश्चात् प्रो. कमला प्रसाद पाण्डेय के नेतृत्व में हिन्दी

विभाग की स्थापना हुई। तब से आज तक विभाग में एम.ए., एम.फिल. कक्षायें सफलतापूर्वक संचालित हैं तथा बड़ी संख्या में छात्र शोध कार्य कर रहे हैं। जून 1994 में सहायक आचार्य के रूप में डॉ. दिनेश कुशवाह की नियुक्त हुई। 1996 में प्रो. रमाकान्त श्रीवास्तव रीडर के रूप में इंदिरा कला संगीत विश्वविद्यालय, खैरागढ़ से आये तथा 1998 में प्रो. कमला प्रसाद पाण्डेय की सेवानिवृत्ति के बाद विभागाध्यक्ष बनाये गये। प्रो. रमाकान्त श्रीवास्तव के बाद प्रो. कौशल प्रसाद मिश्र और प्रो. आर्या प्रसाद मिश्र क्रमशः हिन्दी विभाग के अध्यक्ष पद पर आसीन हुए। 06 नवम्बर 2003 से प्रो. दिनेश कुशवाह हिन्दी विभाग के अध्यक्ष नियुक्त किये गये। विभाग से पढ़े अनेक मेघावी विद्यार्थी आज कई महत्वपूर्ण पदों पर हैं। विभाग के एम. ए., पी–एच.डी. छात्र विश्वविद्यालयों से लेकर देश के विभिन्न महाविद्यालयों, केन्द्रीय विद्यालयों, नवोदय विद्यालयों में अध्यापक, संस्थानों में हिन्दी अधिकारी आदि हैं। विभाग के एक शोधार्थी का I.P.S. में चयन हुआ है। प्रत्येक वर्ष विभाग के विद्यार्थी नेट, जे.आर.एफ., स्लेट तथा राजीव गांधी फेलोशिप में चयनित होते रहे हैं। अवधेश प्रताप सिंह विश्वविद्यालय, रीवा का यह सौभाग्य रहा है कि इसके संस्थापक, अध्यक्ष प्रो. कमला प्रसाद पाण्डेय, हिन्दी जगत के एक अन्तर्राष्ट्रीय ख्याति के व्यक्ति थे। उनके साथ कार्यरत उपाचार्य डॉ. रमाकान्त श्रीवास्तव तथा प्राध्यापक डॉ. दिनेश कुशवाह, राष्ट्रीय स्तर के कवि, कथाकार तथा समालोचक थे, उस समय देश के सभी विश्वविद्यालयों के हिन्दी विभागों में यह संयोग सराहा जाता था। हिन्दी विभाग की स्थापना के साथ ही एक ऐसा प्रभाव दिग–दिगन्त में व्याप्त हुआ कि यहाँ से पढ़े हुए छात्र पूरे देश में अपनी विद्वत्ता और प्रतिभा लेकर छा गये।

हिन्दी विभाग को विश्वविद्यालय अनुदान आयोग ने पहली बार जो दस लाख रूपये का विशेष अनुदान दिया उसमें से 5 लाख रूपये पुस्ताकलय के लिये थे। जिनमें से पुस्तक मेलों तथा देश के विभिन्न राज्य की हिन्दी ग्रंथ अकादमियों/संस्थानों/प्रकाशनों आदि के सूची पत्रों से श्रेष्ठ पुस्तकों का चयन कर उनका क्रय किया गया। तब से निरन्तर प्रकाशित होने वाली सारी महत्वपूर्ण पुस्तकें विभागीय पुस्तकालय में मंगायी जाती रही है। इस समय विभाग के पुस्तकालय में लगभग 10000 पुस्तकें हैं। हिन्दी की महत्वपूर्ण पत्रिकाओं के उपलब्ध अंकों को विभाग

में मंगाया जाता है। इस तरह छात्रों और शोधकर्ताओं को विभाग में पुस्तकालय से नवीनतम और अद्यतन जानकारी मिलती है। कुछ महत्वपूर्ण अप्रकाशित शोध प्रबंध दान के रूप में प्राप्त हुए हैं। हिन्दी विभाग का पुस्तकालय आज की तारीख में एक समृद्ध और आधुनिक पुस्तकालय है।

हिन्दी विभाग की ओर से क्षेत्रीय कलाओं एवं महत्वपूर्ण कार्यक्रमों, राष्ट्रीय संगोष्ठियों, व्याख्यान मालाओं, विशेषज्ञों के साक्षात्कार तथा लोक नाट्य की वीडियो रिकार्डिंग के कैसेटों का संग्रह किया गया है। स्थानीय मंडिलियों की नौटंकी एवं लोक गायन का भी संग्रह हैं। बघेलखण्ड की लोक कला चयन शिविर लगभग 40 मण्डलियों के कार्यक्रमों की भी रिकार्डिंग की गई है। इसी प्रकार उपरोक्त आयोजनों तथा लेखकों, कलाकारों के छायाचित्रों का विपुल संग्रह है। विभाग में लगभग 50 प्रख्यात साहित्यकारों के छायाचित्र जो भारतेन्दु से लेकर आधुनिक काल के श्रीकान्त वर्मा तक फैले हुए हैं, लगे हुए हैं।

हिन्दी विभाग के लिए विश्वविद्यालय अनुदान आयोग ने सन् 1993 में ''मध्ययुगीन बुन्देली साहित्य और कलाओं में अन्तर्संबंधों का अन्वेषण'' शीर्षक से मेजर प्रोजेक्ट स्वीकृत किया था। जिसे निर्धारित समयावधि में पूरा कर लिया गया था।

हिन्दी विभाग के द्वारा राष्ट्रीय और प्रादेशिक विभिन्न संस्थाओं के सहयोग से अनेक राष्ट्रीय संगोष्ठियाँ आयोजित की गई है। जैसे महापंडित राहुल सांस्कृत्यायन जन्म शताब्दी समारोह, लोक साहित्य और संस्कृति, अमीर खुसरो स्मृति समारोह, ''रीतिकाल और केशव'' राष्ट्रीय संगोष्ठी। ये आयोजन मानव संसाधन विकास मंत्रालय संस्कृति विभाग एवं विश्वविद्यालय के सहयोग से सम्पन्न हुये हैं। पं. हरिराम व्यास स्मृति समारोह एवं महाकवि केशव जयंती समारोह राष्ट्रीय एवं प्रादेशिक स्तर पर ओरछा में प्रतिवर्ष आयोजित किया जाता है। जिसमें देश भर के प्रतिष्ठित विद्वानों को आमंत्रित कर अनेक विषयों पर व्याख्यान आयोजित किये जाते हैं।

समय–समय पर विभाग का दौरा करने वाले कुछ प्रमुख प्रख्यात विद्वानों, मनीषियों में डॉ. शिवमंगल सिंह सुमन (उज्जैन), डॉ. नामवर सिंह (नई दिल्ली), श्री राजेन्द्र यादव (नई दिल्ली), डॉ. बृजेन्द्र नारायण सिंह (हैदराबाद), आचार्य राममूर्ति त्रिपाठी (उज्जैन), पद्मश्री शरद जोशी (मुम्बई), पद्मश्री हबीब तनवीर (रायपुर), डॉ. विश्वनाथ त्रिपाठी (नई दिल्ली), प्रो. काशीनाथ सिंह (वाराणसी), प्रो. श्याम सुन्दर शुक्ल (वाराणसी), प्रो. कुमार पंकज, प्रो. अवधेश प्रसाद, प्रो. सदानंद शाही, प्रो. राजकुमार, प्रो. चन्द्रकला त्रिपाठी, प्रो. राजमणि शर्मा, डॉ. केदारनाथ सिंह (जे.एन.यू. नई दिल्ली), प्रो. कांतिकुमार जैन (सागर), डॉ. विजय बहादुर सिंह (भोपाल), प्रो. चौथीराम यादव (वाराणसी), श्री अरुण कमल (पटना), प्रो. पुरुषोत्तम अग्रवाल (पूर्व अध्यक्ष–संघ लोकसेवा आयोग, जे.एन.यू. नई दिल्ली), मैत्रेयी पुष्पा, अर्चना वर्मा, संजीव (पं. बंगाल), शिवमूर्ति (लखनऊ), महेश कटारे (ग्वालियर), प्रो. परमानंद श्रीवास्तव (गोरखपुर), प्रो. सत्यप्रकाश मिश्र (इलाहाबाद), श्री राजेश जोशी (भोपाल), प्रो. चित्तरंजन मिश्र (प्रति कुलपति, वि.वि. वर्धा), प्रो. रामकिशोर शर्मा (इलाहाबाद), प्रो. रेवती रमण (मुजफ्फरपुर), प्रो. सोमा बंदोपाध्याय (कोलकाता), प्रो. मुस्ताक अली (इलाहाबाद), प्रो. प्रहलाद अग्रवाल (सतना), प्रो. सत्येन्द्र शर्मा (सतना), प्रो. देवेन्द्र (लखनऊ), डॉ. कालीचरण स्नेही (लखनऊ), प्रो. त्रिभुवन नाथ शुक्ल (जबलपुर), प्रो. सुरेश आचार्य (सागर), प्रो. विनय दुबे (भोपाल), प्रो. वीरेन्द्र नारायण यादव (छपरा), प्रो. चंदा बेन (सागर), प्रो. सुरेन्द्र स्निग्ध (पटना), डॉ. मुक्ता (बनारस), डॉ. उर्मिला खरपुसे (छिंदवाड़ा) आदि।

विभाग ने हिन्दी के क्षेत्र में नवीनतम विकास के बारे में छात्रों के ज्ञान में सुधार के लिए आमंत्रित वार्ता, कार्यशालाओं और सेमिनारों का आयोजन किया है।

कार्यरत शिक्षक :-

1. प्रो. दिनेश कुशवाह	आचार्य एवं अध्यक्ष
2 डॉ. बारेलाल जैन	अतिथि विद्वान
3. डॉ. अनुराग मिश्र	अतिथि विद्वान
4. डॉ. निशा पटेल	अतिथि विद्वान

लक्ष्य :-

1. छात्रों के बीच साहित्यिक कौशल का विकास करना और उन्हें अनुसंधान के क्षेत्र में करियर बनाने के लिए तैयार करना।
2. विषय में अधिक रूचि पैदा करना और छात्रों को स्वयं सीखने के लिए प्रेरित करना।
3. तार्किक तर्क को मजबूत करना जो साहित्यिक अवधारणाओं को समझने का मुख्य घटक है।
4. प्राचीन भारतीय लोक संस्कृति से छात्रों को परिचित कराना।
5. विश्वविद्यालय में हिन्दी के ऐसे शोधार्थी और छात्र तैयार करना जो विश्व स्तर पर हिन्दी और हिन्दुस्तान को स्थापित कर सकें।

उद्देश्य :-

1. विभिन्न साहित्यिक अवधारणाओं की गहरी समझ विकसित करना और उन पर आधारित विचारों को विकसित करने की छमता को बढ़ाना।
2. छात्रों को हिन्दी साहित्य और संबंधित क्षेत्रों में शोध अध्ययन के लिए प्रोत्साहित करना।
3. विद्यार्थियों का आजीवन शिक्षार्थी बनने में सक्षम बनाना जो जरूरत पड़ने पर स्वतंत्र रूप से अपनी साहित्यिक विशेषज्ञता का विस्तार करने में सक्षम हो।
4. भारतीय संस्कृति के परिवर्द्धन, संपोषण एवं राष्ट्र निर्माण में युवाओं के मन में अपनी भाषा तथा देश के प्रति गौरव की भावना उत्पन्न करना।

प्रोग्राम : एम.ए. हिन्दी

प्रोग्राम कोड : 518

प्रोग्राम अवधि : 4 सेमेस्टर (2 वर्ष)

कुल सीट : 65

योग्यता : स्नातक

उम्र सीमा : निरंक

प्रवेश प्रक्रिया : प्रवेश योग्यता परीक्षाओं की योग्यता के अनुसार मेरिट के आधार पर किया जायेगा।

हिन्दी विभाग

अवधेश प्रताप सिंह विश्वविद्यालय, रीवा (म.प्र.)

Programme Outcome -

PO 1 : आलोचनात्मक सोच – कार्यों से संबंधित विभिन्न अवधारणाएँ बनाकर कार्यों के प्रगति का अवलोकन करना और यह देखना कि किस हद तक कार्य का क्रियान्वयन हो चुका है।

PO 2 : प्रभावी संचार – कम्प्यूटर का उपयोग करते हुए साहित्य को जानना, विषय से संबंधित विभिन्न टॉपिकों में विचार विमर्श के माध्यम से समस्याओं को हल करना।

PO 3 : सामाजिक अंतःक्रिया – टॉपिक से संबंधित दूसरों के विचारों को ग्रहण करना, सहमति और असहमति में मध्यस्थता करना और निष्कर्ष तक पहुँचना।

PO 4 : प्रभावी नागरिकता – सहानुभूतिपूर्ण सामाजिक सरोकार और समता केन्द्रित राष्ट्रीय विकास और मुद्दों के बारे में सूचित जागरूकता के साथ कार्य करने की क्षमता और नागरिकता जीवन में भाग लेने के माध्यम को विकसित करना।

PO 5 : नैतिकता – अपने सहित विभिन्न मूल्य प्रवृत्तियों को पहचानना, अपने निर्णयों के नैतिक आयामों को समझना और उसके लिए जिम्मेदारी को स्वीकार करना।

PO 6 : पर्यावरण और स्थिरता – पर्यावरणीय संदर्भों और सतत् विकास के मुद्दों को समझना।

PO 7 : स्व निर्देशित और जीवन भर सीखना – सामाजिक, तकनीकी परिवर्तनों के व्यापक संदर्भ में स्वनिर्देशित होना और जीवन भर सीखना।

Programme Specific Outcome -

PSO 1 : हिन्दी साहित्य से संबंधित विभिन्न विषयों का अध्ययन करके उसकी उपयोगिता को जानना।

PSO 2 : समकालीन साहित्य में होने वाले परिवर्तनों का अध्ययन करना।

PSO 3 : साहित्य से संबंधित गुणात्मक एवं मात्रात्मक ज्ञान प्राप्त करना। शोध के क्षेत्र में साहित्य के योगदान का अध्ययन करना।

PSO 4 : शिक्षा, ज्ञान या अनुसंधान में उत्कृष्टता प्राप्त करने के अवसर प्रदान करना।

एम.ए. हिन्दी के लिए पाठ्यक्रम संरचना

(CBCS)

सेमेस्टर–I :

क्र.	पाठ्यक्रम कोड	पाठ्यक्रम का शीर्षक	क्रेडिट	अधिकतम अंक		कुल	न्यूनतम अर्हता अंक	
				लिखित अंक	मौखिकी अंक		लिखित अंक	मौखिकी अंक
1.	**CC-101**	प्राचीन एवं मध्यकालीन काव्य तथा उसका इतिहास	04	60	40	100	21	14
2.	**CC-102**	आधुनिक हिन्दी गद्य और उसका इतिहास	04	60	40	100	21	14
3.	**CC-103**	भारतीय एवं पाश्चात्य काव्य शास्त्र	04	60	40	100	21	14
4.	**GE-104**	प्रयोजन मूलक हिन्दी	04	60	40	100	21	14
		कुल कोर्स क्रेडिट	16	240	160	400	—	—

सेमेस्टर–II :

क्र.	पाठ्यक्रम कोड	पाठ्यक्रम का शीर्षक	क्रेडिट	अधिकतम अंक		कुल	न्यूनतम अर्हता अंक	
				लिखित अंक	मौखिकी अंक		लिखित अंक	मौखिकी अंक
1.	**CC-201**	प्राचीन एवं मध्यकालीन काव्य तथा उसका इतिहास	04	60	40	100	21	14
2.	**CC-202**	आधुनिक हिन्दी गद्य और उसका इतिहास	04	60	40	100	21	14
3.	**CC-203**	भारतीय एवं पाश्चात्य काव्य शास्त्र	04	60	40	100	21	14
4.	**GE-204**	प्रयोजन मूलक हिन्दी	04	60	40	100	21	14
		कुल कोर्स क्रेडिट	16	240	160	400	—	—

सेमेस्टर–III :

क्र.	पाठ्यक्रम कोड	पाठ्यक्रम का शीर्षक	क्रेडिट	अधिकतम अंक		कुल	न्यूनतम अर्हता अंक	
				लिखित अंक	मौखिकी अंक		लिखित अंक	मौखिकी अंक
1.	**CC-301**	आधुनिक हिन्दी काव्य और उसका इतिहास	04	60	40	100	21	14
2.	**CC-302**	भाषा विज्ञान एवं हिन्दी भाषा	04	60	40	100	21	14
3.	**CC-303**	हिन्दी साहित्य का इतिहास	04	60	40	100	21	14
4.	**GE-304**	वैकल्पिक प्रश्न–पत्र (सूरदास, तुलसीदास, बघेली भाषा और उसका इतिहास)	04	60	40	100	21	14
		कुल कोर्स क्रेडिट	16	240	160	400	–	–

सेमेस्टर–IV :

क्र.	पाठ्यक्रम कोड	पाठ्यक्रम का शीर्षक	क्रेडिट	अधिकतम अंक		कुल	न्यूनतम अर्हता अंक	
				लिखित अंक	मौखिकी अंक		लिखित अंक	मौखिकी अंक
1.	**CC-401**	आधुनिक हिन्दी काव्य और उसका इतिहास	04	60	40	100	21	14
2.	**CC-402**	भाषा विज्ञान एवं हिन्दी भाषा	04	60	40	100	21	14
3.	**CC-403**	हिन्दी साहित्य का इतिहास	04	60	40	100	21	14
4.	**GE-404**	वैकल्पिक प्रश्न–पत्र (सूरदास, तुलसीदास, बघेली भाषा और उसका इतिहास)	04	60	40	100	21	14
		कुल कोर्स क्रेडिट	16	240	160	400	–	–

Programme Administration :

मूल्यांकन :–

1. प्रत्येक पाठ्यक्रम का मूल्यांकन 100 अंकों के लिए किया जायेगा जिसमें से 60 अंक लिखित परीक्षा के लिए होंगे और 40 अंक सतत् मूल्यांकन (मौखिकी) के लिए होंगे। प्रत्येक पाठ्यक्रम के लिए 3.00 घंटे की सेमेस्टर परीक्षा होगी।
2. प्रत्येक पाठ्यक्रम के सेमेस्टर परीक्षा के प्रश्न–पत्र के दो खण्ड 'अ' और 'ब' होंगे। खण्ड–अ में लघुउत्तरीय प्रश्न होंगे और खण्ड–ब में दीर्घ उत्तरीय प्रश्न होंगे। प्रत्येक खण्ड में पांच प्रश्न होंगे प्रत्येक इकाई से एक आंतरिक विकल्प के साथ। सभी प्रश्न अनिवार्य होंगे।
3. सेमेस्टर के दौरान पाठ्यक्रम को पढ़ाने वाला शिक्षक प्रत्येक 20 अंकों के तीन परीक्षण आयोजित करके तीन बिन्दुओं पर छात्र का निरंतर मूल्यांकन करेगा। इनमें से दो लिखित परीक्षा होनी चाहिए और तीसरी लिखित परीक्षा/प्रश्नोत्तरी/सेमिनार/ असाइनमेंट हो सकती है। तीन में से दो सर्वश्रेष्ठ परीक्षणों में प्राप्त अंक छात्र को प्रदान किये जायेंगे।
4. सत्रांत परीक्षा में प्राप्त कुल अंक और निरंतर मूल्यांकन के तहत सर्वश्रेष्ठ दो परीक्षण पाठ्यक्रम में ग्रेड तय करेंगे।

हिन्दी विभाग

अवधेश प्रताप सिंह विश्वविद्यालय, रीवा (म.प्र.)

पाठ्यक्रम संरचना

(C.B.C.S.)

एम.ए. हिन्दी सेमेस्टर प्रथम

सेमेस्टर–I :

क्र.	पाठ्यक्रम कोड	पाठ्यक्रम का शीर्षक	क्रेडिट	अधिकतम अंक		कुल	न्यूनतम अर्हता अंक	
				लिखित अंक	मौखिकी अंक		लिखित अंक	मौखिकी अंक
1.	**CC-101**	प्राचीन एवं मध्यकालीन काव्य तथा उसका इतिहास	04	60	40	100	21	14
2.	**CC-102**	आधुनिक हिन्दी गद्य और उसका इतिहास	04	60	40	100	21	14
3.	**CC-103**	भारतीय एवं पाश्चात्य काव्य शास्त्र	04	60	40	100	21	14
4.	**GE-104**	प्रयोजन मूलक हिन्दी	04	60	40	100	21	14
		कुल कोर्स क्रेडिट	16	240	160	400	–	–

(CC-101)

क्रेडिट : 04	अधिकतम अंक	न्यूनतम प्राप्तांक
लिखित अंक	60	21
सतत् मूल्यांकन अंक	40	14

उद्देश्य :– यह प्रश्न–पत्र पढ़ाने का उद्देश्य यह है कि विद्यार्थी हिन्दी के प्राचीन एवं मध्यकालीन कवियों एवं काव्य से परिचित हो सकें। आदिकालीन काव्य अपभ्रंश के अवदान को समेटे है। मध्यकालीन काव्य लोकमंगल के स्वर साधता है। इसने भारत की भावनात्मक एकता और सांस्कृतिक परम्परा को सुरक्षित रखा है।

पाठ्य विषय :–

ईकाई–01 :

1. विद्यापति – 20 पद (विद्यापति पदावली संपा. रामवृक्ष बेनीपुरी, लोकभारती प्रकाशन, प्रयागराज)

   पद क्रमांक– 1, 4, 5, 7, 8, 11, 12, 14, 15, 16, 20, 22, 23, 26, 27, 28, 29, 31, 33, 43

2. कबीर – कबीर ग्रंथावली, डॉ. श्यामसुन्दर दास

   गुरुदेव को अंग (साखी क्रमांक 1 से 10), सुमिरण को अंग (साखी क्रमांक 1 से 10), विरह को अंग (साखी क्रमांक 1 से 10), 'कबीर' हजारी प्रसाद द्विवेदी से 160वें पद से 175वें पद तक।

3. जायसी – पद्मावत, संपा. आचार्य रामचंद्र शुक्ल

   (मानसरोदक खण्ड एवं नागमती वियोग खण्ड)

ईकाई–02 :

विद्यापति, कबीर और जायसी से संबंधित आलोचनात्मक प्रश्न।

इकाई–03 :

प्राचीनकाल एवं मध्यकालीन काव्य (निर्गुण धारा) का इतिहास, प्रमुख प्रवृत्तियाँ एवं रचनाकारों से संबंधित प्रश्न।

इकाई–04 :

द्रुतपाठ के कवि–चंदबरदाई, अमीर खुसरो, रैदास, मीराबाई, रहीम से संबंधित लघुउत्तरीय प्रश्न।

इकाई–05 : वस्तुनिष्ठ प्रश्न (सम्पूर्ण पाठ्यक्रम से)

संदर्भ ग्रंथ :–

1. कबीर ग्रंथावली सटीक, प्रो. पुष्पपाल सिंह, अशोक प्रकाशन दिल्ली।
2. हिन्दी के प्राचीन प्रतिनिधि कवि, लेखक द्वारका प्रसाद सक्सेना, प्रकाशन श्री विनोद पुस्तक मंदिर, आगरा–2।
3. हिन्दी साहित्य का इतिहास, लेखक रामचन्द्र शुक्ल, प्रकाशक राजकमल प्रकाशन।
4. प्राचीन एवं मध्यकालीन हिन्दी काव्य, लेखक प्रो. पूरनचंद टण्डन, प्रकाशक राजपाल एण्ड संस।
5. प्राचीन कवि, लेखक विश्वरम्भर 'मानव', प्रकाशक लोकभारती प्रकाशन, इलाहाबाद।

पाठ्यक्रम सीखने के परिणाम : इस पाठ्यक्रम का अध्ययन करने के बाद छात्र सक्षम होंगे :–

CO1	:	विद्यार्थियों को हिन्दी साहित्य के प्राचीन एवं मध्यकालीन काव्य से परिचित कराना और भाषा के विकास समझना।
CO2	:	विद्यापति, कबीर और जायसी की रचनाओं का अध्ययन करना और जीवन के साथ उनके साम्य को परखना।
CO3	:	कबीर हिन्दी साहित्य के प्रथम व्यंग्यकार हैं इस उक्ति को समझना तथा कबीर साहित्य का आलोचनात्मक अध्ययन करना।
CO4	:	निर्गुण धारा से सगुण धारा तक के साहित्य का अध्ययन महत्वपूर्ण बिन्दुओं के आधार पर करना तथा तुलसी साहित्य की आज के समय में प्रासांगिकता समझना।
CO5	:	मध्यकालीन काव्य से उत्तर मध्यकाल तक आने में भाषा में आये परिवर्तन एवं रीतिग्रंथों के प्रणयन का अध्ययन करना।

(CC-102)

क्रेडिट : 04	अधिकतम अंक	न्यूनतम प्राप्तांक
लिखित अंक	60	21
सतत् मूल्यांकन अंक	40	14

उद्देश्य :– विद्यार्थियों को इस बात से परिचित कराना कि मनुष्य के राग–विराग, तर्क–वितर्क, चिन्तन–मनन जिस रागात्मकता तथा कौशलपूर्ण ढंग से गद्य में अभिव्यंजित होते हैं अन्यत्र नहीं।

पाठ्य विषय :–

ईकाई–01 :

1. चंद्रगुप्त : जयशंकर प्रसाद
2. आधे–अधूरे : मोहन राकेश
3. गोदान : प्रेमचंद

इकाई–02 :

चंद्रगुप्त, आधे–अधूरे एवं गोदान से समीक्षात्मक प्रश्न

इकाई–03 :

हिन्दी नाटक, रंगमंच एवं उपन्यास के इतिहास की विविध प्रवृत्तियाँ और रचनाकारों पर निबंधात्मक प्रश्न।

इकाई–04 :

लघुत्तरीय प्रश्न–द्रुतपाठ में निर्धारित गद्यकारों से सम्बद्ध दो लघुत्तरीय प्रश्न होंगे।

1. नाटककार : भारतेन्दु हरीशचन्द्र, डॉ. रामकुमार वर्मा, जगदीशचन्द्र माथुर, धर्मवीर भारती, लक्ष्मीनारायण लाल।
2. उपन्यासकार : जैनेन्द्र, अमृतलाल नागर, निर्मल वर्मा, भीष्म साहनी, मन्नू भण्डारी।

इकाई–05 :

वस्तुनिष्ठ प्रश्न (सम्पूर्ण पाठ्यक्रम से)

संदर्भ ग्रंथ :–

1. आधुनिक हिन्दी साहित्य का इतिहास, लेखक बच्चन सिंह, प्रकाशक लोकभारती प्रकाशन।
2. चन्द्रगुप्त, लेखक जयशंकर प्रसाद, प्रकाशक भारती भण्डार, लीडर प्रेस, प्रयागराज।
3. आधुनिक हिन्दी नाटक, डॉ. नगेन्द्र, साहित्य प्रेस आगरा।
4. मोहन राकेश और उनके नाटक, गिरीश रस्तोगी, लोकभारती प्रकाशन प्रयागराज।
5. प्रेमचंद और उनका युग, रामविलास शर्मा, प्रकाशक मेहरचन्द्र मुंशीराम फैजबाजार, दिल्ली।
6. जयशंकर प्रसाद, नंददुलारे वाजपेयी, प्रकाशक भारती भण्डार, प्रयागराज।

पाठ्यक्रम सीखने के परिणाम : इस पाठ्यक्रम का अध्ययन करने के बाद छात्र सक्षम होंगे :–

CO1	:	विद्यार्थियों को इस बात से परिचित कराना कि मनुष्य के राग–विराग, तर्क–वितर्क, चिन्तन–मनन जिस रागात्मकता तथा कौशलपूर्ण ढंग से गद्य में अभिव्यंजित होते हैं अन्यत्र नहीं।
CO2	:	आधुनिक काल में गद्य का विकास हुआ जिसकी भाषा खड़ी बोली है, गद्य विधाओं में उपन्यास, नाटक का अध्ययन करना।
CO3	:	जयशंकर प्रसाद जी के नाटकों में भारतीय एवं पश्चात् चिंतन का विशेष अध्ययन करना, चंद्रगुप्त नाटक के विशेष संदर्भ में।
CO4	:	उपन्यासकार के रूप में मुंशी प्रेमचंद जी का अध्ययन 1906 से 1936 के बीच लिखा गया प्रेमचंद का साहित्य इन तीस वर्षों का सामाजिक सांस्कृतिक विशेष संदर्भ में।
CO5	:	आधुनिक साहित्य से संबंधित प्रमुख गद्यकारों एवं नाटककारों के कथा और शिल्प का अध्ययन करना और उसका सामाजिक प्रभाव।

(CC-103)

क्रेडिट : 04	अधिकतम अंक	न्यूनतम प्राप्तांक
लिखित अंक	60	21
सतत् मूल्यांकन अंक	40	14

उद्देश्य :– रचना के वैशिष्ट्य और मूल्यबोध के उद्घाटन के लिए काव्यशास्त्र और साहित्यलोचन का ज्ञान अपरिहार्य है।

पाठ्य विषय :–

ईकाई–01 :

संस्कृत काव्यशास्त्र : काव्य–लक्षण, काव्य–हेतु, काव्य–प्रयोजन, काव्य के प्रकार।

रस–सिद्धांत : रस का स्वरूप, रस–निष्पत्ति, रस के अंग, साधारणीकरण, सहृदय की अवधारणा।

अलंकार सिद्धांत : मूल स्थापनाएँ, अलंकारों का वर्गीकरण।

इकाई–02 :

रीति–सिद्धांत : रीति की अवधारणा, काव्य–गुण, रीति एवं शैली, रीति सिद्धांत की प्रमुख स्थापनाएँ।

वक्रोक्ति सिद्धांत : वक्रोक्ति की अवधारणा, वक्रोक्ति के भेद, वक्रोक्ति एवं अभिव्यंजनावाद।

इकाई–03 :

ध्वनि सिद्धांत : ध्वनि का स्वरूप, ध्वनि–सिद्धांत की प्रमुख स्थापनाएँ, ध्वनि काव्य के प्रमुख भेद, गुणीभूत–व्यंग्य, चित्रकाव्य।

औचित्य सिद्धांत : प्रमुख स्थापनाएँ, औचित्य के भेद।

इकाई–04 :

हिन्दी 'कवि आचार्यों' का काव्य शास्त्रीय चिंतन। लक्षण–काव्य परंपरा एवं कवि–शिक्षा।

इकाई–05 :

हिन्दी आलोचना की प्रमुख प्रवृत्तियाँ : शास्त्रीय, व्यक्तिवाद, मार्क्सवादी, ऐतिहासिक, तुलनात्मक, मनोविश्लेषणवादी, सौन्दर्यशास्त्रीय, शैलीवैज्ञानिक और समाजशास्त्रीय।

संदर्भ ग्रंथ :–

1. भारतीय एवं पाश्चात्य काव्य सिद्धांत, लेखक डॉ. गणपतिचन्द्र गुप्त, प्रकाशक लोकभारती प्रकाशन।
2. काव्यशास्त्र, लेखक डॉ. भगीरथ मिश्र, प्रकाशक विश्वविद्यालय प्रकाशन वाराणसी।
3. भारतीय एवं पाश्चात्य काव्यशास्त्र, लेखक डॉ. विवेक शंकर, प्रकाशक राजस्थान हिन्दी ग्रंथ अकादमी।
4. भारतीय एवं पाश्चात्य काव्यशास्त्र की रूपरेखा, रामचन्द्र तिवारी।
5. साहित्य शास्त्र, लेखक आचार्य बलदेव उपाध्याय, प्रकाशक नंदकिशोर एण्ड सन्स, वाराणसी।
6. भारतीय काव्यशास्त्र, आचार्य देवेन्द्रनाथ शर्मा।
7. हिन्दी आलोचना शिखरों का साक्षात्कार, रामचन्द्र तिवारी, लोकभारती प्रकाशन, प्रयागराज।
8. भारतीय एवं पाश्चात्य काव्यशास्त्र तथा आलोचना, प्रो. योगेन्द्र प्रताप सिंह, श्यामा प्रकाशन संस्थान प्रयागराज।
9. पाश्चात्य काव्यशास्त्र : अधुनातन संदर्भ, डॉ. सत्यदेव मिश्रा।
10. वाद–विवाद संवाद नामवर सिंह, राजकमल प्रकाशन नई दिल्ली।
11. सौन्दर्य शास्त्र के तत्व, कुमार विमल, राजकमल प्रकाशन नई दिल्ली।

पाठ्यक्रम सीखने के परिणाम : इस पाठ्यक्रम का अध्ययन करने के बाद छात्र सक्षम होंगे :–

CO1	:	काव्य लक्षण, काव्य हेतु, काव्य प्रयोजन और काव्यरूपों की जानकारी से विद्यार्थियों को परिचित कराना।
CO2	:	सहृदय की अवधारणा और रस सिद्धांत की भूमिका के साथ आचार्य भरत मुनि के रस सूत्र की व्याख्या के आचार्यों की जानकारी देना।
CO3	:	अलंकार सिद्धांत के माध्यम से आचार्य भामह और अलंकार काव्य की आत्म मानने वाले आचार्यों के संबंध में छात्रों को जानकारी देना।
CO4	:	इसी तरह रीति, वक्रोक्ति, ध्वनि और औचित्य सम्प्रदाय के सिद्धांतों की जानकारी विद्यार्थियों को देना।
CO5	:	हिन्दी कवि आचार्यों के काव्य विषयक मतों की जानकारी के साथ हिन्दी आलोचना और आलोचकों के संबंध में विद्यार्थियों को जानकारी उपलब्ध कराना।

(GE-104)

क्रेडिट : 04	अधिकतम अंक	न्यूनतम प्राप्तांक
लिखित अंक	60	21
सतत् मूल्यांकन अंक	40	14

उद्देश्य :– भाषा के प्रयोजनपरक आयाम का संबंध हमारी सामाजिक आवश्यकताओं और जीवन व्यवहार से है। व्यक्तिपरक होकर भी यह समाज सापेक्ष सेवा माध्यम (सर्विसटूल्स) के रूप में प्रयुक्त होती है। इसके विविध आयामों से न केवल रोजगार की समस्या हल होगी अपितु राजभाषा तथा राष्ट्रभाषा का संस्कार की दृढ़ होगा।

पाठ्य विषय :–

ईकाई–01 : कामकाजी हिन्दी –

1. हिन्दी के विभिन्न रूप सर्जनात्मक भाषा, संचार भाषा, राष्ट्रभाषा, राजभाषा, माध्यम भाषा, मातृभाषा।
2. कार्यालयीन हिन्दी, राजभाषा के प्रमुख प्रकार्य– प्रारूपण, पत्र–लेखन, संक्षेपण, पल्लवन टिप्पणी।

इकाई–02 :

पारिभाषिक शब्दावली–स्वरूप एवं महत्व, पारिभाषिक शब्दावली के उदाहरण एवं उनका व्यावहारिक प्रयोग।

इकाई–03 : हिन्दी : कम्प्यूटर अनुप्रयोग

1. कम्प्यूटर : परिचय, रूपरेखा, उपयोग तथा बेब पब्लिशिंग का परिचय।
2. इंटरनेट, संपर्क उपकरणों का परिचय, प्रथामिक, रख–रखाव वं इंटरनेट, समय मितव्ययिता के सूत्र।
3. बेब पब्लिकेशन।
4. इंटर एक्सरलोइट अथवा नेट स्केप।

5. लिंक, ब्राउजिंग पोर्टल, ई.मेल भेजना/प्राप्त करना, हिन्दी के प्रमुख इंटरनेट पेार्टल, डाउलोडिंग एवं अपलोडिंग का साफ्टवेयर, पैकेज।

इकाई–04 :

1. पत्रकारिता स्वरूप एवं प्रकार।
2. हिन्दी पत्रकारिता का संक्षिप्त इतिहास।
3. समाचार–लेखनकला।
4. संपादन के आधारभूत तत्व।
5. व्यावहारिक प्रूफ शोधन।

इकाई–05 :

1. पत्रकारिता : शीर्षक की संरचना, लीड, इण्ट्रो एवं शीर्षक संपादन।
2. संपादकीय लेखन
3. पृष्ठसज्जा
4. साक्षात्कार, पत्रकार वार्ता एवं प्रेस–प्रबंधन
5. प्रमुख प्रेस कानून एवं आचार–संहिता।

संदर्भ ग्रंथ :–

1. हिन्दी पत्रकारिता भारतेन्दु पूर्व से छायावादोत्तर काल तक, लेखक डॉ. धीरेन्द्र नाथ सिंह, प्रकाशक विश्वविद्यालय प्रकाशन वाराणसी।
2. हिन्दी पत्रकारिता का नया स्वरूप, लेखक बच्चन सिंह पत्रकार, प्रकाशक विश्वविद्यालय प्रकाशन, वाराणसी।
3. कम्प्यूटर एक परिचय, लेखक विनय कुमार ओझा, प्रकाशन परीक्षा मंथन।
4. प्रयोजन मूलक हिन्दी, विनोद गोदरे, वाणी प्रकाशन दिल्ली।
5. जन पत्रकारिता, जनसंचार, सूर्यप्रसाद दीक्षित, संजय प्रकाशन, नई दिल्ली।
6. सम्पूर्ण पत्रकारिता, डॉ. अर्जुन तिवारी, विश्वविद्यालय प्रकाशन, वाराणसी।

पाठ्यक्रम सीखने के परिणाम : इस पाठ्यक्रम का अध्ययन करने के बाद छात्र सक्षम होंगे :–

CO1	:	भाषा के प्रयोजनपरक आयाम का हमारे सामाजिक आवश्यकताओं और जीवन व्यवहार के आधार पर अध्ययन करना और इसके विविध आयामों से रोजगार समस्या को कैसे दूर किया जा सकता है। इसका अध्ययन करना।
CO2	:	हिन्दी की उपयोगिकता का कार्यालय भाषा के रूप में अध्ययन करना और राष्ट्र भाषा तथा राज भाषा के मध्य अंतर को जानना।
CO3	:	पारिभाषिक शब्दावली के उपयोग का अध्ययन विविध आयामों के आधार पर करना तथा केन्द्रीय पारिभाषिक शब्दावली संस्थान के कार्यप्रणाली का अध्ययन करना।
CO4	:	कम्प्यूटर के अनुप्रयोग का भाषा के आधार पर अध्ययन करना तथा हिन्दी साहित्य में कम्प्यूटर के प्रवेश और उपयोगिता को समझना।
CO5	:	पत्रकारिता स्पष्ट और सरल होनी चाहिए इस तथ्य को समझना तथा सम्पादन के आधारभूत तत्वों का अध्ययन करना और पत्रकारिता के विभिन्न स्वरूपों का अध्ययन करना।

हिन्दी विभाग

अवधेश प्रताप सिंह विश्वविद्यालय, रीवा (म.प्र.)

पाठ्यक्रम संरचना

(C.B.C.S.)

एम.ए. हिन्दी सेमेस्टर द्वितीय

सेमेस्टर–II :

क्र.	पाठ्यक्रम कोड	पाठ्यक्रम का शीर्षक	क्रेडिट	अधिकतम अंक		कुल	न्यूनतम अर्हता अंक	
				लिखित अंक	मौखिकी अंक		लिखित अंक	मौखिकी अंक
1.	**CC-201**	प्राचीन एवं मध्यकालीन काव्य तथा उसका इतिहास	04	60	40	100	21	14
2.	**CC-202**	आधुनिक हिन्दी गद्य और उसका इतिहास	04	60	40	100	21	14
3.	**CC-203**	भारतीय एवं पाश्चात्य काव्य शास्त्र	04	60	40	100	21	14
4.	**GE-204**	प्रयोजन मूलक हिन्दी	04	60	40	100	21	14
		कुल कोर्स क्रेडिट	16	240	160	400	–	–

(CC-201)

क्रेडिट : 04	अधिकतम अंक	न्यूनतम प्राप्तांक
लिखित अंक	60	21
सतत् मूल्यांकन अंक	40	14

उद्देश्य :— विद्यार्थियों को इस बात से परिचित कराना कि प्राचीन एवं मध्यकालीन काव्य की लोकमंगल की साधना अवस्था काव्य में किस प्रकार संभव होती है। साथ ही उत्तर मध्यकालीन काव्य अपनी कलात्मक अभिव्यंजना में बेजोड़ है। इसका अध्ययन समाज, संस्कृति एवं युग की धड़कनों को समग्रता में समझने के लिए अनिवार्य है।

पाठ्य विषय :—

इकाई—01 :

सूरदास :— भ्रमरगीत सार, संपादक रामचन्द्र शुक्ल, पद क्रमांक 21 से 70 ।

तुलसीदास :— रामचरितमानस, अयोध्या काण्ड, दोहा क्रमांक 51 से 100।

बिहारी :— बिहारी रत्नाकर, संपादक जगन्नाथ रत्नाकर, दोहा क्रमांक 01 से 50।

इकाई—02 :

सूरदास, तुलसीदास एवं बिहारी से संबंधित निबंधात्मक प्रश्न।

इकाई—03 :

भक्तिकाल (सगुण भक्तिधारा) एवं रीतिकाल का इतिहास प्रवृत्तियाँ और प्रमुख रचनाकारों से संबंधित निबंधात्मक प्रश्न।

इकाई—04 :

द्रुतपाठ के कवि, नंददास, मीराबाई, घनानंद और केशव से संबंधित, लघुत्तरीय प्रश्न।

इकाई—05 :

वस्तुनिष्ठ प्रश्न (सम्पूर्ण पाठ्यक्रम से)

संदर्भ ग्रंथ :–

1. हिन्दी के प्राचीन प्रतिनिधि कवि, लेखक–द्वारका प्रसाद सक्सेना, प्रकाशक श्री विनोद पुस्तक मंदिर, आगरा–2।
2. हिन्दी साहित्य का इतिहास, लेखक रामचन्द्र शुक्ल, प्रकाशक राजकमल प्रकाशन।
3. हिन्दी साहित्य का इतिहास, लेखक डॉ. नगेन्द्र एवं डॉ. हरदयाल, प्रकाशक नेशनल पब्लिशिंग हाउस, नई दिल्ली।
4. सूर और उनक साहित्य, हरवंशलाल शर्मा, भारत प्रकाशन मंदिर अलीगढ़।
5. रीतिकाव्य की भूमिका, डॉ. नागेन्द्र, नेशनल पब्लिशिंग हाउस, दिल्ली।
6. गोस्वामी तुलसीदास, आचार्य रामचन्द्र शुक्ल, इण्डियन प्रेस लि. प्रयागराज।

पाठ्यक्रम सीखने के परिणाम : इस पाठ्यक्रम का अध्ययन करने के बाद छात्र सक्षम होंगे :–

CO1	:	विद्यार्थियों को इस बात से परिचित कराना कि प्राचीन एवं मध्यकालीन काव्य की लोकमंगल की साधना व्यवस्था काव्य में किस प्रकार संभव होती है।
CO2	:	उत्तर मध्यकालीन काव्य अपनी कलात्मक अभिव्यंजना में बेजोड़ है। समाज, संस्कृति एवं युग की धड़कनों को समग्रता से समझने के लिए ये किस प्रकार उपयोगी है, इस काव्य की महत्ता से विद्यार्थियों को परिचित कराना।
CO3	:	सूर, तुलसी और बिहारी साहित्य का अध्ययन करते हुए शिल्प के दृष्टि से साम्य और वैषम्य का अध्ययन करना और आज के समय को देखते हुए किसकी कितनी प्रासांगिकता है इस बात को समझना और अध्ययन करना।
CO4	:	भक्तिकाल हिन्दी साहित्य का स्वर्णकाल है ''इस उक्ति की तथ्यात्मक जांच महत्वपूर्ण बिन्दुओं के आधार पर करना और तत्कालीन समाज में इसके कारण जीवन शैली में आए बदलावों का अध्ययन करना।
CO5	:	प्राचीनकाल से मध्यकाल तक आते–आते काव्य की भाषागत, शिल्पगत और विषयगत परिवर्तनों और परिवर्तन के कारणों का अध्ययन करना।

(CC-202)

क्रेडिट : 04	अधिकतम अंक	न्यूनतम प्राप्तांक
लिखित अंक	60	21
सतत् मूल्यांकन अंक	40	14

उद्देश्य :– उपन्यास, कहानी तथा निबंध विधाओं के रूप में गद्य साहित्य वामन से विराट बन गया है। आधुनिक काल में गद्य के विविध रूपों का विकास इस तथ्य का साक्षी है। इसका अध्ययन चिन्तन प्रक्रिया के विकास से परिचित होने के लिए आवश्यक है।

पाठ्य विषय :–

इकाई–01

(i) उपन्यास– बाणभट्ट की आत्मकथा, हजारी प्रसाद द्विवेदी

(ii) निबंध–

- देश सेवा का महत्व–बालकृष्ण भट्ट
- कछुआ धर्म–चन्द्रधर शर्मा गुलेरी
- कविता क्या है–आचार्य रामचन्द्र शुक्ल
- अशोक के फूल–हजारी प्रसाद द्विवेदी
- मेरे राम का मुकुट भीग रहा है–विद्यानिवास मिश्र
- प्रिया नीलकंठी–कुबेरनाथ राय
- पगडण्डियों का जमाना–हरिशंकर परसाई

(iii) निर्धारित कहानियाँ –

- उसने कहा था–चन्द्रधर शर्मा गुलेरी
- पूस की रात–प्रेमचंद
- आकाशदीप–जयशंकर प्रसाद
- अपना अपना भाग्य–जैनेन्द्र कुमार
- तीसरी कसम–फणीश्वरनाथ रेणु
- लंदन की एक रात–निर्मल वर्मा
- राजा निरबंसिया–कमलेश्वर
- क्षमा करो हे वत्स–देवेन्द्र

(iv) पथ के साथी–महादेवी वर्मा

इकाई–02 :

बाणभट्ट की आत्मकथा, निर्धारित निबंध, कहानी एवं पथ के साथी से समीक्षात्मक प्रश्न।

इकाई–03 :

हिन्दी, कहानी, निबंध एवं अन्य गद्य विधाओं (रेखाचित्र, संस्मरण, आत्मकथा, जीवनी, यात्रावृत्तांत, व्यंग्य आदि) के इतिहास प्रवृत्तियाँ और प्रमुख रचनाकारों से सम्बद्ध निबंधात्मक प्रश्न।

इकाई–04 :

लघुत्तरीय प्रश्न :– द्रुतपाठ में निर्धारित निम्नलिखित गद्यकारों पर केन्द्रित दो लघुउत्तरीय प्रश्न पूछे जायेंगे।

निबंधकार :– भारतेन्दु हरिश्चन्द्र, प्रताप नारायण मिश्र, बालमुकुन्द गुप्त, सरदार पूर्ण सिंह।

कहानीकार :– अज्ञेय, यशपाल, फणीश्वरनाथ रेणु, भीष्म साहनी, अमरकांत।

स्फुट ग्रंथ :– 1) अमृतराय (कलम का सिपाही), 2) शिवप्रसाद सिंह (उत्तर योगी), 3) हरिवंशराय बच्चन (क्या भूलूं क्या याद करूं), 4) राहुल सांस्कृत्यायन (घुमक्कड़ शास्त्र), 5) माखनलाल चतुर्वेदी (साहित्य देवता)

इकाई–05 :

संदर्भ ग्रंथ :–

1. हिन्दी में निबंध साहित्य, लेखक जनार्दनस्वरूप अग्रवाल, प्रकाशक साहित्य भवन लिमिटेड, प्रयागराज।
2. कहानी : स्वरूप और संवेदना, लेखक राजेन्द्र यादव, प्रकाशक वाणी प्रकाशन।
3. एक दुनिया : समानान्तर, लेखक राजेन्द्र यादव, प्रकाशक राधाकृष्ण प्रकाशन।
4. हिन्दी कहानी की पहचान और परख, संपा. इन्द्रलाल मदान, लिपि प्रकाशन, नई दिल्ली।
5. नयी कहानी की भूमिका, कमलेश्वर, अक्षर प्रकाशन, नई दिल्ली।
6. कहानी, नयी कहानी, नामवर सिंह, लोकभारती प्रकाशन, प्रयागराज।
7. निबंध नवगीत, लक्ष्मीसागर, वार्ष्णेय, वाराणसी वि.वि. प्रकाशन।

पाठ्यक्रम सीखने के परिणाम : इस पाठ्यक्रम का अध्ययन करने के बाद छात्र सक्षम होंगे :–

CO1	:	विद्यार्थियों को आधुनिक हिन्दी गद्य और उसका इतिहास से परिचित कराना, इसका अध्ययन चिन्तन प्रक्रिया के विकास को समझना।
CO2	:	विद्यार्थियों उपन्यास, कहानी तथा निबंध विधाओं के रूप में गद्य साहित्य से परिचित कराना।
CO3	:	हजारी प्रसाद द्विवेदी, रामचंद्र शुक्ल, बालकृष्ण भट्ट, विद्यानिवास मिश्र की रचनाओं का अध्ययन करना और जीवन के साथ उनके साम्य को परखना।
CO4	:	भारतेन्दु युग और द्विवेदी युग छायावाद तक के साहित्य का विशेष अध्ययन तथा महादेवी वर्मा के विशेष संदर्भ में।
CO5	:	कहानीकार और उपन्यासकारों का विशेष अध्ययन जिससे जीवन में मूल्यों का विकास हो।

(CC-203)

क्रेडिट : 04	अधिकतम अंक	न्यूनतम प्राप्तांक
लिखित अंक	60	21
सतत् मूल्यांकन अंक	40	14

उद्देश्य :– पाश्चात्य चिन्तकों के काव्यालोचन को जानने तथा पूर्ववर्ती एवं आधुनिक वैश्विक काव्य के मर्म को समझने के लिए यह प्रश्न–पत्र आवश्यक है।

पाठ्य विषय :–

इकाई–01 :

प्लेटो : काव्य–सिद्धांत

अरस्तू : अनुकरण–सिद्धांत, त्रासदी–विवेचन, विरेचन–सिद्धांत

लोंजाइनस : उदात्त की अवधारणा।

इकाई–02 :

ड्राइडन के काव्य सिद्धांत

वड्र्सवर्थ : काव्य–भाषा का सिद्धांत

कालरिज : कल्पना–सिद्धांत और ललित–कल्पना

इकाई–03 :

मैथ्यू आर्नल्ड : आलोचना का स्वरूप और प्रकार्य

टी.एस. इलियट : परंपरा की परिकल्पना और वैयाक्तिक प्रज्ञा, निवैर्यक्तिकता का सिद्धांत, वस्तुनिष्ठ समीकरण, संवदेनशीलता का असाहचर्य।

आई.ए. रिचर्डस : रागात्मक अर्थ। संवेगों का संतुलन, व्यावहारिक आलोचना।

इकाई–04 :

सिद्धांत और वाद : अभिजात्यवाद, स्वच्छंदतावाद, अभिव्यंजनावाद, मार्क्सवाद, मनोविश्लेषण तथा अस्तित्ववाद।

इकाई–05 :

आधुनिक समीक्षा की विशिष्ट प्रवृत्तियॉ : संरचनावाद, शैलीविज्ञान, विखण्डनवाद, उत्तर आधुनिकतावाद।

संदर्भ ग्रंथ :–

1. भारतीय एवं पाश्चात्य काव्य सिद्धांत, लेखक डॉ. गणपतिचन्द्र गुप्त, प्रकाशक लोकभारती प्रकाशन।
2. काव्यशास्त्र, लेखक डॉ. भगीरथ मिश्र, प्रकाशक विश्वविद्यालय प्रकाशन वाराणसी।
3. भारतीय एवं पाश्चात्य काव्यशास्त्र, लेखक डॉ. विवेक शंकर, प्रकाशक राजस्थान हिन्दी ग्रंथ अकादमी।
4. भारतीय एवं पाश्चात्य काव्यशास्त्र की रूपरेखा, रामचन्द्र तिवारी।
5. साहित्य शास्त्र, लेखक आचार्य बलदेव उपाध्याय, प्रकाशक नंदकिशोर एण्ड सन्स, वाराणसी।
6. भारतीय काव्यशास्त्र एवं पाश्चात्य साहित्य चिंतन, लेखक डॉ. सभापति मिश्र, प्रकाशक जय भारती प्रकाशन, इलाहाबाद।
7. पाश्चात्य काव्यशास्त्र, आ. देवेन्द्रनाथ शर्मा, मयूर बुक्स।
8. साहित्य अध्ययन की दृष्टियाँ, सं. उदयभान सिंह, नेशनल पब्लिशिंग हाउस, नई दिल्ली।

पाठ्यक्रम सीखने के परिणाम : इस पाठ्यक्रम का अध्ययन करने के बाद छात्र सक्षम होंगे :–

CO1	:	प्लेटो, अरस्तू जैसे महान यूनानी दार्शनिकों के काव्य संबंधी सिद्धांतों से विद्यार्थियों को परिचित कराना।
CO2	:	टी.एस. इलियट, ड्रायडन जैसे कवियों के मनोभावों को सिद्धांतों के माध्यम से जानकारी प्रदान कराना। इनके मत सिद्धांत भारतीय काव्य सिद्धांतों से कहां तक मेल खाते हैं इन सबका परिचय कराना।
CO3	:	क्रोचे, लोंजाइनस, विलियम वर्डसवर्थ के काव्य लक्षण संबंधी मतों की जानकारी प्रदान कराना।
CO4	:	मैथ्यू अर्नाल्ड, कॉलरिज जैसे पाश्चात्य विचारकों के व्यवहारिक आलोचना के सूत्रों का अध्ययन विद्यार्थियों को कराना।
CO5	:	आई.ए. रिचर्डस के मूल्य और अनुभूति संप्रेषण पर विद्यार्थियों को जानकारी प्रदान करना। काव्य भाषा सिद्धांत की जानकारी देना।

(GE-204)

क्रेडिट : 04	अधिकतम अंक	न्यूनतम प्राप्तांक
लिखित अंक	60	21
सतत् मूल्यांकन अंक	40	14

उद्देश्य :– जनसंचार माध्यमों के अनुवाद का स्वरूप, क्षेत्र एवं प्रविधि एवं हिन्दी की प्रयोजनीयता में अनुवाद की उपयोगिता सर्वविदित है। विद्यार्थियों को इसका ज्ञान आवश्यक है।

पाठ्य विषय :–

इकाई–01 : मीडिया लेखन –

1. जनसंचार–प्रौद्योगिकी एवं चुनौतियाँ।
2. विभिन्न जनसंचार माध्यमों का स्वरूप–मुद्रण, श्रव्य, दृश्य–श्रृव्य, इंटरनेट।
3. श्रृव्य माध्यम–रोडियो, मैखिक भाषा की प्रकृति, समाचार लेखन एवं वाचन, रोडियो नाटक, उद्घोषणा लेखन, विज्ञापन लेखन, फीचर तथा रिपोर्ताज।

इकाई–02 :

1. दृश्य–श्रृव्य माध्यम (फिल्म, टेलीविजन, विडियो), दृश्य माध्यमों में भाषा की प्रकृति, दृश्य एवं श्रव्य सामग्री का सामंजस्य, पार्श्व वाचन (वायस ओवर) पटकथा लेखन, टेलीड्रामा, डॉक्यू ड्रामा, संवाद–लेखन, साहित्य की विधाओं का दृश्य माध्यमों का रूपांतरण, विज्ञापन की भाषा।
2. इंटरनेट सामग्री सृजन – (Content creation)

इकाई–03 : हिन्दी : कम्प्यूटर अनुप्रयोग

1. अनुवाद का स्वरूप, क्षेत्र, प्रक्रिया एवं प्रविधि।
2. हिन्दी की प्रयोजनीयता में अनुवाद की भूमिका।
3. कार्यालयीन हिन्दी और अनुवाद।
4. जनसंचार माध्यमों का अनुवाद।
5. विज्ञापन में अनुवाद।

6. वैचारिक साहित्य का अनुवाद।

इकाई–04 :

1. वाणिज्यिक अनुवाद।
2. वैज्ञानिक, तकनीकी तथा प्रौद्योगिकी क्षेत्र में अनुवाद।
3. विधि–साहित्य की हिन्दी और अनुवाद।
4. व्यावहारिका अनुवाद अभ्यास।
5. कार्यालयीन अनुवाद :– कार्यालयीन एवं प्रशासनिक शब्दावली, प्रशासनिक, प्रयुन्तियाँ, पदनाम, विभाग आदि।
6. पत्रों के अनुवाद।
7. पदनामों, अनुभागों, दस्तावेजों, प्रतिवेदनों के अनुवाद।

इकाई–05 :

1. बैंक साहित्य के अनुवाद का अभ्यास।
2. विधि साहित्य के अनुवाद का अभ्यास।
3. साहित्यिक अनुवाद के सिद्धांत एवं व्यवहार : कविता, कहानी, नाटक।
4. सरानुवाद।
5. दुभाषिया प्रविधि।
6. अनुवाद पुनरीक्षण एवं मूल्यांकन।

संदर्भ ग्रंथ :–

1. आधुनिक मीडिया लेखन एवं हिन्दी रचना, लेखक डॉ. अशोक बत्रा, प्रकाशक लक्ष्मी प्रकाशन।
2. मीडिया संचार माध्यम एवं लेखन कला, लेखक रामप्रसाद मौर्य, प्रकाशक अर्जुन पब्लिशिंग हाउस।
3. प्रयोजन मूलक हिन्दी की नयी भूमिका, लेखक कैलाशनाथ पाण्डेय, प्रकाशक राजकमल प्रकाशन प्राइवेट लिमि.।
4. अनुवाद सिद्धांत और प्रयोग, लेखक भोलानाथ तिवारी।
5. हिन्दी भाषा एवं साहित्य का इतिहास, हिन्दी पत्रकारिता एवं निबंध लेखन प्रो. राजेन्द्र प्रसाद श्रीवास्तव, प्रकाशक भवदीय प्रकाशन, अयोध्या फैजाबाद।

पाठ्यक्रम सीखने के परिणाम : इस पाठ्यक्रम का अध्ययन करने के बाद छात्र सक्षम होंगे :–

CO1	:	जनसंचार माध्यमों का स्वरूप क्षेत्र प्रविधि में हिन्दी की प्रयोजनीयता में अनुवाद की उपयोगिता सर्वविदित है, विद्यार्थियों को इसका अध्ययन कराना।
CO2	:	जनसंचार प्रौद्योगिकीय एवं चुनौतियॉ विभिन्न जन संचार माध्यम मुद्रण, श्रव्य, दृश्य, श्रृव्य इंटरनेट समाचार लेखन विज्ञापन लेखन आदि का अध्ययन कराना।
CO3	:	टे फिल्म टेलीवीजन, वीडियो दृश्य माध्यमों में भाषा की प्रकृत सामग्री का सामंजस्य पटकथा लेखन संवाद लेखन साहित्य की विधाओं का दृश्य माध्यमों का रूपान्तरण विज्ञापन की भाषा आदि की उपयोगिता को विद्यार्थियों को समझाना है।
CO4	:	अनुवाद का स्वरूप क्षेत्र एवं प्रविधि और हिन्दी की प्रयोजनीयता में अनुवाद की भूमिका को स्पष्ट करना एवं उसके स्वरूपों का अध्ययन कराना।
CO5	:	जनसंचार माध्यमों का अनुवाद, कार्यालयीन हिन्दी अनुवाद, विज्ञापन में अनुवाद, वैचारिक साहित्य का अनुवाद, अनुवाद के माध्यम से देश–विदेश की भाषाओं को अनुवादित कर समस्त राष्ट्र को एक संस्कृति एवं एक सूत्र में बाधने के प्रयास की ओर विद्यार्थियों को जोड़ना एवं उसकी उपयोगिता को समझाना।

हिन्दी विभाग

अवधेश प्रताप सिंह विश्वविद्यालय, रीवा (म.प्र.)

पाठ्यक्रम संरचना

(C.B.C.S.)

एम.ए. हिन्दी सेमेस्टर तृतीय

सेमेस्टर–III :

क्र.	पाठ्यक्रम कोड	पाठ्यक्रम का शीर्षक	क्रेडिट	अधिकतम अंक		कुल	न्यूनतम अर्हता अंक	
				लिखित अंक	मौखिकी अंक		लिखित अंक	मौखिकी अंक
1.	**CC-301**	आधुनिक हिन्दी काव्य और उसका इतिहास	04	60	40	100	21	14
2.	**CC-302**	भाषा विज्ञान एवं हिन्दी भाषा	04	60	40	100	21	14
3.	**CC-303**	हिन्दी साहित्य का इतिहास	04	60	40	100	21	14
4.	**GE-304**	वैकल्पिक प्रश्न–पत्र (सूरदास, तुलसीदास, बघेली भाषा और उसका इतिहास)	04	60	40	100	21	14
		कुल कोर्स क्रेडिट	16	240	160	400	–	–

(CC-301)

क्रेडिट : 04	अधिकतम अंक	न्यूनतम प्राप्तांक
लिखित अंक	60	21
सतत् मूल्यांकन अंक	40	14

उद्देश्य :– उन्नीसवीं शती के उत्तरार्द्ध से अध्यावधि तक की संवेदनाएँ, भावनाएँ एवं नूतन विचार सारणियाँ इसमें अभिव्यक्त हुई हैं। अतः संवेदना तथा ज्ञानक्षितिज के विस्तार के लिए इसका अध्ययन अत्यंत आवश्यक एवं प्रासंगिक है।

पाठ्य विषय :–

इकाई–01 : व्याख्यांश –

1. मैथिलीशरण गुप्त : साकेत (नवम् सर्ग)
2. जयशंकर प्रसाद : कामायनी (चिंता, श्रद्धा एवं इडा सर्ग)
3. सूर्यकांत त्रिपाठी निराला : निर्धारित संकलन–राग विराग (संपादक रामविलास शर्मा) में संकलित कविताएँ। राम की शक्ति पूजा, सरोज स्मृति एवं कुकुरमुत्ता।

इकाई–02 :

मैथिलीशरण गुप्त, जयशंकर प्रसाद एवं निराला से संबंधित समीक्षात्मक प्रश्न (एक)

इकाई–03 :

आधुनिक हिन्दी काव्य (छायावाद तक) की प्रमुख प्रवृत्तियाँ, इतिहास और प्रमुख कवि

इकाई–04 :

लघुउत्तरीय प्रश्न :– (दो)

द्रुतपाठ से निर्धारित कवि जगन्नाथदास रत्नाकर अयोध्या सिंह उपाध्याय हरिऔध, महादेवी वर्मा और बालकृष्ण शर्मा 'नवीन' से संबंध दो लघुउत्तरीय प्रश्न।

इकाई–05 :

वस्तुनिष्ठ प्रश्न (सम्पूर्ण पाठ्यक्रम से)

संदर्भ ग्रंथ :–

1. हिन्दी साहित्य का इतिहास, लेखक डॉ. रामचन्द्र शुक्ल, प्रकाशक राजकमल प्रकाशन।
2. आधुनिक हिन्दी काव्य और कवि, लेखक डॉ. रामचन्द्र तिवारी, प्रकाशक नया साहित्य प्रकाशन इलाहाबाद।
3. कामायनी की टीका, लेखक श्री विश्वम्भर 'मानव', प्रकाशक लोकभारती प्रकाशन, इलाहाबाद।
4. निराला और अपरा, लेखन डॉ. राजेश्वर प्रसाद चतुर्वेदी, प्रकाशक विनोद पुस्तक मंदिर, आगरा।
5. साकेत की टीका, लेखक ओम प्रकाश सिंहल, प्रकाशन हिन्दी साहित्य संसार, दिल्ली।

पाठ्यक्रम सीखने के परिणाम : इस पाठ्यक्रम का अध्ययन करने के बाद छात्र सक्षम होंगे :–

CO1	:	उन्नीसवीं शती के उत्तरार्द्ध से अध्यावधि तक की संवेदनाओं, भावनाओं, नूतन विचारों एवं ज्ञानक्षितिज के विस्तार को दृष्टिगत करते हुए आधुनिक हिन्दी काव्य का अध्ययन करना।
CO2	:	काव्य में नारी विषयक उदासीनता का अध्ययन करते हुए गुप्त जी के साकेत महाकाव्य में उर्मिला की स्थिति को स्पष्ट करना और इस तथ्य को समझना की साकेत का नवम् सर्ग साकेत की हृदयस्थली क्यों हैं?
CO3	:	छायावाद के प्रवेश को जानना और प्रसाद, निराला की कविताओं में तत्कालीन समय के समाज का अध्ययन करना। शुक्ल जी द्वारा छायावाद पर लगाए आक्षेपों और उसके बचाव में कवियों के आलोचनात्मक ग्रंथ लिखने की परम्परा का अध्ययन करना।
CO4	:	छायावाद पर पश्चिम के स्वच्छंदतावाद का क्या प्रभाव पड़ा; और छायावादी काव्य ने भाषा का एक मानक रूप कैसे स्थिर किया इस बात का अध्ययन करते हुए प्रतीकों और बिम्बों के प्रवेश को हिन्दी साहित्य के परिप्रेक्ष्य में समझना।
CO5	:	ब्रजभाषा के अवसान और खड़ी बोली हिन्दी के उत्थान को आधुनिक काव्य के परिप्रेक्ष्य में समझना।

(CC-302)

क्रेडिट : 04	अधिकतम अंक	न्यूनतम प्राप्तांक
लिखित अंक	60	21
सतत् मूल्यांकन अंक	40	14

उद्देश्य :– साहित्य आद्यंत एक भाषिक निर्मित है। साहित्य के गम्भीर अध्ययन के लिए भाषिक व्यवस्था का सुस्पष्ट सर्वांगीण ज्ञान अपरिहार्य है।

पाठ्य विषय :–

इकाई–01 :

भाषा और भाषा विज्ञान–भाषा की परिभाषा और अभिलक्षण, भाषा–व्यवस्था और भाषा–व्यवहार, भाषा संरचना और भाषिक–प्रकार्य। भाषा विज्ञान स्वरूप एवं व्याप्ति, अध्ययन की दिशाएँ–वर्णनात्मक, ऐतिहासिक और तुलनात्मक।

इकाई–02

स्वप्न प्रक्रिया–स्वप्न विज्ञान का स्वरूप और शाखाएँ, वांगयंत्र और उनके कार्य स्वन की अवधारणा और स्वनों का वर्गीकरण, स्वन–गुण, स्वनिक–परिवर्तन। स्वनिम विज्ञान का स्वरूप, स्वनिम की अवधारणा, स्वनिम में भेद, स्वनिमिक–विश्लेषण।

इकाई–03 :

व्याकरण–रूपविज्ञान का स्वयप और शाखाएँ, रूपिम की अवधारणा और भेद मुक्त–आबद्ध, अर्थदर्शी और संबंधदर्शी, संबंधदर्शी भेद और प्रकार। वाक्य की अवधारणा, अभिहितान्वयवाद और अन्विताभिधानवाद, वाक्य के भेद, वाक्य–विश्लेषण, निकटस्थ अवयव विश्लेषण, गहन–संरचना और बाह्य संरचना।

इकाई–04

अर्थविज्ञान–अर्थ की अवधारणा, शब्द और अर्थ संबंध, पर्यायता, अनेकार्थता, विलोमता, अर्थ प्राप्ति के साधन, अर्थ परिवर्तन।

इकाई–05

साहित्य और भाषाविज्ञान–साहित्य में अध्ययन में भाषाविज्ञान के अंगों की अपयोगिता।

संदर्भ ग्रंथ :–

1. भाषा–विज्ञान, लेखक डॉ. भोलानाथ तिवारी, प्रकाशक किताब महल प्राइवेट लिमिटेड, इलाहाबाद।
2. आधुनिक भाषा विज्ञान, लेखक डॉ. विवेक शंकर, प्रकाशक राजस्थान हिन्दी ग्रंथ अकादमी।
3. भाषा विज्ञान की भूमिका, लेखक आचार्य देवेन्द्रनाथ शर्मा, प्रकाशक राधाकृष्ण प्रकाशन, नई दिल्ली।
4. भाषा विज्ञान सिद्धांत और स्वरूप, डॉ. जितराम पाठक, अनुपम प्रकाशन पटना।

पाठ्यक्रम सीखने के परिणाम : इस पाठ्यक्रम का अध्ययन करने के बाद छात्र सक्षम होंगे :–

CO1	:	विद्यार्थियों को साहित्य के गम्भीर अध्ययन के लिए भाषिक व्यवस्था का सुस्पष्ट सर्वांगीण ज्ञान से अवगत कराना।
CO2	:	भाषा और भाषा विज्ञान का अध्ययन की दिशाएँ–वर्णनात्मक ऐतिहासिक और तुलनात्मक रूप में करना।
CO3	:	स्वन विज्ञान का स्वरूप और शाखाएँ, वांगयंत्र और उनके कार्यों को परखना।
CO4	:	विद्यार्थियों को अर्थविज्ञान, अर्थ परिवर्तन की अवधारणा से परिचित कराना।
CO5	:	साहित्य और भाषा विज्ञान साहित्य में अध्ययन में भाषा विज्ञान के अंगों की उपयोगिता को समझना।

(CC-303)

क्रेडिट : 04	अधिकतम अंक	न्यूनतम प्राप्तांक
लिखित अंक	60	21
सतत् मूल्यांकन अंक	40	14

उद्देश्य :– साहित्य के इतिहास का परिचय, हिन्दी साहित्य के इतिहास लेखन की परम्परा और पुनर्लेखन के ज्ञान हेतु यह प्रश्न–पत्र अनिवार्य है।

पाठ्य विषय :–

इकाई–01 :

हिन्दी साहित्य के इतिहास लेखन की परम्परा और साहित्येतिहास के पुनर्लेखन की समस्याएँ।

इकाई–02

हिन्दी साहित्य के आदिकाल की पृष्ठभूमि, साहित्यक प्रवृत्तियाँ, काव्याधाराएँ, गद्य साहित्य, प्रतिनिधि रचनाकार और इनकी रचनाएँ।

इकाई–03 :

पूर्वमध्यकाल भक्तिकाल की ऐतिहासिक पृष्ठभूमि, सांस्कृतिक चेतना एवं भक्ति आंदोलन, विभिन्न काव्य धाराएँ तथा उनका विश्लेषण, प्रमुख निर्गुण संत कवि और प्रमुख सूफी कवियों का अवदान।

इकाई–04

राम काव्य और कृष्णकाव्य : प्रमुख कवि और उनका रचनागत वैशिष्ट्य।

इकाई–05

उत्तर मध्यकाल (रीतिकाल) की ऐतिहासिक पृष्ठभूमि, काल सीमा और नामकरण, विविध धाराएँ रीतिबद्ध, रीतिसिद्ध, रीतिमुक्त, प्रवृत्तियाँ और विशेषताएँ।

संदर्भ ग्रंथ :–

1. इतिहास और आलोचना–नामवर सिंह, राजकमल प्रकाशन, नई दिल्ली।
2. हिन्दी साहित्य का दूसरा इतिहास, डॉ. बच्चन सिंह, वाणी प्रकाशन, नई दिल्ली।
3. साहित्य और इतिहास दृष्टि, डॉ. मैनेजर पाण्डेय, वाणी प्रकाशन, नई दिल्ली।
4. हिन्दी साहित्य का इतिहास, डॉ. नगेन्द्र, वाणी प्रकाशन, नई दिल्ली।
5. साहित्य इतिहास और संस्कृति, शिवकुमार मिश्र, वाणी प्रकाशन।

पाठ्यक्रम सीखने के परिणाम : इस पाठ्यक्रम का अध्ययन करने के बाद छात्र सक्षम होंगे :–

CO1	:	भक्तिकाल की विशेषतायें, भक्ति के मार्ग और सूरदास के सखाभाव कृष्ण की भक्ति पर सगुण प्रेम की स्थापना आदि पर विद्यार्थियों को जानकारी प्रदान करना।
CO2	:	भक्ति और विनय के पदों के माध्यम से सूरदास के व्यक्तित्व और रचना धर्मिता पर जानकारी प्रदान कराना।
CO3	:	बाललीला, ब्रजलीला और राधाकृष्ण लीला के आधार पर वात्सल्य और श्रृंगार के रूपों का अध्ययन कराना।
CO4	:	सूर जन्मोंध रहे हैं यह आलाचकों के बीच संवाद का विषय रहा है। इसके माध्यम से जानकारी प्रदान करना।
CO5	:	सूर साहित्य के विविध आलोचकों और उनके द्वारा सूर साहित्य की श्रेष्ठता के आधारों को विद्यार्थियों को परिचित कराना।

(GE-304)

क्रेडिट : 04	अधिकतम अंक	न्यूनतम प्राप्तांक
लिखित अंक	60	21
सतत् मूल्यांकन अंक	40	14

उद्देश्य :– तुलसीदास का रामचरितमानस भारतीय जनमानस की कथा कहती है मर्यादा पुरुषोत्तम राम के चरित्र परिचय कराने के लिए यह प्रश्न–पत्र है।

पाठ्य विषय :–

व्याख्या हेतु निर्धारित – रामचरित मानस (बालकाण्ड, अयोध्याकाण्ड और उत्तरकाण्ड)

आलोचनात्मक प्रश्न – तुलसीदास की युगीन पृष्ठभूमि, जीवन, कृतित्व एवं रामचरित मानस से संबंधित होंगे।

संदर्भ ग्रंथ :–

1. रामचरितमानस, प्रकाशक गीता प्रेस, गोरखपुर।
2. गोस्वामी तुलसीदास, रामचंद्र शुक्ल, इण्डियन प्रेस प्रयागराज।
3. तुलसीदास, उदयभान सिंह, राधाकृष्ण प्रकाशन नई दिल्ली।
4. लोकवादी तुलसीदास, डॉ. विश्वनाथ त्रिपाठी, राधाकृष्ण प्रकाश नई दिल्ली।

पाठ्यक्रम सीखने के परिणाम : इस पाठ्यक्रम का अध्ययन करने के बाद छात्र सक्षम होंगे :–

CO1	:	हिन्दी साहित्य इतिहास लेखन की परम्परा और पुनर्लेखन के माध्यम से छात्र–छात्राओं को हिन्दी साहित्य के इतिहास से परिचित कराना एवं अध्ययन कराना।
CO2	:	आदिकाल की पृष्ठभूमि साहित्यिक प्रवृत्तियॉ काव्यधाराएँ गद्य साहित्य प्रतिनिधि रचनाकार और उनकी रचनाएँ एवं उनकी प्रमुख विशेषताओं से विद्यार्थियों को अवगत कराना।
CO3	:	भक्तिकाल की ऐतिहासिक पृष्ठभूमि सांस्कृतिक चेतना एवं भक्ति आंदोलन के माध्यम से निर्गुण संत एवं सगुण संतों का अध्ययन कर विद्यार्थियों को समरस्ता की ओर प्रेरित करना।
CO4	:	राम काव्य और कृष्ण काव्य के प्रमुख रचनाकारों और उनके काव्य के माध्यम से राम के चरित्र और श्री कृष्ण के चरित्र के माध्यम से समाज में नये आदर्श की स्थापना करना और विद्यार्थियों को सदमार्ग में चलने के लिए इनकी काव्य रचना का जैसे रामचरित मानस और सूर सागर का अध्ययन कर समाज एवं राष्ट्र में शांती स्थापित करने का मार्ग प्रसस्त करना।
CO5	:	रीतिकाल की ऐतिहासिक पृष्ठभूमि, काल सीमा और नामकरण विविध धाराएँ रीतिबद्ध, रीतिसिद्ध, रीतिमुक्त प्रवृत्तियॉ और विशेषताओं से विद्यार्थियों को अवगत कराना। केशव, बिहारी, देव, पद्माकर, घनानन्द की काव्य रचनाओं से विद्यार्थियों को अवगत कराना।

(GE-304)

क्रेडिट : 04	अधिकतम अंक	न्यूनतम प्राप्तांक
लिखित अंक	60	21
सतत् मूल्यांकन अंक	40	14

उद्देश्य :– भारत एक कृषि प्रधान देश है। सूरदास कृषक संस्कृति एवं पशुपालन संस्कृति के कवियों में वरेण्य हैं। वे प्रेम और वात्सल्य के अद्भुत चितेरे हैं। विद्यार्थियों को इस संवेदनों से परिचित कराने के लिए यह वैकल्पिक प्रश्न–पत्र निर्धारित है।

ग्रंथ 'सूरसागर सार' संपादक – डॉ. धीरेन्द्र वर्मा

निर्धारित पद (प्रारम्भ से मथुरागमन के पूर्व तक) आलोचनात्मक प्रश्न सूर साहित्य की पृष्ठभूमि, जीवन, रचनाएँ तथा निर्धारित अंश से सम्बद्ध पूछे जाएँगे।

संदर्भ ग्रंथ :–

1. सूरदास, लेखक आचार्य रामचन्द्र शुक्ल, प्रकाशक नागरी प्राचारिणी सभा, वाराणसी।
2. भक्ति आंदोलन और सूरदास का काव्य, मैनेजर पाण्डेय, वाणी प्रकाशन नई दिल्ली।
3. सूरदास : मूल्यांकन पुनर्मूल्याकन, लेखक परमानन्द श्रीवास्तव, प्रकाशक अभिव्यक्ति प्रकाशन, इलाहाबाद।
4. सूर साहित्य, हजारी प्रसाद द्विवेदी, राजकमल प्रकाशन नई दिल्ली।

(GE-304)

क्रेडिट : 04	अधिकतम अंक	न्यूनतम प्राप्तांक
लिखित अंक	60	21
सतत् मूल्यांकन अंक	40	14

उद्देश्य :– आज वैश्वीकरण का जमाना है। 'वसुधा' कुटुम्ब हो रही है परन्तु बिना जमीन पर खड़े हुए आकाश को नहीं निहारा जा सकता। बिना 'लोकल' के हम 'ग्लोबल' की कल्पना नहीं कर सकते। विद्यार्थियों को उनकी जमीन, बोली–बानी भाषा के मर्म से परिचित कराने के लिए जनपदीय भाषा और साहित्य के अध्ययन हेतु 'बघेली भाषा एवं साहित्य के अन्तर्गत मानवता की मातृभाषा कविता का यह प्रश्न–पत्र रखा गया है।

इकाई-01 :-

बघेली तथा हिन्दी की अन्य बोलियाँ, बघेली का उद्भव और विकास, बघेली का व्याकरण।

इकाई-02 :- **बघेली कविता**

बैजनाथ पाण्डेय 'बैजू', सैफूद्दीन सिद्दिकी 'सैफू', शम्भूनाथ द्विवेदी 'शम्भू काकू', गोमती प्रसाद 'विकल', अमोल वटरोही, अनूप अशेष।

पाठ्यपुस्तक–बघेली भाषा एवं साहित्य–संपादक डॉ. प्रतिभा चतुर्वेदी, मध्यप्रदेश हिन्दी ग्रंथ अकादमी, भोपाल।

इकाई-03 :- उपर्युक्त कवियों से संबंधित समीक्षात्मक प्रश्न।

इकाई-04 :- बघेली लोक साहित्य के विशेषताएँ।

इकाई-05 :- द्रुतपाठ के कवि (कालिका प्रसाद त्रिपाठी, डॉ. रामसिया शर्मा, शिवशंकर मिश्र 'सरस', डॉ. कैलाश तिवारी, बाबूलाल दाहिया, सुधाकांत मिश्रा 'बेलाला', रामनरेश तिवारी 'निष्ठुर', सुदामा शरद, सुधाकांत मिश्रा 'बेलाला',)।

पाठ्यपुस्तक–बघेली भाषा और साहित्य संपादक डॉ. सत्येन्द्र शर्मा, प्रकाशकः मध्यप्रदेश हिन्दी ग्रंथ अकादमी, भोपाल।

संदर्भ ग्रंथ :–

1. नेउतहरी–सैफूद्दीप सिद्दिकी 'सैफू'।
2. चिरई चुनगुन–डॉ. भागवत प्रसाद शर्मा, कुमार प्रकाशन रीवा।
3. सेंदूर केर बोझ–श्रीमती रश्मि शुक्ला, गणेश प्रकाशन मंदिर प्रयागराज।
4. थोर का सुख–डॉ. चंद्रिका प्रसाद 'चंद्र', रूपांकन प्रकाशन इन्दौर।
5. फूलमती–योगेश त्रिपाठी, उत्कर्ष प्रकाशन 142 शाक्यपुरी, कंकर खेड़ा मेरठ उत्तरप्रदेश।
6. लोकगीतों का तुलनात्मक अध्ययन–(बुन्देलखण्ड एवं बघेलखण्ड के संदर्भ में), डॉ. विनोद त्रिपाठी, साहित्य वाणी प्रयागराज।

हिन्दी विभाग

अवधेश प्रताप सिंह विश्वविद्यालय, रीवा (म.प्र.)

पाठ्यक्रम संरचना

(C.B.C.S.)

एम.ए. हिन्दी सेमेस्टर चतुर्थ

सेमेस्टर–IV :

क्र.	पाठ्यक्रम कोड	पाठ्यक्रम का शीर्षक	क्रेडिट	अधिकतम अंक		कुल	न्यूनतम अर्हता अंक	
				लिखित अंक	मौखिकी अंक		लिखित अंक	मौखिकी अंक
1.	**CC-401**	आधुनिक हिन्दी काव्य और उसका इतिहास	04	60	40	100	21	14
2.	**CC-402**	भाषा विज्ञान एवं हिन्दी भाषा	04	60	40	100	21	14
3.	**CC-403**	हिन्दी साहित्य का इतिहास	04	60	40	100	21	14
4.	**GE-404**	वैकल्पिक प्रश्न–पत्र (सूरदास, तुलसीदास, बघेली भाषा और उसका इतिहास)	04	60	40	100	21	14
		कुल कोर्स क्रेडिट	16	240	160	400	–	–

(CC-401)

क्रेडिट : 04	अधिकतम अंक	न्यूनतम प्राप्तांक
लिखित अंक	60	21
सतत् मूल्यांकन अंक	40	14

उद्देश्य :– आधुनिक हिन्दी काव्य और उसके इतिहास से विद्यार्थियों को परिचित कराना। स्वतंत्रता आंदोलन और तत्पश्चात् स्वतंत्र्योत्तर भारत की गति दशा और दिशा के काव्य से परिचित कराना।

पाठ्य विषय :–

इकाई–01 : व्याख्यांश –

1. सुमित्रानंदन पंत–निर्धारित संकलन, रश्मिबंध में संकलित परिवर्तन, नौकाविहार, एक तारा, मौन निमंत्रण आ धरती कितना देती है।
2. सच्चिदानंद हीरानंद वात्स्यायन 'अज्ञेय', नदी के द्वीप, असाध्य वीणा, कलगी बाजरें की, परती का गीत।
3. गजानन माधव मुक्तिबोध, ब्रह्म राक्षस कम, मुझे कदम–कदम पर, लकड़ी का बना रावण।

इकाई–02 :

पंत, अज्ञेय और मुक्तिबोध से संबंध समीक्षात्मक प्रश्न

इकाई–03 :

छायावादोत्तर काव्य की प्रमुख प्रवृत्तियाँ, इतिहास और प्रमुख कवियों पर निबंधात्मक प्रश्न।

इकाई–04 :

लघुउत्तरीय प्रश्न :– (दो)

दुतपाठ से निर्धारित कवि हरिवंशराय बच्चन, भवानी प्रसाद मिश्र, श्री नरेश महेता, रघुवीर से संबंध दो लघुउत्तरीय प्रश्न।

इकाई–05 :

वस्तुनिष्ठ प्रश्न (सम्पूर्ण पाठ्यक्रम से)

संदर्भ ग्रंथ :–

1. हिन्दी साहित्य का इतिहास, लेखक डॉ. रामचन्द्र शुक्ल, प्रकाशक राजकमल प्रकाशन।
2. आधुनिक हिन्दी काव्य और कवि, लेखक डॉ. रामचन्द्र तिवारी, प्रकाशक नया साहित्य प्रकाशन इलाहाबाद।
3. छायावाद, डॉ. नामवर सिंह, प्रकाशक राजकमल प्रकाशन, नई दिल्ली।
4. आधुनिक कवि, विश्वम्भर 'मानव', रामकिशोर शर्मा, प्रकाशक लोकभारती प्रकाशन, इलाहाबाद।
5. सुमित्रानंदन पंत, डॉ. नगेन्द्र, नेशनल पब्लिशिंग हाउस, नई दिल्ली।

पाठ्यक्रम सीखने के परिणाम : इस पाठ्यक्रम का अध्ययन करने के बाद छात्र सक्षम होंगे :–

CO1	:	आधुनिक हिन्दी काव्य और उसके इतिहास से विद्यार्थियों को परिचित कराना।
CO2	:	स्वतंत्रता आंदोलन और तत्पश्चात् स्वंतत्र्योत्तर भारत की गति, दशा एवं दिशा के काव्य का अध्ययन करना।
CO3	:	पश्चिमी साहित्य के प्रभाव से हिन्दी साहित्य में आए विभिन्न वाद (प्रगतिवाद, प्रयोगवाद, बिम्बवाद, प्रतीकवाद) का अध्ययन करना।
CO4	:	तार सप्तक के बारे में जानकारी देते हुए तार सप्तक प्रमुख कवियों और उनके काव्य विषयों का अध्ययन करना।
CO5	:	आधुनिक काव्य में भारतेन्दु युग से नयी कविता और फिर समकालीन कविता तक आते–आते काव्य की भाषा, रूप, विषय में आए परिवर्तनों को जानना और समकालीन कविता में विभिन्न विमर्शों का अध्ययन करना।

(CC-402)

क्रेडिट : 04	अधिकतम अंक	न्यूनतम प्राप्तांक
लिखित अंक	60	21
सतत् मूल्यांकन अंक	40	14

उद्देश्य :– भाषा विज्ञान भाषा की वस्तुनिष्ठ अध्ययन प्रणाली के रूप में भाषिक ईकाईयों तथा भाषा संरचना के विभिन्न स्तरों पर उनके अन्तर्संबंधों के विन्यास को आलोकित कर न केवल अध्येता को भाषिक अर्द्धदृष्टि देता है। अपितु भाषा विषयक विवेचन के लिए एक निरूपक भाषा भी प्रदान करता है।

पाठ्य विषय :–

ईकाई–01 :

हिन्दी की ऐतिहासिक पृष्ठभूमि : प्राचीन भारतीय आर्य भाषाएँ–वैदिक तथा लौकिक संस्कृत और उनकी विशेषताएँ। मध्यकालीन भारतीय आर्य भाषाएँ–पालि, प्राकृत–शैरसेनी, अर्द्धमागधी, मागधी, अपभ्रंश और उनकी विशेषताएँ। आधुनिक भारतीय आर्यभाषाएँ और उनका वर्गीकरण।

इकाई–02 :

हिन्दी का भौगोलिक विस्तार : हिन्दी की उपभाषाएँ, पश्चिमी हिन्दी, पूर्वी हिन्दी, राजस्थानी, बिहारी तथा पहाड़ी और उनकी बोलियाँ। खड़ी बोली, ब्रज और अवधी की विशेषताएँ।

इकाई–03 :

हिन्दी का भाषिक स्वरूप : हिन्दी की स्वनिम व्यवस्था–खंड्य, खंड्येतर। हिन्दी शब्द रचना, उपसर्ग, प्रत्यय, समास। रूप रचना–लिंग, वचन और कारक–व्यवस्था के संदर्भ में हिन्दी के संज्ञा, सर्वनाम विशेषण और क्रिया रूप। हिन्दी वाक्य–रचना : पदक्रम और अन्विति।

इकाई–04 :

हिन्दी के विविध रूप : संपर्क भाषा, राष्ट्रभाषा, राजभाषा के रूप में हिन्दी, माध्यम–भाषा, संचार–भाषा, हिन्दी की साविधानिक स्थिति।

इकाई–05 :

हिन्दी में कम्प्यूटर सुविधाएँ : आँकड़ा–संसाधन और शब्द संसाधन, वर्तनी–शोधक, मशीनी अनुवाद, हिन्दी भाषा–शिक्षण।

देवनागरी लिपि : विशेषताएँ और मानकीकरण –

संदर्भ ग्रंथ :–

1. भाषा–विज्ञान, लेखक डॉ. भोलानाथ तिवारी, प्रकाशक किताब महल प्राइवेट लिमिटेड, इलाहाबाद।
2. आधुनिक भाषा विज्ञान, लेखक डॉ. विवेक शंकर, प्रकाशक राजस्थान हिन्दी ग्रंथ अकादमी।
3. भाषा विज्ञान की भूमिका, लेखक आचार्य देवेन्द्रनाथ शर्मा, प्रकाशक राधाकृष्ण प्रकाशन, नई दिल्ली।
4. भाषा विज्ञान सैद्धांतिक चिन्तन, रवीन्द्रनाथ श्रीवास्तव, राधाकृष्ण प्रकाशन दिल्ली।

पाठ्यक्रम सीखने के परिणाम : इस पाठ्यक्रम का अध्ययन करने के बाद छात्र सक्षम होंगे :–

CO1	:	विद्यार्थियों को भाषा विज्ञान भाषा की वस्तुनिष्ठ अध्ययन प्रणाली के रूप में भाषा संरचना के विभिन्न स्तरों पर प्रकाश डालना।
CO2	:	भाषा विषयक विवेचन के लिए एक निरूपक भाषा का भी अध्ययन करना।
CO3	:	प्राचीन भारतीय आर्य भाषाएँ, मध्यकालीन भारतीय आर्य भाषाओं का अध्ययन करना।
CO4	:	हिन्दी की उपभाषाएँ, पश्चिमी हिन्दी, पूर्वी हिन्दी, राजस्थानी, बिहारी तथा पहड़ी और उनकी बोलियों के बारे में समझना।
CO5	:	हिन्दी के विविध रूपों में संपर्क भाषा, राष्ट्रभाषा, राजभाषा के रूप में हिन्दी का अध्ययन करना।

(CC-403)

क्रेडिट : 04	अधिकतम अंक	न्यूनतम प्राप्तांक
लिखित अंक	60	21
सतत् मूल्यांकन अंक	40	14

उद्देश्य :– हिन्दी एम.ए. के विद्यार्थियों के लिए काव्य एवं कथा और उपन्यास सर्जना के इतिहास से परिचित होने के अनिवार्य है।

पाठ्य विषय :–

इकाई–01 :

आधुनिक काल :– आधुनिक काल की सामाजिक, राजनीतिक, आर्थिक एवं सांस्कृतिक पृष्ठभूमि, सन् 1857 ई. का प्रथम स्वाधीनता संग्राम और पुनर्जागरण।

भारतेन्दु युग :– प्रमुख साहित्यकार, रचनाएँ और साहित्यिक विशेषताएँ।

इकाई–02 :

द्विवेदी युग :– प्रमुख साहित्यकार रचनाएँ और साहित्यिक विशेषताएँ। हिन्दी स्वच्छंदतावादी चेतना का अग्रिम विकास, छायावादी काव्य, प्रमुख साहित्यकार, रचनाएँ और साहित्यिक विशेषताएँ।

इकाई–03 :

उत्तर छायावाद की विविध प्रवृत्तियाँ : प्रगतिवाद, प्रयोगवाद, नयी कविता। प्रमुख साहित्यकार, रचनाएँ और साहित्यिक विशेषताएँ।

इकाई–04 :

हिन्दी गद्य की प्रमुख विधाएँ : कहानी, उपन्यास, नाटक निबंध आदि।

इकाई–05 :

संस्मरण रेखाचित्र, जीवनी, आत्मकथा का विकास। हिन्दी आलोचना का उद्‌भव एवं विकास। स्त्री विमर्श और दलित विमर्श का परिचय।

संदर्भ ग्रंथ :–

1. हिन्दी साहित्य का इतिहास, रामचन्द्र शुक्ल
2. हिन्दी साहित्य का आलोचनात्मक इतिहास, डॉ. राम कुमार वर्मा
3. छायावाद, डॉ. नामवर सिंह
4. हिन्दी साहित्य बीसवीं शताब्दी, नंददुलारे वाजपेयी

पाठ्यक्रम सीखने के परिणाम : इस पाठ्यक्रम का अध्ययन करने के बाद छात्र सक्षम होंगे :–

CO1	:	विद्यार्थियों के लिए काव्य एवं कथा और उपन्यास सर्जना के इतिहास से परिचित कराना।
CO2	:	आधुनिक काल की सामाजिक, राजनैतिक, आर्थिक एवं सांस्कृतिक पृष्ठभूमि एवं सन् 1857 ई. का प्रथम स्वाधीनता और संग्राम पुनः जागरण काल के माध्यम से छात्र–छात्राओं को उस युग के साहित्यकारों और समाजसेवियों को परिचित कराना।
CO3	:	आचार्य महावीर प्रसाद द्विवेदी युग के प्रमुख साहित्यकारों एवं उनकी साहित्यिक विशेषताओं का अध्ययन कराना एवं स्वछंदतावादी चेतना का अग्रिम विकास छायावादी काव्य और प्रमुख साहित्यकार उनकी रचनाएँ इसके अध्ययन ने हिन्दी की शुद्ध परिनिष्ठित भाषा के साथ–साथ साहित्य सृजन से छात्र–छात्राओं को परिचित कराना।
CO4	:	प्रगतिवाद, प्रयोगवाद, नई कविता के माध्यम से नागार्जुन एवं केदारनाथ अग्रवाल की रचनाओं के माध्यम से युवाओं को छात्र–छात्राओं को राष्ट्र प्रेम एवं यथार्थ बोध का परिचय कराना।
CO5	:	संस्मरण रेखाचित्र, जीवनी, आत्मकथा का विकास हिन्दी आलोचना का उद्‌भव और विकास, स्त्री विमर्श और दलित विमर्श का परिचय एवं समाज में इनका अध्ययन के माध्यम से विद्यार्थियों में चेतना जाग्रत कराना।

(GE-404)

क्रेडिट : 04	अधिकतम अंक	न्यूनतम प्राप्तांक
लिखित अंक	60	21
सतत् मूल्यांकन अंक	40	14

उद्देश्य :– 'कवितावली' सिर्फ राम की कथा नहीं तत्कालीन समाज की धड़कन है। विनय पत्रिका भक्ति, आस्था अज्ञेर समर्पण का काव्य है। विद्यार्थियों के लिए यह परिचय यह आवश्यक है।

पाठ्य विषय :–

व्याख्या हेतु निर्धारित – कवितावली एवं विनय पत्रिका।

आलोचनात्मक प्रश्न – तुलसी की भक्ति, दर्शन तथा निर्धारित कृतियों से संबंधित होंगे।

संदर्भ ग्रंथ :–

1. रामचरितमानस, प्रकाशन गीता प्रेस, गोरखपुर।
2. तुलसीदास और उनकी कविता, रामनरेश त्रिपाठी, हिन्दी मंदिर प्रयागराज।
3. तुलसीदास, डॉ. राममूर्ति त्रिपाठी।
4. तुलसी के हिय हेरि, विष्णुकांत शास्त्री।

(GE-404)

क्रेडिट : 04	अधिकतम अंक	न्यूनतम प्राप्तांक
लिखित अंक	60	21
सतत् मूल्यांकन अंक	40	14

उद्देश्य :– सूरदास हिन्दी साहित्य के सूर्य है। हिन्दी के विद्यार्थियों के ज्ञान और संवेदना के विकास के लिए यह प्रश्न–पत्र आवश्यक है।

ग्रंथ 'सूरसागर सार' संपादक – डॉ. धीरेन्द्र वर्मा

निर्धारित पद (मथुरागमन से अंत तक) आलोचनात्मक प्रश्न सूर साहित्य की भक्ति, दर्शन, भ्रमरगीत आदि तथा सूरसागर के निर्धारित अंश से सम्बद्ध पूछे जाएँगे।

संदर्भ ग्रंथ :–

1. सूरदास, लेखक आचार्य रामचन्द्र शुक्ल, प्रकाशन नागरी प्राचारिणी सभा, वाराणसी।
2. भ्रमरगीत सार की टीका, लेखक डॉ. राजेश्वर प्रसाद चतुर्वेदी।
3. सूरदास, ब्रजेश्वर वर्मा, हिन्दी परिषद विश्वविद्यालय प्रयागराज।
4. सूरदास : मूल्यांकन पुनर्मूल्याकन, लेखक परमानन्द श्रीवास्तव, प्रकाशन अभिव्यक्ति प्रकाशन, इलाहाबाद।

पाठ्यक्रम सीखने के परिणाम : इस पाठ्यक्रम का अध्ययन करने के बाद छात्र सक्षम होंगे :–

CO1	:	निर्गुण और सगुण भक्ति में श्रेष्ठ कौन? सूरदास के मथुरागमन के बाद के पदों में विरह भावों की व्यंजना है। इन्हीं के माध्यम से सगुण भक्ति की स्थापना को विद्यार्थियों को परिचित कराना।
CO2	:	विरह प्रेम की कसौटी है निर्गुण ब्रह्म की साधना का उपदेश द्वारा गोपियों को इसकी जानकारी तथा गोपियों द्वारा प्रेममार्ग की महत्ता पर अपने चातुरी वचनों को प्रस्तुत करना।
CO3	:	विरह के पदों को भ्रमरगीत नाम दिया गया है भ्रमरगीत के माध्यम से प्रेम में विरह की आकुलता के साथ श्रेष्ठता के दर्शन भी गोपियों द्वारा तर्क संगत उलाहने, व्यंग्य वचन आदि की जानकारी प्रदान करना।
CO4	:	कृष्ण का वृत्त से लगाव और ब्रज का तथा ब्रजवासी खाशतोर पर गोपियों का कृष्ण से लगाव एक मानवी संसार सृजित होता है। इसका परिज्ञान विद्यार्थियों को देना।
CO5	:	विरह का विषमान करना इतना सरल नहीं संघर्ष त्याग, प्रेम, मनोभावों का परिमार्जन आदि इन पदों में संग्रहित है। इन्हीं का महत्व विद्यार्थियों को बतलाना।

(GE-404)

क्रेडिट : 04	अधिकतम अंक	न्यूनतम प्राप्तांक
लिखित अंक	60	21
सतत् मूल्यांकन अंक	40	14

उद्देश्य :– गद्य को कवियों की कसौटी कहा गया है। स्थानीय भाषा एवं साहित्य के अन्तर्गत विद्यार्थियों को जनपदीय भाषा के गद्य से परिचित कराने के लिए बघेली नाटक और कहानी का यह प्रश्न–पत्र लिखा गया है।

इकाई-01 :- बघेली कहानी

1. सैफूद्दीन सिद्दिकी 'सैफू' – नेउतहरी
2. डॉ. भागवत प्रसाद शर्मा – चिरई चुनगुन
3. श्रीमती रश्मि शुक्ला – सेंदुर केर बोझ
4. डॉ. चंद्रिका प्रसाद 'चंद्र' – थोर का सुख
5. डॉ. रामसिया शर्मा – उपरेहित

इकाई-02 :- बघेली नाटक

योगेश त्रिपाठी – 'फूलमती'

इकाई-03 :-

उपर्युक्त लेखकों से संबंधित अलोचनात्मक प्रश्न।

इकाई-04 :-

बघेली लोकगीत, लोक कथाएँ, लोकनाट्य से संबंधित लघु उत्तरीय प्रश्न।

इकाई-05 :-

द्रुतपाठ के लेखक (डॉ. चंद्रिका प्रसाद 'चंद्र', डॉ. रामसिया शर्मा, श्रीमती रश्मि शुक्ला, डॉ. भागवत प्रसाद शर्मा, सैफूद्दीन सिद्दिकी 'सैफू') संबंधित लघुउत्तरी प्रश्न।

संदर्भ ग्रंथ :–

1. बघेली भाषा और साहित्य–डॉ. भगवती प्रसाद शुक्ल, प्रकाशक साहित्य भवन प्रयागराज।
2. बघेली साहित्य का इतिहास–डॉ. आर्या प्रसाद त्रिपाठी, साहित्य अकादमी मध्यप्रदेश।
3. बघेली संस्कृति और साहित्य–गोमती प्रसाद 'विकल', प्रकाशक राजभाषा एवं संस्कृत संचालनालय, मध्यप्रदेश।
4. बघेली भाषा एवं साहित्य–डॉ. प्रतिभा चतुर्वेदी, मध्यप्रदेश हिन्दी ग्रंथ अकादमी, भोपाल।
5. सोन एवं रेवा के स्वर–संपा. डॉ. कमला प्रसाद, सेवाराम त्रिपाठी, बाबूलाल दाहिया, शिवशंकर मिश्र 'सरस', राजभाषा संचालनालय, भोपाल।
6. बघेलखण्ड के लोकगीत–लखन प्रताप सिंह उरगेस, मध्यप्रदेश आदिवासी लोक कला परिषद भोपाल।
7. हम तोंहार विरवा–कैलाश तिवारी, कुमार प्रकाशन रीवा।
8. बघेली व्याकरण–डॉ. सूर्यभान सिंह, प्रकाशन हिन्दी ग्रंथ अकादमी भोपाल।
9. रनजीत राय–गोमती प्रसाद 'विकल', वर्क प्रिन्टिंग प्रेस, रीवा।

अवधेश प्रताप सिंह विश्वविद्यालय, रीवा (म.प्र.)

(अध्यादेश 11, पी–एच.डी. 2016)

पी–एच.डी. कोर्स वर्क

पाठ्यक्रम–संरचना

हिन्दी

2022–23

(अध्ययन मण्डल, हिन्दी, अवधेश प्रताप सिंह विश्वविद्यालय द्वारा मान्य)

अवधेश प्रताप सिंह विश्वविद्यालय, रीवा (म.प्र.)

अध्यादेश 11 पी–एच.डी. अनुसार पी–एच.डी. कोर्स वर्क

2018–19 के पाठ्यक्रम की रूपरेखा

पेपर कोड	सैद्धान्तिक प्रश्न–पत्र का नाम	क्रेडिट	अधिकतम अंक सैद्धांतिक+आंतरिक मूल्यांकन	न्यूनतम उत्तीर्णांक अंक
पी–एच.डी. 101	शोध प्रविधि	04	100 (80+20)	55
पी–एच.डी. 102	संबंधित क्षेत्र में प्रकाशित शोध की समीक्षा	03	100	55
पी–एच.डी. 103	कम्प्यूटर एप्लीकेशन	03	100 (80+20)	55
पी–एच.डी. 104	विशेष प्रश्न–पत्र (नाटक और रंगमंच)	03	100 (80+20)	55
पी–एच.डी. 105	बहुग्राही विषय गौखिकी	03	100	55
	योग क्रेडिट	16		

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पी-एच.डी. (हिन्दी)
पी-एच.डी. 101 : शोध प्रविधि

सैद्धान्तिक प्रश्न-पत्र पूर्णांक : 80
उत्तीर्ण अंक : 55
समय : 03 घंटे

प्रश्न-पत्र बनाने वालों से निवेदन है/अपेक्षा की जाती है कि प्रश्न-पत्र में 10 प्रश्न बनाने हैं। जिसमें 05 प्रश्न हल किये जाने हैं। सभी प्रश्न समान 16 अंकों के हैं। प्रत्येक यूनिट से 01 प्रश्न हल करना अनिवार्य है।

इकाई-एक : शोध प्रविधि –

शोध प्रविधियाँ और उनका परिचय, विविध क्षेत्रों की शोध प्रविधियाँ, समाज विज्ञान, मानविकी और विज्ञान की शोध प्रविधियों का परिचयात्मक तथा तुलनात्मक अध्ययन।

इकाई-दो : शोध के विविध रूप –

शोध का अर्थ, विस्तार, अवधारणा, शोध के पर्याय, अर्थ भेद, अनुसंधान के तत्व, अनुसंधान का प्रयोजन, हिन्दी अनुसंधान का विकास, साहित्यिक अनुसंधान की विशेषताऐं।

इकाई-तीन : अनुसंधान की पद्धतियाँ –

ऐतिहासिक कालखण्ड परक पद्धति, सर्वेक्षण परक पद्धति, समीक्षा परक पद्धति पाठालोचन, सापेक्षिक या तुलनात्मक पद्धति, शास्त्रीय या सैद्धांतिक शोध पद्धति, भाषा वैज्ञानिक पद्धति, पाठालोचनपरक पद्धति, वर्गमूलक पद्धति, साक्षात्कार पद्धति।

इकाई-चार : शोध प्रबंध लेखन –

शोध लेखन की सैद्धांतिक एवं व्यावहारिक समस्यायें, विषय चयन, सामग्री संकलन, लघुशोध एवं शोध प्रबंध में अंतर, शोधार्थी और निर्देशक की योग्यता, शोध प्रबंध की भूमिका, उपसंहार, मानक आधार एवं संदर्भ ग्रंथ सूची, प्रादर्श अनुक्रमणिका।

इकाई-पाँच : रचना और आलोचना –

रचना प्रक्रिया के चरण, रचनाकार व्यक्तित्व निर्माण के हेतु, अध्ययन और चिन्तन का महत्व, रचना में अभ्यास की भूमिका, रचना भाषा, सामान्य भाषा

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संदर्भ ग्रंथ :–

1. अनुसंधान के मूल तत्व – सं. डॉ. विश्वनाथ प्रसाद क.मु. विद्यापीठ आगरा।
2. शोध प्रविधि – डॉ. विनय मोहन शर्मा, नेशनल पब्लिशिंग हाउस नई दिल्ली।
3. नवीन शोध विज्ञान – डॉ. तिलक सिंह, प्रकाशन संस्थान, दिल्ली।
4. हिन्दी शोध संदर्भ और इतिहास – डॉ. जोगेश कौर, राजेश प्रकाशन दिल्ली।
5. संस्कृति के चार अध्याय – रामधारी सिंह दिनकर, उदयांचल प्रकाशन, पटना।
6. आई.ए. रिचर्डस के काव्य सिद्धान्त – शुभदत्त झा, भारती भवन पटना।
7. साहित्य शास्त्र – वंशबल देश पाण्डे, पापुलर बुक डिपो, बम्बई।
8. जनवादी समझ और साहित्य – रामनारायण शुक्ल, बनारस विश्वविद्यालय प्रकाशन।
9. साहित्य का समाजशास्त्र – श्री राम मेहरोत्रा, रचना प्रकाशन, वाराणसी।
10. भारतीय साहित्य की समस्याएँ – डॉ. रामविलास शर्मा, वाणी प्रकाशन दिल्ली।
11. शैली विज्ञान – डॉ. नगेन्द्र
12. रीति विज्ञान – विद्यानिवास मिश्र
13. कला और संस्कृति तथा अन्य निबंध – वासुदेव शरण अग्रवाल, साहित्य भवन, इलाहाबाद।
14. सौन्दर्य तत्व – अनु. आनन्द प्रकाश दीक्षित, सुरेन्द्रनाथ दास गुप्त, भारतीय भण्डार प्रयाग।
15. भारतीय साहित्य शास्त्र – बल्देव प्रसाद उपाध्याय, शारदा मंदिर वाराणसी।
16. भारतीय मूर्तिकला – रामकृष्ण दास, राजकमल प्रकाशन नई दिल्ली।
17. संगीतज्ञ कवियों की हिन्दी रचनाएँ – नर्मदेश्वर चतुर्वेदी, साहित्य भवन इलाहाबाद।
18. हिस्ट्री आफ फाइन आर्ट्स इन इण्डिया – वी. स्मिथ।
19. शोध प्रविधि – डॉ. रामकुमार खंडेलवाल एवं डॉ. चन्द्रभान रावत।
20. साहित्यिक अनुसंधान – डॉ. रामेश्वर पाण्डेय
21. अनुसंधान – प्रविधि और प्रक्रिया – डॉ. विनय कुमार पाठक
22. काव्य रचना प्रक्रिया – कुमार विमल
23. आलोचना भी रचना है – काशीनाथ सिंह
24. रचना और आलोचना की द्वन्द्वात्मकता–कमला प्रसाद

पूर्णांक : 100

उत्तीर्ण अंक : 55

पी–एच.डी. 102 : संबंधित क्षेत्र में प्रकाशित–शोध सामग्री की समीक्षा

- हिन्दी साहित्य के इतिहास में प्राचीन से लेकर अध्यतन विधायों के रचनाकारों की रचनाओं, प्रकाशित शोध पत्रिकाओं, विशिष्ट प्रकाशित कृति की शोध समीक्षा।

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पी–एच.डी. (हिन्दी)
पी–एच.डी. 103 : कम्प्यूटर एप्लीकेशन

सैद्धान्तिक प्रश्न–पत्र पूर्णांक : 80

आंतरिक मूल्यांकन : 20

उत्तीर्ण अंक : 55

समय : 03 घंटे

प्रश्न–पत्र बनाने वालों से निवेदन है/अपेक्षा की जाती है कि प्रश्न–पत्र में 10 प्रश्न बनाने हैं। जिसमें 05 प्रश्न हल किये जाने हैं। सभी प्रश्न समान 16 अंकों के हैं। प्रत्येक यूनिट से 01 प्रश्न हल करना अनिवार्य है।

इकाई :– 01 : कम्प्यूटर का परिचय

कम्प्यूटर का इतिहास, कम्प्यूटर की विशेषताएँ, वर्गीकरण, डिजिटल; एनालाग, हाईब्रिड, माइक्रो, मिनी, मेन फ्रेम एवं सुपर कम्प्यूटर, कम्प्यूटर प्रणाली के घटक एवं कम्प्यूटर का ब्लाक चित्र, इनपुट, आउटपुट एवं द्वितीयक संग्रह युक्तियाँ, हार्डवेयर एवं साफ्टवेयर की अवधारणा, उच्च स्तरीय एवं निम्न स्तरीय भाषाएँ, अनुवादक कम्पाइलर एवं इन्टरप्रेटर।

इकाई :– 02 : आपेरटिंग सिस्टम का परिचय

आवश्यकता, कार्य, कंट्रोल प्रोग्राम एवं जाब कंट्रोल प्रोग्राम का करेन्ट आपरेटिंग सिस्टम पर्सनल कम्प्यूटर के लिए प्रसिद्ध आपरेटिंग सिस्टम–एम.एस.डास एवं विन्डोस। डास के आन्तरिक एवं बाह्य कमाण्ड, बाह्य कमाण्ड–(ट्री, अनडिलीट, चेकडिस्क, एफडिस्क, एफसी, बेकअप, रिस्टोर, फॉरमेट, अनफारमैट, ज्वाइन) बैच और कोनफिग फाइल की अवधारणा, फिल्टरिंग पाइपिंग एवं रिडायरेक्टिंग।

इकाई :– 03 : विन्डोज का परिचय

प्रोग्राम मैनेजर, फाइल मैनेजर, कंट्रोल पैनल प्रिंट मैनेजर, पी.आई.एफ. एडिटर, एक अनुप्रयोग से दूसरे अनुप्रयोग में सूचना का आदान–प्रदान (ओ.एल.ई.)।

इकाई :– 04 : माइक्रोसाफ्ट आफिस का परिचय

आफिस मैनेजर, माइक्रो साफ्ट आफिस के साथ सूचना का आदान–प्रदान, जोड़ी एवं रखी गई सूचना को एडिट करना, माइक्रो साफ्ट आफिस के घटक–वर्ड, एक्सल एवं पावर प्वांइट, वर्ड के साथ शब्दो की प्रोसिंग, जैसे– अन्डू, रिडू, रिपीट, इर्न्सट टेक्ट, रिप्लेश

टेक्सट, टेक्ट की फार्मेटिंग करना, नये वर्ड डाक्यूमेंट की कापी अन्य वर्ड डाक्यूमेंट में करना, प्रिंटिंग प्रक्रिया, आटो फारमेट एवं आटो करेक्ट की प्रक्रिया।

इकाई :– 05 : सांख्यिकीय विश्लेषण का परिचय

आवृत्ति वितरण, माध्य, मध्यिका, बहुलक, प्रसरण, समाश्रयण, सहसंबंध, इन सब का प्रयोग एम.एस. एक्सल अथवा सामाजिक विज्ञान पैकेज के विशेष संदर्भ में।

संदर्भ ग्रंथ :–

- Taxali, R.K.,PC Software MadeSimple, TMH
- Sinha P.K., Computer Fundamentals, BPB
- Balaguruswamy, E., ANSIC, TMH
- Cowart, R., Mastering Windows 3.1, BPB
- Mansfield, R., The Compact Guide to MS-OFFICE, BPB
- शोध प्रविधि और कम्प्यूटर–डॉ. गिरिजाशंकर गौतम, छत्तीसगढ़ राज्य हिन्दी ग्रंथ अकादमी
- फंडामेंटल ऑफ कप्यूटर–डॉ. पी.के. सिन्हा
- फंडामेंटल ऑफ कप्यूटर–डॉ. बी. राम

पी–एच.डी. (हिन्दी)
पी–एच.डी. 104 : नाटक और रंगमंच

सैद्धान्तिक प्रश्न–पत्र पूर्णांक : 80

आंतरिक मूल्यांकन : 20

उत्तीर्ण अंक : 55

समय : 03 घंटे

प्रश्न–पत्र बनाने वालों से निवेदन है/अपेक्षा की जाती है कि प्रश्न–पत्र में 10 प्रश्न बनाने हैं। जिसमें 05 प्रश्न हल किये जाने हैं। सभी प्रश्न समान 16 अंकों के हैं। प्रत्येक यूनिट से 01 प्रश्न हल करना अनिवार्य है।

इकाई :– 01 : नाटक और रंगमंच का अंतः संबंध

इकाई :– 02 : हिन्दी रंगमंच : पृष्ठभूमि और परम्परा

- संस्कृत रंगमंच : रंग पद्धति एवं प्रस्तुतिकरण शैली
- लोक नाट्य : नौटंकी, संगीत, तमाशा, जात्रा, स्वांग आदि
- पारसी थियेटर
- हिन्दी रंगमंच

इकाई :– 03 : हिन्दी नाट्य चिन्तन :

भारतेन्दु हरिश्चन्द्र, जयशंकर प्रसाद, जगदीश चन्द्र माथुर, मोहन राकेश के संदर्भ में

इकाई :– 04 : पाश्चात्य रंग परम्परा :

ग्रीक थियेटर, स्वच्छन्दतावादी (यथार्थवादी विसंगत, ब्रेख्त पद्धति)

इकाई :– 05 : काव्य और ललित कलाएँ

काव्य और कला के संबंध में भारतीय एवं पश्चिमी अभिमत, काव्य एवं ललित कलाओं के अन्तर्सम्बन्ध, सौन्दर्यशास्त्र, साहित्य का समाजशास्त्र रचना और आलोचना।

पूर्व ग्रंथ :–

नाट्यशास्त्र की भारतीय परम्परा और दशरूपक – हजारी प्रसाद द्विवेदी

भारतीय रंगमंच – आद्य रंगाचार्य

भारतीय रंगमंच का विवेचनात्मक इतिहास – अशांत

पारसी हिन्दी रंगमंच – लक्ष्मीनारायण लाल

हिन्दी नाटक का उद्‌भव और विकास – दशरथ ओझा

भारतीय नाट्य साहित्य – डॉ. नगेन्द्र

रंगमंच – बलवंत गार्गी

रंगदर्शन – नेमिचन्द्र जैन

लोकधर्मी नाट्य परम्परा – जगदीश चन्द्र माथुर

हिन्दी नाट्यकारों के नाट्य सिद्धान्त – निर्मला हेगल

एबसर्ड नाट्य परम्परा – रामसेवक सिंह

हिन्दी रंगमंच का उद्‌भव और विकास – विश्वनाथ शर्मा

ड्रामा इन रूरल इण्डिया – जे.सी. माथुर

अभिनव नाट्य शास्त्र – सीताराम चतुर्वेदी

भारतीय और पाश्चात्य रंगमंच – सीताराम चतुर्वेदी

हिन्दी रंगमंच की भूमिका – लक्ष्मीनारायण लाल

साहित्य के समाजशास्त्र की भूमिका – मैनेजर पाण्डेय

हिन्दी आलोचना : शिखरों का साक्षात्कार – रामचंद्र तिवारी

रचना प्रक्रिया – ओम अवस्थी

एक साहित्यिक की डायरी – गजाजन माधव मुक्तिबोध

सौन्दर्यशास्त्र के तत्व – कुमार विकल

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Awadhesh Pratap Singh University

Rewa(M.P.)

Syllabus

B.A. (Hon's)Public Administration

Ist and IInd Semester System 2021-22

IIIrd and IVth Semester System 2022-23

Registrar

Awadhesh Pratap Singh University

Rewa (M.P.)

Programme Outcomes

B.A.(Hons.) Public Administration

CBCS PROGRAMME

OUTCOME

PO #	PROGRAMME OUTCOME
PO1	**Critical Thinking:** Take informed actions after discipline the dimensions that frame our political and philosophy check out the degree to which these nationality are state and nation and look at our ideas and decisions (intellectual, organizational and personal) from different political phenomena.
PO2	**Effective Communication:** Understanding write and listen clearly in person and political philosophies in English and in one Indian language and make meaning of the world by connecting people western and Indian political thinkers.
PO3	**Social Interaction:** General understanding of concepts of public administration elicit views of others, mediate disagreements and help reach conclusions in group settings.
PO4	**Effective Citizenship :** Cunctions different part of state and governments development and the ability to act with an administration to structures and governance in civic life through democratic society.
PO5	**Ethics:** Under different citizenship including civil society understand the their rights of your duties and leadership qualities for them.
PO5	**Environment and Sustainability :** Understand the Democracy grass level local and self government.
PO6	**Self-directed and Life-long Learning:** Opportunities of ability to Jobs in bureaucracy and life-long learning in the broadest context of socio UPSC and state services changes.

PROGRAMME SPECIFIC OUTCOME

B.A.(Hons.) Public Administration

PSO #	PROGRAMME SPECIFIC OUTCOME
PSO 1	Understanding a functional politics as a social science discipline theoretical and practical aspects.
PSO 2	General understanding of political philosophies and western and Indian political thinkers, analytical , synthetic, instrumental etc.
PSO 3	The program will provide ample opportunities of jobs to the students in bureaucracy, UPSC, state and other in services.
PSO 4	Provide opportunities for further studies, research and innovation.

B.A (Honours) Public Administration
Programme structure
(As per NEP 2020 & CBCS ordinance 14 A)
1st Year (1st & 2nd semester Programme)

COURSE CODE	TITLE	SEMESTER -1 COURSE TYPE	THEORY PAPER	INTERNAL ASSESSEMENT	MAXIMUM MARKS	CREDITS
101	Principle of Public Administration	Major	60	40	100	6
102	Principle of Political Science	Minor	60	40	100	6
103	Introduction of Personnel Management	GE	60	40	100	4
104	English	AE	60	40	100	4
		Semester total			400	20
		Comulative total			400	20

COURSE CODE	TITLE	SEMESTER -2 COURSE TYPE	THEORY PAPER	INTERNAL ASSESSEMENT	MAXIMUM MARKS	CREDITS
201	Administrative Theory-II	Major	60	40	100	6
202	National Movement and Constitutional Development-II	Minor	60	40	100	6
203	Human Right and Service Environment	GE	60	40	100	4
204	Environment	AE	60	40	100	4
		Semester total			400	20
		Comulative total			400	20

Part-A : Introduction			
Program : Certificate	Class : B.A. (Honour) Public Administration	Year : Ist Semester	Session : 2021-22

Subject : Public Administration		
1.	Course Code	101
2.	Course Title	Principles of Public Administration
3.	Course Type (Core)	Core Course
4.	Pre-requisite (if any)	To study this course, a student must have passed 12th class
5.	Course Learning Outcomes (CLO)	1. Awareness about the evolution and growth of the discipline of Public Administration. 2. Learn the basic principle and approaches of Public Administration. 3. Acquire knowledge about the structure and principles of organization.
6.	Credit Value	06
7.	Total Marks	Max. Marks : ..... Min. Passing Marks : .....

Part B-Content of the Course

Total No. of Lectures - Tutorials (in hours per week :		
Unit	Topics	No. of Lectures
1.	Introduction of Public Administration : Meaning, Nature, Scope and Importance of Public Administration. Evolution of Public Administration. New Public Administration. Public and Private Administration. Ecology of Public Administration.	
2.	Organization and its Structure : Meaning, Importance; Types of Organisation, Formal and Informal Organisation; Basis of Organisation (4Ps). Chief Executive; Line and Staff agencies.	
3.	Principles of Organisation : Hierarchy, Span of Control, Unity of Command. Centralization and Decentralization, Delegation, Supervision and Co-ordination.	
4.	Administrative Approaches : Classical approach, Bureaucratic approach. Scientific management approach (FW Taylor); Human Relations approach (Eltn Mayo)	
5.	Modern Approaches : Behavioural approach; System Approach ; Ecological approach (FW Riggs)	

Semester-I		
101	**Principle of Public Administration**	**MCH101**
Course Outcomes		
CO1	Understand General theoretical aspect of public administration	
CO2	Differentiate private with public administration.	
CO3	The causes of evaluation of new public administration.	
CO4	Process of accounting and auditing system in India.	
CO5	financial administration, budget.	

भाग – अ परिचय

कार्यक्रम : प्रमाण पत्र	कक्षा : बी.ए.आनर्स लोक प्रशासन	वर्ष : प्रथम सेमेस्टर	सत्र 2021–22

विषय : लोक प्रशासन

1.	पाठ्यक्रम का कोड	101
2.	पाठ्यक्रम का शीर्षक	लोक प्रशासन के सिद्धांत
3.	पाठ्यक्रम का प्रकार	कोर कोर्स
4.	पूर्व–अपेक्षा	इस पाठ्यक्रम का अध्ययन करने के लिए विद्यार्थी को कक्षा 12वीं उत्तीर्ण होना चाहिए।
5.	पाठ्यक्रम अध्ययन की परिलब्धियां (कोर्स लर्निंग आउटकम) (CLO)	1. विद्यार्थी स्वतंत्र विषय के रूप में लोक प्रशासन के विकास एवं वृद्धि से अवगत होगा। 2. लोक प्रशासन के आधारभूत सिद्धांतों एवं उपागमों के संबंध में जानकारी प्राप्त होगी। 3. संगठन की संरचना एवं सिद्धांतों का ज्ञान प्राप्त होगा।
6.	क्रेडिट मान	06
7.	कुल अंक	अधिकतम अंक ..... न्यूनतम उत्तीर्ण अंक : .....

भाग–ब पाठ्यक्रम की विषयवस्त

इकाई	विषय	व्याख्यान की संख्या
1.	लोक प्रशासन का परिचय : लोक प्रशासन का अर्थ, प्रकृति, क्षेत्र एवं महत्व। लोकप्रशासन का विकास, नवीन लोक प्रशासन, लोक प्रशासन और निजी प्रशासन, लोक प्रशासन का परिवेश	
2.	संगठन एवं उसकी संरचना : अर्थ, महत्व संगठन के प्रकार, औपचारिक एवं अनौपाचारिक संगठन, संगठन के आधार (4पी) मुख्य कार्यपालिका : सूत्र एवं स्टाफ अभिकरण	
3.	संगठन के सिद्धांत : पदसोपान, नियंत्रण का क्षेत्र, आदेश की एकता, केन्द्रीकरण एवं विकेंद्रीकरण, प्रत्यायोजन, पर्यवेक्षण और समन्वय	
4.	प्रशासनिक उपागम : शास्त्रीय उपागम, नौकरशाही उपागम, वैज्ञानिक प्रबंध उपागम (एफ डब्ल्यू टेलर), मानवीय संबंध उपागम (एलटन मेयो)	
5.	आधुनिक उपागम : व्यवहारवादी उपागम, व्यवथा उपागम, पारिस्थितिकीय उपागम : (रिग्स)	

Part-A : Introduction			
Program : Certificate	Class : B.A. (Honour) Public Administration	Year : Ist Semester	Session : 2021-22
Subject : Political Science			

1.	Course Code	102
2.	Course Title	Principles of Political Science
3.	Course Type (Core)	Minor Course
4.	Pre-requisite (if any)	To study this course, a student must have passed 12th class
5.	Course Learning Outcomes (CLO)	1. Awareness about the evolution and growth of the discipline of Political Science. 2. Learn the basic principle and approaches of Political Science . 3. Acquire knowledge about the structure and principles of organization.
6.	Credit Value	06
7.	Total Marks	Max. Marks : ..... Min. Passing Marks : .....

Part B-Content of the Course

Total No. of Lectures - Tutorials (in hours per week :		
Unit	Topics	No. of Lectures
1.	Political Science - Definition, Scope, Nature, Methodology. Traditional & Behavioural approach.	
2.	Relations of Political Science with other Social Science - History Economics & Sociology	
3.	State - Definition, Elements, Various theories of the origin of the State i.e. Divine, Social contract and Evolutionary (Historical) Theory, Nature of the state - Organic theory.	
4.	Welfare State, The concept of the sovereignty-meaning & definition, essential characteristics, Austin's Theory of Sovereignty, Pluralism.	
5.	Main concepts- Liberty, Equality, Rights (Human Rights). Social Justice, Law and Citizenship.	

102	Principle of Political Science	MCH102
Course Outcomes		
CO1	Understand meaning of definition of political theory	
CO2	Understand the various traditions and approaches of political theory.	
CO3	Understand multiple Games by which the idea of political community is debated.	
CO4	Understand various ways of theorizing the political science.	
CO5	Understand different concept such as democracy, liberty, justice, equality.	
CO6	Understand the significance of theorizing and of applying, theory in to practice.	

भाग – अ परिचय

कार्यक्रम : प्रमाण पत्र	कक्षा : बी.ए.आनर्स लोकप्रशासन	वर्ष : प्रथम सेमेस्टर	सत्र 2021–22

विषय : राजनीति विज्ञान

1.	पाठ्यक्रम का कोड	102
2.	पाठ्यक्रम का शीर्षक	राजनीति विज्ञान के सिद्धांत
3.	पाठ्यक्रम का प्रकार	माइनर कोर्स
4.	पूर्व–अपेक्षा	इस पाठ्यक्रम का अध्ययन करने के लिए विद्यार्थी को कक्षा 12वीं उत्तीर्ण होना चाहिए।
5.	पाठ्यक्रम अध्ययन की परिलब्धियां (कोर्स लर्निंग आउटकम) (CLO)	1. विद्यार्थी स्वतंत्र विषय के रूप में राजनीति विज्ञान के विकास एवं वृद्धि से अवगत होगा। 2. राजनीति विज्ञान के आधारभूत सिद्धांतों एवं उपागमों के संबंध में जानकारी प्राप्त होगी। 3. संगठन की संरचना एवं सिद्धांतों का ज्ञान प्राप्त होगा।
6.	क्रेडिट मान	06
7.	कुल अंक	अधिकतम अंक ..... न्यूनतम उत्तीर्ण अंक : .....

भाग–ब पाठ्यक्रम की विषयवस्त

इकाई	विषय	व्याख्यान की संख्या
1.	राजनीति विज्ञान, अर्थ, परिभाषा, प्रकृति और क्षेत्र, अध्ययन पद्धतियां, परम्परावादी एवं व्यवहारवादी उपागम	
2.	राजनीति विज्ञान का अन्य विज्ञान के साथ सम्बन्ध – इतिहास अर्थशास्त्र एवं समाजशास्त्र	
3.	राज्य – अर्थ, परिभाषा, राज्य के प्रमुख तत्व, राज्य की उपत्पत्ति के विभिन्न सिद्धांत – दैवी उत्पत्ति, सामाजिक समझौता एवं विकासवादी (ऐतिहासिक) सिद्धांत, सावयव सिद्धांत।	
4.	लोक कल्याणकारी राज्य, सम्प्रभुता – अर्थ, परिभाषा, लक्षमण, विविध प्रकार, आस्टिन का सम्प्रभुता सिद्धांत बहुलवाद।	
5.	प्रमुख्य अवधारणायें स्वतंत्रता, समानता, अधिकार सामाजिक न्याय, विधि और नागरिकता	

Part-A : Introduction			
Program : Certificate	Class : B.A. (Honour) Public Administration	Year : Ist Semester	Session : 2021-22

Subject : Public Administration		
1.	Course Code	103
2.	Course Title	Introduction to Personnel Management
3.	Course Type (Core)	Generic Elective
4.	Pre-requisite (if any)	To study this course, a student must have passed 12th class
5.	Course Learning Outcomes (CLO)	1. Knowledge regarding the origin and evaluation of Personnel Management will be acquired. 2. Leaning about the Constitutional and Structural Framework on which Personnel Management is based.
6.	Credit Value	04
7.	Total Marks	Max.Marks : ..... Min. Passing Marks : .....

Part B-Content of the Course

Total No. of Lectures - Tutorials (in hours per week :		
Unit	Topics	No.of Lectures
1.	a. Personnel Management - Meaning, Scope, Objectives and Subject Matter. b. Relationship of Personnel Management with other branches of social sciences.	
2.	a. Selection Procedure - Meaning, and Methods. b. Functions, Responsibilities and Qualifications of Personnel Manager.	
3.	a. Induction b. Promotion	
4.	a. Transfer b. Training and Development	
5.	a. Leadership b. Communication	

103	Introduction of Personnel Management	MCH103
Course Outcomes		
CO1	Integrated perspective on role of personnel management in modern business.	
CO2	Ability to plan human resources and implement, techniques of design.	
CO3	Competency to recruit, train and appraise the performance of employees.	
CO4	Rational design of compensation and salary administration.	
CO5	Ability to handle employee issues and evaluate the new trends in personnel management.	

भाग – अ परिचय

कार्यक्रम : प्रमाण पत्र	कक्षा : बी.ए.आनर्स लोकप्रशासन	वर्ष : प्रथम सेमेस्टर	सत्र 2021–22

विषय : लोक प्रशासन

1.	पाठ्यक्रम का कोड	103
2.	पाठ्यक्रम का शीर्षक	सेवीवर्गीय प्रबंध का परिचय
3.	पाठ्यक्रम का प्रकार	जेनेरिक इलेक्टिव
4.	पूर्व–अपेक्षा	इस पाठ्यक्रम का अध्ययन करने के लिए विद्यार्थी को कक्षा 12वीं उत्तीर्ण होना चाहिए।
5.	पाठ्यक्रम अध्ययन की परिलब्धियां (कोर्स लर्निंग आउटकम) (CLO)	1. सेवीवर्गीय प्रबन्ध के उद्गम और विकास के सम्बन्ध में छात्रों को जानकारी प्राप्त होगी। 2. संवैधानिक एवं संरचनात्मक ढांचे का बोध जिस पर सेवीवर्गीय प्रबन्ध पर आधारित है।
6.	क्रेडिट मान	04
7.	कुल अंक	अधिकतम अंक ..... न्यूनतम उत्तीर्ण अंक : .....

भाग–ब पाठ्यक्रम की विषयवस्तु

इकाई	विषय	व्याख्यान की संख्या
1.	(अ) सेवीवर्गीय प्रबन्ध – अर्थ, क्षेत्र, उद्देश्य और विषयवस्तु। (ब) सेवीवर्गीय प्रबन्ध का समाज विज्ञान के अन्य विषयों से सम्बन्ध।	
2.	(अ) चयन प्रक्रिया– अर्थ और विधियाँ (ब) सेवीवर्गीय प्रबन्धक के कार्य, उत्तरदायित्व एवं योग्यताएँ।	
3.	(अ) कार्य परिचय (ब) पदोन्नति	
4.	(अ) स्थानान्तरण (ब) प्रशिक्षण एवं विकास	
5.	(अ) नेतृत्व (ब) संम्प्रेक्षण	

Part-A : Introduction			
Program : Certificate	Class : B.A. (Honour) Public Administration	Year : Ist Semester	Session : 2021-22

Subject : Public Administration		
1.	Course Code	104
2.	Course Title	English
3.	Course Type (Core)	Ability Enhancement
4.	Pre-requisite (if any)	To study this course, a student must have passed 12th class
5.	Course Learning Outcomes (CLO)	1. This course will help the students in reading, writing and over all communication skills, 2. The students are expected to understand the process of communication and interpreting the human experiences through literary representation.
6.	Credit Value	04
7.	Total Marks	Max. Marks : ..... Min. Passing Marks : .....

Part B-Content of the Course

Total No. of Lectures - Tutorials (in hours per week :		
Unit	Topics	No. of Lectures
1.	Questions and Answers based on the prescribed text book, *'English Language and Indian Culture*' by Prof. Tribhuwan Nath Shukla.	
2.	Comprehension	
3.	Composition	
4.	Vocabulary	
5.	Grammar and Usage.	

104	**English**	**MCH104**
Course Outcomes		
CO1	Understand symmetry and group theory	
CO2	Discuss Microwave spectroscopy	
CO3	Investigate infrared Spectroscopy	
CO4	Discuss Raman Spectroscopy	
CO5	Analyse electronic and photoelectron spectroscpy	

Suggested Readings :

1. *'English Language and Indian Culture*' by Prof. Tribhuwan Nath Shukla. Published by M.P. Hindi Granth Academy, Bhopal.

2. P.C. Wren and H. Martin, High School English Grammar and Composition.

3. Martin Hewings, Advanced English Grammar .

Part-A : Introduction			
Program : Certificate	Class : B.A. (Honour) Public Administration	Year : IInd Semester	Session : 2021-22

Subject : Public Administration		
1.	Course Code	201
2.	Course Title	Administrative Theory (Paper - 2)
3.	Course Type (Core)	Core Course
4.	Pre-requisite (if any)	To study this course, a student must have passed 12th class
5.	Course Learning Outcomes (CLO)	1. Knowledge regarding the origin and evaluation of Administrative Theory will be acquired. 2. Leaning about the Constitutional and Structural Framework on which Administrative Theory is based.
6.	Credit Value	06
7.	Total Marks	Max.Marks : ..... Min. Passing Marks : .....

Part B-Content of the Course

Total No. of Lectures - Tutorials (in hours per week :		
Unit	Topics	No.of Lectures
1.	An Introduction Indian and Classical Theories - Introduction of Indian and Classical theories; Importance and utility of administrative theories; Kautilya's view.	
2.	Western View on Administrative Theories - Scientific Management Theory by F.W. Taylor; Bureaucratic Theory of Organization by Weber; Administrative Management Theory by Henery Fayol, Luther Gulick and others.	
3.	Human Relations Theories - Human Relation Theory by Elton Mayo and others; Behavioural Theory by Chester Barnard and Herbert Simon.	
4.	Administrative Behaviour Theories - Theories related to Leadership; Communication; and Motivation (Maslow and Herzberg).	
5.	Modern Administrative Theories - Minnow Brook Perspectives; New Public Service; and Post Modernism.	

Semester-II		
201	**Administrative Theory-II**	**MCH201**
Course Outcomes		
CO1	Understand Scientific management theory F.W. tallayere	
CO2	Understand need theory by Masloo	
CO3	Understand Bureaucracy-Maxbebar	
CO4	Understand principles of administration	
CO5	Understand private administration	

भाग – अ परिचय

कार्यक्रम : प्रमाण पत्र	कक्षा : बी.ए.आनर्स लोकप्रशासन	वर्ष : द्वितीय सेमेस्टर	सत्र 2021–22

विषय : लोक प्रशासन

1.	पाठ्यक्रम का कोड	201
2.	पाठ्यक्रम का शीर्षक	प्रशासनिक सिद्धान्त (प्रश्न–पत्र–1)
3.	पाठ्यक्रम का प्रकार	कोर कोर्स
4.	पूर्व–अपेक्षा	इस पाठ्यक्रम का अध्ययन करने के लिए विद्यार्थी को कक्षा 12वीं उत्तीर्ण होना चाहिए।
5.	पाठ्यक्रम अध्ययन की परिलब्धियां (कोर्स लर्निंग आउटकम) (CLO)	1. प्रशासनिक सिद्धान्त के उद्‌गम और विकास के सम्बन्ध में छात्रों को जानकारी प्राप्त होगी। 2. संवैधानिक एवं संरचनात्मक ढांचे का बोध जिस पर प्रशासनिक सिद्धान्त आधारित है।
6.	क्रेडिट मान	06
7.	कुल अंक	अधिकतम अंक ..... न्यूनतम उत्तीर्ण अंक : .....

भाग–ब पाठ्यक्रम की विषयवस्त

इकाई	विषय	व्याख्यान की संख्या
1.	भारतीय एवं प्रतिष्ठित सिद्धान्त : भारतीय एवं प्रतिष्ठित सिद्धान्त का परिचय; प्रशासनिक सिद्धान्तों का महत्त्व एवं उपयोगिता कौटिल्य के विचार।	
2.	प्रशासनिक सिद्धान्तों पर पश्चिमी दृष्टिकोण : एफ.डब्ल्यू. टेलर का वैज्ञानिक प्रबन्ध का सिद्धान्त : मैक्स वेबर का संगठन का नौकरशाही सिद्धान्त; हेनरी फेयोल, लूथर एच. गुलिक व अन्य के प्रशासनिक प्रबंध के सिद्धान्त।	
3.	मानव संबंध सिद्धान्त : जॉर्ज एल्टन मेयो व अन्य का मानव – संबंध सिद्धान्त; चेस्ट बर्नार्ड एवं हरबर्ट ए. साइमन का व्यवहारवादी सिद्धान्त।	
4.	प्रशासनिक व्यवहार सिद्धान्त : नेतृत्व, संचार एवं मनोबल से संबंधित सिद्धान्त (मैस्लो एवं हर्जबर्ग)।	
5.	आधुनिक प्रशासनिक सिद्धान्त : मिनो ब्रुक दृष्टिकोण, नवीन जनता सेवा और उत्तर आधुनिकतावाद।	

Part-A : Introduction			
Program : Certificate	Class : B.A. (Honour) Public Administration	Year : IInd Semester	Session : 2021-22
Subject : Political Science			
1.	Course Code	202	
2.	Course Title	National Movement and Constitutional Development (Paper - 2)	
3.	Course Type (Core)	Minor Course	
4.	Pre-requisite (if any)	To study this course, a student must have passed 12th class	
5.	Course Learning Outcomes (CLO)	1. To taught students about the Development of National movement in India. 2. The students will be able to know about the Constitutional Development in India.	
6.	Credit Value	06	
7.	Total Marks	Max.Marks : ..... Min. Passing Marks :	

Part B-Content of the Course

Total No. of Lectures - Tutorials (in hours per week :		
Unit	Topics	No.of Lectures
1.	Rise of Nationalism - Religious & Social Reform movement. Rise of the Indian National congress- Extreme & liberal Nationalism.	
2.	Revolutionary Nationalism - 1906-1914 Causes of failure of revolutionary movement. Home Rule movement, Lucknow Pact.	
3.	Gandhian - Era 1920-42, Non cooperation, Civil disobedience movement, Quit India Movement.	
4.	Indian politics after IInd world War- Wavel plan, Shimla conference, cabinet mission plan and Indian independence at. 1947.	
5.	Growth of Muslim Communalism & Partition of India, Indian constituent assembly composition & approach, preamble & sources of Indian constitution.	

202	**National Movement and Constitutional Development-II**	**MCH202**
Course Outcomes		
CO1	Process of constitutional development in India in pre independent and post independent scenario	
CO2	Importance of preamble and its importance in the constitution	
CO3	Constituent assembly decided about one national flag, national anthem.	
CO4	Understand function ad role of the president, prime minister and governor	
CO5	Help them to prepare for UPSC, state civil service	

भाग – अ परिचय

कार्यक्रम : प्रमाण पत्र	कक्षा : बी.ए.आनर्स लोकप्रशासन	वर्ष : द्वितीय सेमेस्टर	सत्र 2021–22

विषय : राजनीति विज्ञान

1.	पाठ्यक्रम का कोड	202
2.	पाठ्यक्रम का शीर्षक	भारत में राष्ट्रीय आन्दोलन एवं संवैधानिक विकास
3.	पाठ्यक्रम का प्रकार	माइनर कोर्स
4.	पूर्व–अपेक्षा	इस पाठ्यक्रम का अध्ययन करने के लिए विद्यार्थी को कक्षा 12वीं उत्तीर्ण होना चाहिए।
5.	पाठ्यक्रम अध्ययन की परिलब्धियां (कोर्स लर्निंग आउटकम) (CLO)	1. विद्यार्थी भारत में राष्ट्रीय आन्दोलन के विकास से अवगत होगा। 2. भारत के संवैधानिक विकास के संबंध में जानकारी प्राप्त होगी।
6.	क्रेडिट मान	06
7.	कुल अंक	अधिकतम अंक ..... न्यूनतम उत्तीर्ण अंक : .....

भाग–ब पाठ्यक्रम की विषयवस्त

इकाई	विषय	व्याख्यान की संख्या
1.	राष्ट्रवाद का उद्य :– धार्मिक एवं सामाजिक एवं सामाजिक सुधार आन्दोलन भारतीय राष्ट्रीय आन्दोलन के उदय के कारण भारतीय राष्ट्रीय कांग्रेस का उदय उग्रराष्ट्र उग्रराष्ट्रवाद एवं उदार राष्ट्रवाद	
2.	क्रांतिकारी आन्दोलन :– 1906 से 1914 तक क्रांतिकारी आन्दोलन 1914 से 1932 तक क्रांतिकारी आन्दोलन क्रांतिकारी आन्दोलन की असफलता के कारण लखनऊ समझौता होम रूल आन्दोलन	
3.	राष्ट्रीयता का गाँधी युग :– असहयोग आन्दोलन सविनय अवज्ञा आन्दोलन और भारत छोड़ो आन्दोलन	
4.	द्वितीय विश्व युद्ध के बाद भारतीय राजनीति :– बैवल योजना, शिमला सम्मेलन, कैबिनेट मिशन योजना, भारतीय स्वाधीनता अधिनियम 1947	
5.	मुस्लिम सम्प्रदायिकता एवं भारत विभाजन, भारतीय संविधान सभा रचना एवं दृष्टिकोण, संविधान की प्रस्तावना एवं ाारतीय संविधान के स्त्रोत।	

Part-A : Introduction			
Program : Certificate	Class : B.A. (Honour) Public Administration	Year : IInd Semester	Session : 2021-22

Subject : Political Science		
1.	Course Code	203
2.	Course Title	Human Rights and Environment
3.	Course Type (Core)	Generic Elective
4.	Pre-requisite (if any)	To study this course, a student must have passed 12th class
5.	Course Learning Outcomes (CLO)	This paper will help the students to understand the issues related to Human Rights and Environment.
6.	Credit Value	04
7.	Total Marks	Max.Marks : ..... Min. Passing Marks : .....

Part B-Content of the Course

Total No. of Lectures - Tutorials (in hours per week :		
Unit	Topics	No.of Lectures
1.	a. Human Rights - Meaning, Objectives and Emergence. b. Human Rights and United Nations.	
2.	a. Human Rights and Indian Constitution b. Human Rights Movement in India	
3.	a. National Human Rights Commission - Structure and Functions b. Human Rights in Organised and Unorganised Sector in India.	
4.	a. Environment - Meaning and its place in human life. b. Environment Pollution	
5.	a. Environment and Administration. b. Environment Pollution Acts in India.	

203	**Human Right and Service Environment**	**MCH203**
Course Outcomes		
CO1	Human rights with other rights of individuals	
CO2	The meaning of human rights and examine human rights issues in different social	
CO3	Issues of human rights when state and its agencies	
CO4	The methods and techniques of surveillance	
CO5	Know about the human right of the armed forces	

भाग – अ परिचय

कार्यक्रम : प्रमाण पत्र	कक्षा : बी.ए.आनर्स लोकप्रशासन	वर्ष : द्वितीय सेमेस्टर	सत्र 2021–22

विषय : राजनीति विज्ञान

1.	पाठ्यक्रम का कोड	203
2.	पाठ्यक्रम का शीर्षक	मानव अधिकार और पर्यावरण
3.	पाठ्यक्रम का प्रकार	जेनेरिक इलेक्टिव
4.	पूर्व–अपेक्षा	इस पाठ्यक्रम का अध्ययन करने के लिए विद्यार्थी को कक्षा 12वीं उत्तीर्ण होना चाहिए।
5.	पाठ्यक्रम अध्ययन की परिलब्धियां (कोर्स लर्निंग आउटकम) (CLO)	विद्यार्थी को मानव अधिकार एवं पर्यावरण के सम्बन्ध में परिचय कराया जायेगा।
6.	क्रेडिट मान	04
7.	कुल अंक	अधिकतम अंक ..... न्यूनतम उत्तीर्ण अंक : .....

भाग–ब पाठ्यक्रम की विषयवस्त

इकाई	विषय	व्याख्यान की संख्या
1.	(अ) मानव अधिकार – अर्थ, उद्देश्य और उद्भव (ब) मानव अधिकार और संयुक्त राष्ट्र	
2.	(अ) मानव अधिकार और भारतीय संविधान (ब) भारत में मानव अधिकार आन्दोलन	
3.	(अ) राष्ट्रीय मानव अधिकार आयोग – संरचना और कार्य (ब) संगठित और असंगठित क्षेत्रों में मानव अधिकार	
4.	(अ) पर्यावरण– अर्थ और मानव जीवन में उसका स्थान (ब) पर्यावरण प्रदूषण	
5.	(अ) पर्यावरण एवं प्रशासन (ब) भारत में पर्यावरण अधिनियम	

B.A (Honours) Public Administration
Programme structure
(As per NEP 2020 & CBCS ordinance 14 A)
2nd Year (3rd & 4th semester Programme)

SEMESTER -3

COURSE CODE	TITLE	COURSE TYPE	THEORY PAPER	INTERNAL ASSESSEMENT	MAXIMUM MARKS	CREDITS
301	Indian Administration	Major	60	40	100	6
302	Western Political Thinkers	Minor	60	40	100	6
303	Rural local Government	GE	60	40	100	4
304	E-Governance	AE	60	40	100	4
		Semester Total			400	20
		Comulative Total			400	20

SEMESTER -4

COURSE CODE	TITLE	COURSE TYPE	THEORY PAPER	INTERNAL ASSESSEMENT	MAXIMUM MARKS	CREDITS
401	Public Policy and Governance	Major	60	40	100	6
402	Comparative government and politics	Minor	60	40	100	6
403	Urban local Governnance	GE	60	40	100	4
404	Management of NGOS	AE	60	40	100	4
		Semester total			400	20
		Comulative total			400	20

AWADHESH PRATAP SINGH UNIVERSITY REWA

J.N. CENTRE FOR POLICY RESEARCH

(PUBLIC ADMINISTRATION) **3rd sem**

Indian Administration

UNIT – I

Evolution & Constitutional Framework: Evolution of Indian Administration during Ancient, Medieval and British period; Constitutional Framework of Indian Administration;

and Salient Features of Indian AdministrationUNIT – II

Union Government: President; Prime Minister & Council of Ministers; Central Secretariat, Cabinet Secretariat, Cabinet Committees, Prime Minister Office; Ministry of Home Affairs and Finance Ministry.

UNIT – III

Constitutional Institutions, Union State Relations & Control over Administration: Election Commission of India; Union Public Service Commission; Union State Relations (Legislative, Executive and Financial); Parliamentary, Executive and Judicial Control overAdministration

UNIT - IV

Citizen and State Interface: Citizens' Grievances Redressal Institutions and Mechanisms; Institutional Mechanism for Prevention of Corruption: Central Vigilance Commission; Lok Pal and Lok Ayukta; Politician and Civil Servant relationship.

302	**Indian Administration**	**MCH302**
Course Outcomes		
CO1	Familiarity with the constitutional framework on which Indian Administration is based	
CO2	Grasping the role of union executive	
CO3	Delineating the constitutional provisions and dynamics of union state relationships.	
CO4	Awareness about the institutions and mechanism in force for citizen state interface	
CO5	In this context paper seeks to enlighten the students on the current issues and problems of Indian administration	

Recommended Readings:

Arora, Ramesh K. and Goyal, Rajni (1997) Indian Public Administration: Institutions and Issues. New Age International Publishers: New Delhi

Avasthi, A and Avasthi, A P (2004) Indian Administration. Laksmi Narain Aggarwal: Agra

Balfour, Lady Betty (2015) Lord Lytton's Indian Administration 1876-1880 The UntoldHistory. Gyan

Books: New Delhi

Basu, D D (2013) Introduction to the Constitution of India (21 st Edition). Lexus Nexus:New Delhi
Chakraborty, Bidyut (2016) Indian Administration. Sage: New Delhi
Cott, J E Woola (1986) British Rule in India. Anmol: Delhi

Fadia, B L and Fadia, Kuldeep (2017) Indian Administration, (New Edition). SahityaBhawan: Agra
Ghuman, B S; Monga, Anil and Johal, Ramanjit Kaur (Eds.) (2012) Corruption and Qualityof Governance: Experiences of Select Commonwealth Countries. Aalekh Publishers:Jaipur
Kangle R P (1972) The Kautilya Arthshastra. Motilal Banarsidass: New Delhi
Kapur, Devesh; Mehta, Pratap Bhanu and Vaishnav, Milan (Eds.) (2017) Rethinking Public Institutions in India. Oxford University Press: New Delhi
Maheshwari, S R (2000) Indian Administration. Orient Longman: New Delhi
Palmer, N D (1961) Indian Political System. George Allen and Unwin : London
Sarkar, Jadunath Sir (1972) Mughal Administration. M.C. Sarkar: Calcutta
Sharma, Ashok(2016) Administrative Institutions in India. RBSA Publishers: Jaipur
Sharma, M (2007) Indian Administration. Anmol: New Delhi
Sharma, Prabhu Datta and Sharma, B M(2009) Indian Administration: Retrospect andProspect. Rawat Publications: Jaipur
Singh, M and Singh, H (1989) Public Administration in India. Sterling Publishers: NewDelhi

AWADHESH PRATAP SINGH UNIVERSITY REWA

J.N. CENTRE FOR POLICY RESEARCH
(PUBLIC ADMINISTRATION)

WESTERN POLITICAL THINKERS

Unit I :- Features of Greek political thought:-
Plato-Ideal State Justice, Education Communism Philosopher Ruler Aristotle-State Slavery Classification of Constitutions and Thoughts Related to Revolution
Unit II: - Machiavelli, Compromise thinkers - Hobbes, Locke, Rousseau
Unit III :- Utilitarianism and Individualism Bentham and J.S. Mill's political views
Unit IV :- Idealism or Idealism-ideas of Hegel Green
Unit V :- Marxist Socialism- Thoughts of Marx Democratic Socialism

301	**Western Political Thinker**	**MCH301**
Course Outcomes		
CO1	Understand Essential characteristics of greek political theory with reference to political philosophies of Plato and Aristole	
CO2	Understand Machiavelli as the first modern political thinker	
CO3	Understand the Basic principles of utilitarianism and individualism	
CO4	Communist ideology of Karl Marx	

AWADHESH PRATAP SINGH UNIVERSITY REWA

J.N. CENTRE FOR POLICY RESEARCH

(PUBLIC ADMINISTRATION)

RURAL LOCAL GOVERNANCE

UNIT - I

Introduction: Evolution and Growth of rural local governance in India focusing on constitutional provisions, community development program and committees and commissions on panchayati raj constituted by the Government of India.

UNIT - II

Panchayati Raj Institutions: 73rd Constitutional Amendment Act, 1992; Gram Sabha –composition, functions and role; Gram Panchayat – composition,

functions and role;Panchayat Samiti – composition, functions and role; and Zila Parishad – composition,functions and role

UNIT - III

Institutional Framework for PRIs: District Rural Development Agency; District Planning Committee; State Election Commission; State Finance CommissionUNIT - IV

Issues: Panchayati Raj Finance; Devolution of powers, functions and Activity Mapping;Panchayati Raj Bureaucracy in Rural Development.

303	**RURAL LOCAL GOVERNANCE**	**MCH303**
Course Outcomes		
CO1	Discuss Panchayti Raj, gram sabha, 73rd amendment	
CO2	Reservation of Panchayti Raj	
CO3	Understand 29 subject own dicision	
CO4	Election of Panchayati Raj	
CO5	Three Pillar of Panchayati Raj.	

Recommended Readings:

Agarwal, Amba(2005) Fiscal Decentralization: Financing of Panchayati Raj Institutionsin India. Serial Publications: New Delhi

Baluchamy, S (2004) Panchayati Raj Institutions. Mittal Publications: New Delhi

Bhadouria, B D S and Dubey, V P (1989) Panchayati Raj and Rural Development.Commonwealth Publishers: New Delhi

Biju, M R (2008) Panchayati Raj System in India: A Symbol of Participatory Democracyand Decentralized Development. Kaniska Publication: New Delhi

Dharmaraj, Sengmalam (2008) Panchayati Raj System in India.Abhijeet Publications: NewDelhi
Dube, M P and Padalia, Munni (Eds.) (2002) Democratic Decentralization and PanchayatiRaj in India.Anamika Publishers: New Delhi
Hochgesang, Thomas W (1994) Rural Local Self-Government in India. NIRD: Hyderabad Jayal, Niraja Gopal; Prakash, Amit and Sharma, Pradeep Kumar (2007) Local Governancein India – Decentralisation and Beyond, Oxford University Press:New Delhi
Khanna, B S (1992) Rural Development in South Asia. Deep and Deep : New Delhi
Maheshwari, S R (2003) Local Government in India. Lakshmi Narain Agarwal: Agra
Maheswari, Shriram (2008) Local Government in India, Lakshmi Narain Agarwal: AgraMalik, A S (2012) Rural Leadership: Emerging Trends. Deep & Deep Publications: NewDelhi
Mathew, George (1994) Panchayati Raj in India: From Legislation to Movement. ISS: NewDelhi
Mathew, George (Ed.) (2000)Status of Panchayati Raj in States and Union Territories ofIndia 2000. Institute of Social Sciences: New Delhi
Mathew, George and Jain L C (Eds.) (2005) Decentralisation and Local Governance.Orient Blackswan : New Delhi
Mathur, Kuldeep (2013) Oxford India Short Introductions:Panchayati Raj. Oxford: NewDelhi
Mathur, S N (1986) Panchayati Raj Bureaucracy and Rural Development. IIPA: New Delhi
Mathur, S N (1996) New Panchayati Raj in Action. Mittal Publications: New Delhi Mathur, S N (1997) Nyaya Panchayats as Instruments of Justice. ISS : New Delhi Narwani, G S and Joshi, R P (2002) Panchayat Raaj in India: Emerging Trends Across the States. Rawat Publications: Jaipur
Oakley, P (1991) Projects with People: The Practice of Participation in Rural Development.ILO: Geneva
Oakley, Peter and Marsden, David (1984) Approaches to Participation in Rural Development. ILO: Geneva
Oommen, M A (1995) Devolution of Resources from the State to the Panchayati RajInstitutions. Instituite of Social Sciences:New Delhi
Oommen, M A and Datta, A (1995) Panchayats and their Finance. Institute of SocialSciences :New Delhi
Ram, D Sundar (2007)Panchayati Raj Reforms in India: Power to the People at theGrassroots. Kanishka Publishers: New Delhi
Ram, D Sundar (2008)Role of Panchayati Raj Institutions in 60 Years of Independent India: Vision of the Future. Academy of Grassroot Studies and Research: Tirupati Ramulu, Ch. Bala(1984) Administration on Anti-Poverty Programme (A study of SFDA).Kakatiya School of Public Administration: Warangal
Ramulu, Ch. Bala (2018) Marginalized Communities and Decentralized Institutions in India-Exclusion and Inclusion Perspective. Routledge, Taylor & Francis: London, UK Sisodia, Yatinder Singh (2005) Functioning of Panchayat Raj System. Rawat Publications:Jaipur
Sisodia, Yatinder Singh; Bhatt, Ashish; and Dalapati,Tapas Kumar (Eds.) (2018)Two Decades of Panchayati Raj in India: Experiences, Issues, Challenges and Opportunities.Rawat Publications: Jaipur
Venkatesan, Venkatachalam (2002) Institutionalising Panchayati Raj in India. ConceptPublishing: New Delhi

AWADHESH PRATAP SINGH UNIVERSITY REWA

J.N. CENTRE FOR POLICY RESEARCH

(PUBLIC ADMINISTRATION)

E-GOVERNANCE

UNIT – I

Concepts and Initiatives : Meaning, Definitions, Scope (Including stages and typesof interactions in e-Governance) and Significance of e-Governance, Theories of e-Governance (Six perspectives and six theories). Models of e-Governance (The General Information Dissemination Model, the Critical Information Dissemination Model, the Advocacy Model, the Interactive Model). Growth of e-Governance initiatives in India, Pre-National e-Governance Plan and Post NeGP (NeGP 2006). e-Governance Initiatives in the area of Government to Citizens (G2C), Government to Business (G2B) and Government to Government G2G)

UNIT – II

Legal Framework, Issues & Challenges for e-Governance: I T Act – 2001 (ICT Act and important features of the Act); Information and Cyber Security. e-Readiness;Digital Divide (Gender, Geographic, Economic, Social and Political); Challenges; Resistance to Change, Capacity Building, Adaptation of Technology and Administrative Reforms

304	**E-GOVERNANCE**	**MCH304**
Course Outcomes		
CO1	To understand the importance of E-Governance	
CO2	To know E-Governance initiatives.	
CO3	To understand E-Governance	
CO4	Critically analyze E-Governance in administration	
CO5	Understanding legal aspects of E-Governance	

Recommended Readings:

Bellamy, Christine and John, Taylor (1998) Governing in the Information Age. Open University Press: Buckingham

Bhatnagar, S C (2004) E-Government: From Vision to Implementation. Sage: New Delhi Bouwman, Harry; Hooff, Bart van den; Vingaert, Lidwien van de; and Dijk, Jan van (2005) Information and Communication Technology in Organizations: Adoption,Implementation, Uses and Effects, Sage Publications: New Delhi

Gosling, P. (1997) Government in the Digital Age. Government Information Quarterly, Vol. 18, No. ER2. Bowerdean: London

Heeks, Richard (2006) Implementing and Managing eGovernment: An International text.

Sage: London
Jones, S. G. (Ed.)(1995) Cyber Society, Computer mediated communication and Community. Sage: Thousand Oaks CA
Kooiman, J. (Ed.) (1993) Modern Governance: New Government – Society Interactions. Sage: London
Layne, K. and Lee J. (2001) Developing Fully Functional e-Government: A Four Stage Model. Government Information Quarterly, 18(2001), pp. 122-36. Elsevier: Manchester UK
Marchionini, G. (1995) Information Seeking in Electronic Environments. The Press Syndicate of the University of Cambridge: New York
Milakovich, Michael E. (2012) Digital Governance - New Technologies for improving Public Service and Participation. Routledge: New York
Pardhasaradhi, Y. (2009) E-Governance and Indian Society. Kanishka: New Delhi
Raab, C. Bellamy; C. Staylor, J. ; Dutton, W. H. and Peltu, M. (1996) The information polity: electronic democracy, privacy and surveillance, in W.H. Dutton (Ed.) Information and Communication Technologies; Visions and Realities. Oxford University Press: Oxford
Satyanarayana, J. (2006) E-Government. PHI: New Delhi
Scarbrough H., and Corbett, J. M. (1992) Technology and Organization: Power, Meaning and Design. Routledge : London
Sharma, Sangeeta; Nagar, Pankaj and Sodhi, Inderjeet Singh (2013) Governometrics and Technological Innovation for Public Policy. IGI Global: Hershey, PA, USA
Sodhi, Inderjeet Singh (2015) Trends, Prospects and Challenges in Asian E-Governance. IGI Global: Hershey, PA, USA
Sodhi, Inderjeet Singh (2015) Emerging Issues and Prospects in African E-Government. IGI Global: Hershey, PA, USA
Sodhi, Inderjeet Singh (2017) E-Governance in India. University Book House: Jaipur
Tubtimhin, J (2009) Global e-Governance: Advancing e-Governance through Innovation and Leadership. IOS Press: Amsterdam
Web Resources:
'E-Government Act of 2002; http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=107_cong_Public_laws&docid=f:publ347.107.pdf
'e-Procurement'; by Rajkumar; Compendium of e-Governance Initiatives in India
'G2BServices: Key Learnings from MCA 21'; Ministry of Corporate Affairs; http://www.eindia.net.in/egov/presentation/Day_3/Session_2/YS_Malik.pdf
'Minimum Agenda for e-Governance in the Central Government'; http://darpg.nic.in/arpg-website/ReformInitiatives/eGovernance/IndianExperience/EgovExp73.doc
Paragraph 83, Report of the Working Group on Convergence and E-Governance for The Tenth Five Year Plan (2002-2007), Planning Commission, November, 2001
Source: http://go.worldbank
Bhatnagar, Subhash: One Stop Shop for Electronic Delivery of Services: Role of Public-Private Partnership

AWADHESH PRATAP SINGH UNIVERSITY REWA

J.N. CENTRE FOR POLICY RESEARCH

(PUBLIC ADMINISTRATION) 4th sem

Public Policy and Governance

UNIT - I

Introduction: Public Policy: Concept, Significance and Scope. Policy Analysis: Concept and Significance. Public Policy Approaches and Models with specialreference to the Incrementalist and Rationalist Paradigms

UNIT – II

Concepts and Theories of Governance: Governance as per the World Bank, UNDP and others; Public Choice Theory, Public Value Theory; Governance as Theory, Governance and Public Governance; Role of State, Market and Civil Society in Governance

UNIT-III

Role of Various stakeholders in Public Policy Making Process: Role of Legislature,Executive, Judiciary, Planning Machinery at the Central and State levels in Policy

Making. Role of other Stakeholders in Policy-making: Political Parties, InterestGroups, Mass Media

UNIT - IV

Public Policy Implementation and Evaluation: Approaches to Policy Implementation, Role of Executive (with special reference to Bureaucracy), Legislature, Judiciary, Non-Governmental Organisations, Pressure Groups. Issues in Public Policy Implementation. Policy Evaluation: Approaches to Policy Evaluation: Criteria for Evaluation.Issues in Policy Evaluation

401	**Public Policy and Governance**	**MCH401**
Course Outcomes		
CO1	An understanding of the factor that intrluence the direction of govt.	
CO2	An understand of the tools	
CO3	An understanding of the effects of govt. action	
CO4	An understanding of various constitciencies	
CO5	An understanding of real life comparative government and policy	

Recommended Readings:

Anderson, J E (2005) Public Policy Making (6 th Edition). Houghton Mifflin: New York
Ayyar, Vaidyanathan R V (2009) Public Policy Making in India. Pearson: New Delhi

Basu, D D (2011) Constitution of India (20th Edition). Prentice Hall of India: New Delhi
Chakraborti, Rajesh (2017) Public Policy in India. Oxford University Press: New Delhi
Chakraborty, Bidyut and Chand, Parkash (2016) Public Policy: Concept, Theory and Practice. Sage: New Delhi
Dolowitz, D P and Marsh, D (2000) Learning from Abroad: The Role of Policy Transfer in Contemporary Policy-Making, Governance: An International Journal of Policy and Administration, 13(1), Pp.5-24.
Dubhashi, P R (1986) Policy and Performance. Sage: New Delhi
Dye, Thomas (2002) Understanding Public Policy. Pearson: Singapore /New Delhi
Ghuman, B S (1994) The Use of Input-Output Analysis in Regional Planning: A Case Study of Punjab. Ajanta Publications: Delhi
Ghuman, B S (2014) Nehruvian Model of Development Planning: Rhetoric and Reality in Ghuman, Ranjit Singh and Singh, Indervir (Eds.), Nehruvian Economic Philosophy and its Contemporary Relevance. Centre for Research in Rural and Industrial Development: Chandigarh.
Giuseppe, Marcon (2014) Public Value Theory in the context of Public Sector Modernization in the book Public Value Management, Measurement and Reporting (Studies in Public and Non-Profit Governance), Vol.3, Guthrie, J; Marcon, G; and Farneti, F (Eds.) Emerald Publishing House: Bingley, UK
Henry, Nicholas (2009) Public Administration and Public Affairs (11th Edition). Prentice Hall: New Jersey
Laxmikanth, M (2011) Governance in India. Tata McGraw Hill Education : New Delhi
Madan, K D (1982) Policy Making in Government. Publications Division, Government of India: New Delhi
McLean, Lain (1991) Public Choice: An Introduction, 1st Edition. Wiley Blackwell:
Mueller, Dennis C (2003) Public Choice III. Cambridge University Press: Cambridge, UK
Nagel, S S (1991) Public Policy: Goals, Means and Methods. St. Martin Press: New York
OECD(2001) Governance in the 21st Century. OECD Publishing: Paris
OECD(2016) Governance of Regulators' Practices: Accountability, Transparency and Coordination. OECD Publishing: Paris
Ramulu , Ch. Bala (1991) Public Policies: An Evaluation of Integrated Rural Development Programme. Ajanta Publications: New Delhi
Russell, Clifford S (Ed.) (1979) Collective Decision Making : Applications from Public Choice Theory. Resources for the Future: Baltimore
Sapru, R K (2011) Public Policy: Art and Craft of Policy Analysis. (2nd Edition). Prentice
Hall of India: New Delhi
Sarwar, Lateef K (2016) Evolution of World Bank's Thinking on Governance, World Development Background Paper. World Bank: Washington DC
Singh, Abhay Prasad and Murari, Krishna (2018)Governance: Issues and Challenges (1st Edition). Pearson Education: New Delhi
Tullock, Gordon; Seldon, Arthur and Brady, Gordon L (2002) Government Failue: A Primer in Public Choice. Cato Institute: Washington DC
Turkel, G and Turkel, E (2016) Public Value Theory: Reconciling Public Interests, Administrative Autonomy and Efficiency. Review of Public Administration Management,

AWADHESH PRATAP SINGH UNIVERSITY
REWA

J.N. CENTRE FOR POLICY
RESEARCH(PUBLIC
ADMINISTRATION)

Comparative government and politics

Unit-1 Comparative Governance and Politics, Meaning, Nature, Scope, Development and Problems, Approaches to Study Constitution and Constitutionalism
Unit – 2 Historical Heritage and Political Traditions, Features of Major Constitutions of the World, Britain, America, Swiss, China,

Unit-3 Constitutional Framework - Legislature, Executive, Judiciary, PoliticalCulture
Unit-4 Political Parties; and political party-systems, interest groups, pressuregroups,

Unit-5 State and Local Governments, Socio-Economic Basis of theConstitution, Women and Political Process,

402	**Comparative government and politics**	**MCH402**
Course Outcomes		
CO1	Define and apply key concepts in completive politics	
CO2	Explain and evaluate the importance of specific historical events	
CO3	Compare and contrast the political system of the countries	
CO4	Use the comparative method to analyze contemporary political issue	

Recommended Readings:

C. B. Gena, "Comparative Politics" Vikas Publishing House Uttar Pradesh2018 First Edition

Dr. J. C. Johri "Comparative Governance" SBPD Publication 2021

C.B. Gena "Comparative Politics and Political Institutions" Vikas Publishing HouseUttar Pradesh 2018 First Edition

O. P. Gava, Outline of Comparative Politics" Mayur Paper Back 1999

AWADHESH PRATAP SINGH UNIVERSITY
REWA

J.N. CENTRE FOR POLICY
RESEARCH(PUBLIC
ADMINISTRATION)

URBAN LOCAL GOVERNANCE

UNIT - I

Introduction: Evolution of Local Governance in India. Urbanization: Concept;Trends;Challenges

UNIT - II

Organizational Framework for Urban Governance: 74th Constitutional AmendmentAct; Structure, Composition and Functions of Metropolitan Committees, Municipal Corporations, Municipal Councils and Nagar Panchayats; State Finance Commission; StateElection Commission

UNIT - III

Urban Development Programmes and Urban Governance: Urban DevelopmentProgrammes like AMRUT, NUHM etc.; SMART cities and other recent trends; Sources of Finance of Urban Local Government; Personnel Administration; Bureaucracy and LocalGovernance

UNIT – IV

Issue Areas in Urban Governance: State-Local relations; Rural-Urban relations; Globalization and Urban governance; Administrative Reforms in Local Governance

403	**Urban Local Governance**	**MCH403**
Course Outcomes		
CO1	Understand development of rural and urban self government and peoples participation in decision making	

CO2	Understand rural are a and its plights
CO3	Have knowledge of different ways to approach the local government body to participate as an active citizen.
CO4	Gain knowledge of various development skill and measure is resolv issues at the grassroots levels
CO5	Understanding working and the structure of the local government in urban areas

Recommended Readings:

Ahluwalia, Isher Judge (2014) Transforming our Cities: Facing up to India's Growing Challenge: Postcards of Change. HarperCollins: New Delhi

Ahluwalia, Isher Judge (2017) Urbanisation in India. Sage: New Delhi.

Ahluwalia, Isher Judge; Kanbur, Ravi and Mohanty, P K (2014) Urbanization in India:Challenges, Opportunities and the Way Forward. Sage: New Delhi

Aziz, A (1996) Decentralised Governance in Asian Countries. Sage: New Delhi

Baud, I S A and Wit, J Dee (Eds.)(2008) New Forms of Urban Governance in India: Shifts,Models, Networks and Contestations. Sage: New Delhi

Bhattacharya, Mohit (1976) Management of Urban Government in India. Uppal: NewDelhi

Burns, Dany; Hambleton, Robin and Hogget Paul (1994) The Politics of Decentralisation:Revitalising Local Democracy. Macmillan: London

Chand, Mahesh and Puri, V K (2011) Regional Planning in India. Allied Publishers: New Delhi

Dasgupta, Biplab; Buch, M N ; and Sivaramakrishanan, K C (Eds.) (1993) Urbanisation in India: Basic Services and People's Participation. Concept Publishing Company: New Delhi

Firodia, Arun (2015)Smart City. Vishwkarma Publications: New Delhi.

Ghuman, B S and Mehta, Akshat (2010) Privatisation of Public Services by Urban Local Governments in India: A Case Study of Municipal Council Panchkula, Nagarlok, Vol.XLII, No. 1, Pp. 50-68

Jha, Gangadhar (2018) Fragile Urban Governance: Evolution, Decline, and Empowermentof Local Self-Government in India. Routeledge:New York

Kaur, Jaswinder (2017) Urban Infrastructure Development in India: A Case Study ofJNNURM in Ludhiana. New Era Book Agency: Chandigarh

Mani, N (2016) Smart Cities & Urban Development in India. New Century Publications:New Delhi

Mohanty, Prasanna K (2014) Cities and Public Policy: An Urban Agenda for India. Sage:New Delhi

Mohanty, Prasanna K (2016) Financing Cities in India: Municipal Reforms, FiscalAccountability and Urban Infrastructure. Sage: New Delhi

Nath, V (2007) Urbanization, Urban Development and Metropolitan Cities in India.Concept Publishing Company: New Delhi
Prasad, R N (2006) Urban Local Self-Government in India. Mittal Publications: New DelhiRamachandran, R (1989) Urbanization and Urban Systems in India. Oxford University Press: New Delhi
Rao, C. Nagaraja and Prasad, G Sai (2007) Accountability of Urban Local Governmentsin India. Atlantic Publishers: New Delhi
Satyam, Amitabh and Calzada, Igor (2017) The Smart City Transformation: TheRevolution of the 21st Century.Bloomsbury India: New Delhi
Sharma, Manoj (2004) Local Government: Rural and Urban. Anmol Publishers: New DelhiSharma, Sameer (2018) Smart Cities Unbundled. Bloomsbury India: New Delhi
Singh, U B (2001) Functioning of Local Government in South India.Gyan PublishingHouse: New Delhi
Singh, U B (Ed.) (2002) Revitalised Urban Administration in India: Staretgies andExperiences. Kalpaz Publications: Delhi
Sivaramakrishnan, K C; Kundu, Amitabh; and Singh, B N (2007) Handbook of Urbanization in India- Handbook Series (2 nd Edition). Oxford University Press: New Delhi

AWADHESH PRATAP SINGH UNIVERSITY REWA

J.N. CENTRE FOR POLICY RESEARCH(PUBLIC ADMINISTRATION)

MANAGEMENT OF NGOS

UNIT - I

Non-Governmental Organisations (NGOs): Concept, Rationale and Scope; National Policy on the Voluntary Sector 2007; NGO-Government Interface in India with

special reference to the NITI Ayog, Ministries and Departments. Organisational Forms and Governance Structures of NGOs: Trust; Society; Company; NGO- Government & NGO-Private sector partnerships: Rationale and practice; Sourcesof NGO Funding; Government and Foreign Grants: Eligibility, Requirements & Procedures with special reference to Foreign Contributions

UNIT - II

Issues, Accountability, Mechanism & Problems: Issues of Governance; Capacity Building; Autonomy; Ethics. Accountability of NGOs: Rationale, Mechanisms andProblems; Formulation of a Welfare/Development Project Proposal including Monitoring and Evaluation arrangements. Case Studies: Self Employed Women's Association(SEWA): Organisation, Functions and Working; Red Cross Society of India: Organisation, Functions and Working; Voluntary Action Network India (VANI); and OXFAM India

404	**Management of NGOs**	**MCH404**
Course Outcomes		
CO1	Communication and Networking their primary purpose is to defend or promote scientific cause	
CO2	Measurable:- Statement that Articulate of the beginning what should know	
CO3	Achievable :- Attainable using your existing skill and source	
CO4	Relevant :- To your organization's Mission	

Recommended Readings:

Bava, N (Ed.) (1997) Non-Government Organisations in Development: Theory and Practice. Kanishka Publishers: New Delhi

Chandra, Suresh (2015) Non-Government Organisations. Rawat: Jaipur

Chatterjee, A (1998) NGOs: An Alternative Democracy in Hiranmay Karlekar IndependentIndia: The First Fifty Years. Indian Council for Cultural Relations and Oxford University Press:New Delhi

Dantwala, M L; Sethi, Harsh and Pravin Visaria (Eds.) (1998) Social Change ThroughVoluntary Action. Sage Publications: New Delhi

Gangrade, K D and Jain S (1995) NGOs: Retrospect and Prospect. Friedrich Ebert Stiftung:New Delhi

Government of India (1994) An Action Plan to bring about Collaborative Relationship between Voluntary Organizations and Government. CAPART, Government of India: NewDelhi (Available at: http:pcserver.nic.in/ngo/reports.aspx)

Government of India (2007) Report of the Steering Committee on Voluntary Sector for theEleventh Five-Year Plan. Planning Commission: New Delhi

Handy, C (1990) Understanding Voluntary Organizations – How to make them FunctionEffectively?. Penguin Books: London

Jain, N (2009)Handbook for NGOs: An Encyclopaedia for Non-Governmental Organisations and Voluntary Agencies, (I & II). Nabhi Publications: New Delhi Jain, R B (1995) NGOs in Development

Perspective. Vivek Prakashan: New Delhi
Kalima, R. (1992). Where Women are Leaders: The Sewa Movement in India. Vistaar Publications: New Delhi
Khaira, Dahlia (2017) Appreciation & Evaluation of MGNREGA in Punjab. AdroitPublishers: New Delhi
Meher, Nanavaty and Kulkarni P (1998). NGOs in the Changing Scenario. UppalPublishing House: New Delhi
Plnning Commission (2002) Report of the Steering Committee on Voluntary Sector for theTenth Five-Year Plan: Government of India, Planning Commission: New Delhi (Available at: http:pcserver.nic.in/ngo/reports.aspx)
Prasad, K (Ed.) (2000) NGOs and Socio-Economic Development Opportunities. Deep andDeep Publications : New Delhi
Smith-Sreen, P (1995) Accountability in Development Organisations: Experiences ofWomen Organisations in India. Sage Publication: New Delhi

Programme Outcome, MBA (CBCS)

(2021-22, 2022-23 and running)

PO#	PROGRAMME OUTCOME
PO1	**Critical Thinking**: This program places a strong emphasis on the value of being conscious of our presumptions, challenging their accuracy, and approaching concepts and choices from several angles. It entails having the capacity to recognize, assess, and make sensible choices based on logical reasoning.
PO2	**Effective Communication:** This program helps participants improve their communication skills and makes sure they can express themselves accurately in written, spoken, and technological mediums. It also encompasses the capacity to link individuals, concepts, literature, media, and technology, as well as the capacity to communicate effectively and interpret the world.
PO3	**Social Interaction:** It emphasizes on the capacity to solicit the opinions of others, resolve conflicts, and aid in reaching decisions in group settings. It entails having the capacity to collaborate with others, forge agreement, and settle disputes.
PO4	**Effective Citizenship:** The necessity of sympathetic social concern and equity-focused national development is emphasized. It entails being aware of the problems that society faces, being involved in civic affairs via volunteering, and behaving in a way that reflects a thorough understanding of these problems.
PO5	**Ethics:** It emphasizes the significance of appreciating many value systems, comprehending the moral implications of choices, and taking accountability for them. It entails being conscious of ethical concerns and basing judgments on ethical principles.
	Environment and Sustainability: Understanding environmental

PO6	surroundings and sustainable development are the main objectives. It entails being conscious of how human behavior affects the environment and acting to advance sustainability.
PO 7	**Self-directed and Life-long Learning:** gaining the capacity to participate in independent, ongoing learning in light of socio-technical developments. It entails having the capacity to learn on one's own, adjust to new technology, and consistently acquire new abilities and information.

PROGRAMME SPECIFIC OUTCOME

PSO1	Students will be able to gain a broad understanding of various concepts of HRD process. This helps them develop a well-rounded perspective and prepares them to face and handle various future challenges.
PSO2	Overall knowledge of HRD concepts: understanding helps students make and improve their decision making capacity.
PSO3	Seed knowledge in various HR concepts and practices for students so that they can apply their skills in HR, HR planning, HR auditing, HR accounting, HRIS and IHRM.
PSO4	Provision of case study practices that are applicable in student's future careers growth.

COURSE OUTCOME (COs)

Semester I

S.No.	**Course Code**	**Course Name**		**Course Outcome**
1.	**101**	**Management Concepts & Process**	CO1	Gain insight of various management concepts and principles.
			CO2	Learning about the planning function of management and its types.
			CO3	Understanding the organizing function of management along with its types, functions and structures.
			CO4	Understanding the directing function of

				management along with leadership and motivation theories.
			CO5	Understanding the concept of controlling and co-ordination along with its importance and principles.
2.	**102**	**Quantitative Methods**	CO1	To understand the basics of Matrices and Determinants and its types.
			CO2	To understand the basics of statistics which will sharpen their critical thinking, analytical skills and problem solving ability.
			CO3	To understand the measures of central tendency and measures of dispersion.
			CO4	To learn and know about the probability, correlation, regression and index numbers along with law of probability problems.
			CO5	To understand the theory and testing of hypothesis and to learn about the concepts of sample and population in statistics.
3.	**103**	**Managerial Economics**	CO1	The participants of this course will be able learn about the concept, nature and scope of managerial economics and its relation with other disciplines.
			CO2	Acquaintance with the concepts of demand and supply along with concepts of utility, law of demand and supply, demand forecasting etc.
			CO3	Understanding the concepts of cost which includes its meaning, concept, function and relevance of cost theory for managers.
			CO4	Understanding the market structures and criteria for market classification and pricing decision which includes price determination under perfect competition.
			CO5	To learn and understand about the meaning, definition and concept of national income and its measurements.
4.	**104**	**Environmental management**	CO1	To learn and understand about the environmental management and conventional and non- conventional energy.
			CO2	To know about the basic concept of ecosystem and their application in business.
			CO3	Helps student to learn and know about the environmental protection standards in India and environmental ethics.
			CO4	To learn about brief introduction to environmental laws, environment and

				greenhouse effect.
			CO5	To learn about various types of pollution in environment and its management.
5.	**105**	**Computer application in management**	CO1	Acquainting the participants with the usage of computer in data processing.
			CO2	Learning about computer input-output devices, storage devices, computer software and its types, computer language and its classification.
			CO3	Understanding meaning, advantages and preparation of simple flow charts and needs of operating systems.
			CO4	To know about the windows in computer and its components, features and uses.
			CO5	Acquaint the students with introduction to MS office which includes MS word and its components.
6.	**106**	**Managerial skills development**	CO1	This course will hone the skills of participants in inter-personal, organizational and written communication to express their ideas clearly.
			CO2	To learn about process and elements of communication, its types and patterns and barriers of communication.
			CO3	To learn about the oral communication skills required for group discussion, seminar etc and principles of public speaking.
			CO4	To learn about written communication required for notice, business letters, circulars and memos etc.
			CO5	Develop basic skills for report writing , notice and agenda, minutes writing and drafting of representations.
7.	**107**	**HRD Strategies and system**	CO1	Learning about the Meaning, definition of HRD, HRD as a total system and various emerging trends of HRD.
			CO2	Understanding the process of designing HRD system and various factors affecting in HRD system.
			CO3	Helping students to learn about the Career planning and Succession planning along with its process and importance.
			CO4	Helping to learn about training and its types that will help in development and supervision.
			CO5	To learn about the principles of designing HRD system and providing physical and financial resources and facilities for HRD

				department.

COURSE OUTCOME (COs)

Semester II

S.No.	Course Code	Course Title		Course Outcome
1.	**201**	**Legal framework governing human relations**	CO1	To acquaint students with various laws governing the manpower in the organization.
			CO2	Understanding the significance of payment of bonus act 1965, payment of gratuity act 1972 and payment of maternity act 1961.
			CO3	To learn the importance of provisions of Industrial disputes act 1947 and the Industrial employment (standing orders) act 1946.
			CO4	To understand the provisions of Employee state insurance act 1948 and Employee provident fund and miscellaneous act 1952.
			CO5	To understand the provisions of the factories act 1948.
2.	**202**	**Human resource management**	CO1	Acquainting the participants with various aspects of management as applied to handling human resources.
			CO2	To learn the concepts of manpower policy and manpower planning and its significance.
			CO3	To understand the various concepts, nature, scope and significance of employee training and development in an organization.
			CO4	To learn about performance appraisals and its techniques in an organization.
			CO5	Understanding of the knowledge of concept of motivation, reward system, job enlargement and job enrichment.
3.	**203**	**Business environment**	CO1	Gaining knowledge of meaning and various components of business environment.

			CO2	Understanding of the knowledge of socio-cultural environment, ethics, culture and social responsibility of business.
			CO3	Understanding the knowledge of economic role of government, concentration of economic power and economic and fiscal policies under economic environment of business.
			CO4	To study about politico-legal environment of business which includes constitution of India and provisions affecting business.
			CO5	To gain brief understanding of international organization- UNO, GATT, WTO & IMF.
4.	**204**	**Functional Management**	CO1	To acquaint students with various functional aspects of management.
			CO2	Development of the acquaintance about marketing management, marketing mix and marketing environment.
			CO3	Improved financial literacy among the students
			CO4	To understand the concepts of operations management and inventory control.
			CO5	To learn and gain knowledge about personnel management and its concepts, function and importance.
5.	**205**	**Organizational change and intervention strategies**	CO1	The participants of this course will be able to learn about able to identify needs of modification in an organization.
			CO2	Understanding the concept of organizational analysis and development process.
			CO3	Improved understanding of concept of OD interventions and its affecting factors.
			CO4	To learn about inter-group and third party peace making interventions.
			CO5	Understanding of change management and its approaches and resistance to change in an organization.
6.	**206**	**Organizational behavior**	CO1	Gaining the knowledge about individual groups and organizational variants effecting to organization.

			CO2	To learn about various components of individual factors which includes perception, learning, ability, attitude and personality.
			CO3	To gain knowledge about group dynamics, its concept and types.
			CO4	To gain knowledge about OD interventions and change management.
			CO5	To study about conflict management, stress management and its remedies.
7.	**207**	**Quality of work life and Total quality management**	CO1	The course will acquaint the participants with creating cordial work environment by maintaining work life balance.
			CO2	To study about the concepts of quality circles, its techniques and its significance.
			CO3	To gain knowledge about TQM, its tools and techniques, principles and scope.
			CO4	Understanding TQM through QMS and its requirements.
			CO5	Understanding of case studies related to the same.

COURSE OUTCOME (COs)

Semester III

S.No.	**Course Code**	**Course Title**		**Course Outcome**
1	**301**	**Human resource planning**	CO1	To learn about various needs, approaches, dimensions and process of Human resource planning.
			CO2	To gain knowledge about methods of demand and supply at Micro and Macro level.
			CO3	Understanding the knowledge of job evaluation, job analysis, job description and job specifications.
			CO4	To gain familiarity with various actions area of human resource.
			CO5	To understand various performing functions of human resource like HRIS, HR audit and

				HR accountancy.
2	**302**	**Management information system and decision support system.**	CO1	This course provides a valuable insight importance of application system and its importance for management.
			CO2	To gain knowledge about structure of MIS, system approach to MIS and Evaluation of MIS.
			CO3	The participants will gain an understanding on data management and information handling and its various components.
			CO4	To understand the knowledge of DSS, its characteristics and structures, and approaches to development of DSS.
			CO5	Understanding about HRIS and its needs.
3	**303**	**Compensation management**	CO1	Understanding of basic wage concepts and theories and its types.
			CO2	To gain knowledge about Minimum wages act, Equal remuneration act, and payment of wages act.
			CO3	To learn about different components of compensation packages like fringe benefits, incentives and retirement plans etc.
			CO4	To understand compensation packages designed for senior HR and tools used in implementing it.
			CO5	Understanding of conceptual and theoretical economic theory related to reward management.
4	**304(A)**	**Management training and development**	CO1	To understand training needs, its objectives and process.
			CO2	To understand learning process and its approaches in training and budgeting of training.
			CO3	To gain knowledge of various training techniques and elements of training system.
			CO4	To understand training system, its techniques and qualities of good trainer.
			CO5	To learn implementation and evaluation of T&D programme.
5	**304(B)**	**Management of comparative Industrial Relations.**	CO1	To familiarize students with major Industrial relation systems and its emerging trends.
			CO2	To learn the concept of discipline in an organization and management of grievances in India.
			CO3	To learn the concept of collective bargaining in India , its process and significance.

			CO4	Understanding the concepts of Employee empowerment and TQM and workers participation in management.
			CO5	To understand and learn the working and Nature of I.L.O.
6	**305**	**Counselling skills for managers.**	CO1	To acquaint students with basic skills of handling employee counselling and performance counselling.
			CO2	To study about counselling concepts and its process.
			CO3	To learn about the Counselling strategies and interventions, problems in counselling and psychoanalytical theory.
			CO4	To learn and understand the outcomes of counselling in an organization.
			CO5	To understand the need and significance of transaction analysis, gestalt counselling and electric counselling.

COURSE OUTCOME (COs)

Semester IV

S.No.	Course Code	Course Title		Course Outcome
1.	**401**	**Business policy and Strategic Management**	CO1	The course gives a picture of development of a comprehensive approach to decision making by understanding policy making and execution.
			CO2	Understanding the knowledge of strategic formulation , SWOT, SAP & ETOP analysis etc.
			CO3	The students will get to learn about the strategic alternatives and choices which includes modernization, diversification, mergers, joint ventures etc.
			CO4	Understanding of strategic implementation along with structural, functional and behavioral implementation.
			CO5	To learn an overview of strategic evaluation and control.
2.	**402**	**Business legislation**	CO1	Understanding the basic laws affecting the operations of a business enterprise.
			CO2	To learn and understand the provisions of The Indian contract Act 1872 and The sales of good Act, 1930.
			CO3	To understand the provisions of The Companies

				Act, 1965.
			CO4	To gain knowledge about basics of share capital and allotment.
			CO5	To understand the process and procedures of winding up of company.
	403	**Cross cultural and global human resource management**	CO1	The graduates will be able to learn various cultural and related behavioral variables in management of global organization.
			CO2	To learn the Considerations for MNC's Policy Formulations.
			CO3	Understanding of HRM practices in MNC's.
			CO4	To understand practices of HRM in MNC's which includes IR and WPM's problems.
			CO5	Understanding the comparative study of HRM practices in America, Japan and European countries.
	404 A	**Industrial psychology**	CO1	The participants will acquire with the psychological aspects of industrial workers and employees for solving work related problems.
			CO2	The students will learn about the individual behavior and industrial problems in an organization which includes ability, attitude, fatigue, monotony, psychological conflicts etc.
			CO3	Understanding the causes, outcome and mechanism to retain employee and to gain knowledge about socio psychology.
			CO4	Understanding about employees' turnover, absentism and its causes and remedies.
			CO5	Understanding about Socio psybhology, family system, housing and health related problems as well as its effect on their working.
	404 B	**HRD in specialized sector.**	CO1	This course offers understanding of roles of HRD in various sectors.

			CO2	To know about the concepts and working of HRD in Public and Service sector.
			CO3	To learn about the working of HRD in NGO's and strategy contribution of voluntary organization in HRD.
			CO4	Understanding of characteristics, significance, and principles of HRD in co-operative sector.
			CO5	To gain knowledge of working of HRD in rural sector and measures of rural development.
	405	**Entrepreneurship**	CO1	To acquaint participants with the basic concepts of entrepreneurship and recent trends in startup revolution in India.
			CO2	Understanding of functional management of entrepreneurship which includes business model designing, accounting principles, HRM in entrepreneurship, recruitment, selection, T&D.
			CO3	To understand the concept of technology-based entrepreneurship which includes patents, trademarks, design, copyrights and success story of Technology/App based entrepreneurs.
			CO4	To gain knowledge on social entrepreneurship and its concepts and components.
			CO5	To learn and understand the concept and importance of women entrepreneurship in India, problem faced by women and growth of women entrepreneurship in India.

AWADHESH PRATAP SINGH UNIVERSITY

REWA, MADHYA PRADESH, INDIA

BACHELOR OF EDUCATION (B. Ed)

FULL TIME TWO YEAR PROGRAMME

PROGRAMME STRUCTURE, SCHEME OF EXAMINATION & SYLLABUS

2018-19

on words

Syllabus & Course Structure
For

BACHELOR OF EDUCATION (B.Ed.)
COURSE STRUCTURE:
B.Ed. Course Scheme of Examination

First Year

Course/Paper	Hours per week	Total marks	Internal (Formative)	External (Summative)
Core Course				
CC 1. Education in India- Status, Problems and Issues	6	100	25	75
CC 2: Childhood & Growing Up	6	100	25	75
CC 3: Learning & Teaching	6	100	25	75
CC 4.Curriculum Development & School	6	100	25	75
CC 5 Education Policies School Leadership and Management	4	100	25	75
6. PC (I) Pedagogy of a School Subject – (Part 1) (Subject: 1.Language-Hindi/ English/ Urdu/Sanskrit / Science/ Physics/Chemistry)	6	100	25	75
7. PC (II) Pedagogy of a School Subject (Part II): (Subject 2.SocialScience / History/Civics/ Geography / Economics/Commerce/ Life Science/ Maths)	6	100	25	75
EPC.1.Reading and Reflecting on Texts	2	50	20	30
EPC.2. Drama & Art in Education	2	50	20	30
EPC 3- Educational Psychology Practical		50	10	40
Total		850	225	625

1

Second Year

Course/Paper	Hours per week	Total marks	Internal (Formative)	External (Summative)
Core Course				
CC 1: Gender, School & Society	6	100	25	75
2. Educational Technology & ICT	6	100	25	75
3. Creating an Inclusive School	6	100	25	75
4. Optional Course: (Any One of the Subject mentioned below)	6	100	25	75
a. Educational Administration and Management				
b. Value Education				
c. Health and Physical Education				
d. Guidance and counelling in school				
e. Action Research				
5. EPC 4 : Understanding the Self	2	50	20	30
6. EPC 5 : Understanding of ICT	2	50	20	30
		500	140	360
7. School Internship		350		
	Total	850		

EPC – Enhancing professional capacities.PC – Pedagogy courses***CC – Core Course

INTERNSHIP IN TEACHING

The activities and the allotment of marks for internship in teaching in each method of teaching school subjects are as following

Sl.No.	Particulars	MM Marks
1	Micro Teaching under Simulated conditions (Eight Skills)	50
2	Lesson Planning(Part I)	50
	Lesson Planning (Part II)	50
3	Execution of the lesson in the actual class room Situation	50
4	Unit Plan	25
5	Unit Test Administration Evaluation and interpretation	50
6	Resource unit/instructional kit/workbook/working models.	50
7	Observation records	25
	Total	350

Note – sixteen weeks internships in school.

Eligibility to take the Examination

a. A candidate shall appear at the final examination if he/she satisfactorily completes, besides fulfilling all other conditions under regulation of this syllabus.

Guidelines for Internal Assessment:

1 The college shall submit to the University all the internal assessment marks pertaining to theory and practicum as detailed in above to the University a week before the commencement of the theory examination along with CD in the format supplied by the University.

2 The Registrar (Evaluation) shall arrange for scrutiny of internal marks by constituting a committee of 2-3 members. The committee shall ascertain IA marks in the light of guidelines. The Registrar (Evaluation) shall call for all the IA related records of any Affiliated College without any prior intimation or the screening committee may visit any B.Ed college at any time during the office hours without any intimation, and during such surprise visit, the screening committee shall verify the IA records.

3 The individual colleges shall also submit the required descriptive statistics i.e., Frequency distribution, Mean, for (i)Total Internal Assessment (ii) Individual

papers and (iii) Internship in Teaching as directed by the Registrar(Evaluation).

4 The Principal of the college shall submit a fair copy of the moderated consolidated marks lists incorporating the directions of the Registrar (Evaluation).

5 In the instance of any malpractice coming to the knowledge of the Registrar (Evaluation) the matter will be seriously viewed by the University for appropriate action.

6 The decision of the University shall be final.

Scheme of Examination:

1 There shall be a University Examination at the end of each year.

2 Scheme of studies and examination of the B.Ed. Course.

3 The External and internal assessment for each Theory and MOT paper shall be 75 and 25 marks respectively.

Theory Examination – Question Paper Pattern

Pattern of all Question Papers for B.Ed. papers (duration of examination-3 hrs)

Section	No. of questions to be answered	Marks per question	Total marks	Nature of objectives to be covered
A	11 Questions out of 14 questions to be answered	5	55	Knowledge Understanding Comprehension type questions. Each should answered in not more than one Page (100-150) Words)
B	2 Questions out of 4 question to be answered	10	20	Application, Analysis, Synthesis, Evaluation type questions Each should be answered in about 2 to 3 pages (400-500 Words)
		Total	75	

Note : 1. All units in a given subject/paper should be adequately represented in the question paper. 2. Due weightage in terms of marks should be given to each unit.

Internal Assessment:

A. The Internal Assessment marks of the theory papers are as follows.

	Particulars	Marks
1.	Attendance	5 Marks
2.	1st Test	5 Marks
3.	2nd Test	5 Marks
4.	Assignmet	10 Marks
	Total	**25 Marks**

Attendance MarksSplit-up

Attendance (in percentage)	90 and above	Above 80 to 90	Above 75 to 80	70 and below
Marks	5	4	3	No Marks

Community Orientation	
a. SUPW	
b. PE/Games	
C. Citizenship Training Camp (CTC)	

Grades (A= Excellent, B=Good, C= Average)

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SYLLABUS

Bachelor of Education (B.Ed.) Course

Compulsory Paper

1st Year

CC 1. Education in India- Status, Problems and Issues

Objectives:

- To develop perception of the role and functions of a teacher as envisaged in the NPE 1986 and to familiarize the Student Teacher with the different projects and schemes at Secondary level in M.P.
- To develop an understanding of the brief historical background of Indian Education with special reference to Secondary Education
- To develop an understanding of the objectives and scope of Secondary Education.
- To develop an awareness of the professional ethics.

CONTENT

UNIT 1: Concept of Education –

- Indian and Western. Aims of Education. Functions of Education.
- Education as an instrument of Social Control, Social Change,
- Preservation of Cultural Heritage and Values.
- School and the society, Culture and Education, School as a Social System. Agencies of Education – Informal, Formal and Non-formal .

UNIT 2: Salient Features of Ancient Indian Education –

- Vedic, Buddhist, Islamic
- Tradition in Education.
- Major landmarks of British System of Education in Colonial India particularly from the viewpoint of Aims, Structure, Curricula and Methods of Education.
- Efforts towards evolving a national system of Education.

Unit -3: Secondary Education

- General Aims and Objectives of Secondary Education and Structure., Education during Post Independence Period Constitutional provisions for education,

Secondary Education commission 1952-53, Education Commission 1964-66, New Education Policy 1986 withProgramme of Action 1992,

- Different streams of Secondary Education 1) C.B.S.E. 2) I.C.S.E. and 3) KSEEB with respect to curriculum 4) Examination System etc.,
- Secondary School Teacher – Qualifications, Competences, Job Profile, Professional Code of Ethical conduct.
- Role of Secondary school teacher in Emerging India.

Unit - 4: Teacher Education and Secondary School Curriculum

- Status, Aims and Objectives of Teacher Education in India.
  - Role and Resposibilities of NCTE NCERT, DSERT, CTE, IASE
  - Professional organisation in the field of Teacher education
  - Rastriya Madhyamika Shikshana Abiyana (RMSA), NCF-2005
  - Programmes for enhancing efficiency and productivity of school teachers- In-service training – orientation and content enrichment programmes.

Assignments: (Any two of the following.)

- Prepare and execute a plan for making at least two children and one adult literate from the community.
- Plan and organize a field trip/excursion to a nearby area of educational important and submit a report.
- Visit to block or district and divisional educational offices and study their educational management pattern and submit the report.
- Prepare one project for institutional planning.
- Critically Study the working of the one of the parent teacher association in any two secondary schools.
- A critical survey of co-curricular activities in secondary schools.

Reference:

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& Coombs Philips H (1985) *The World Crisis in Education*. New York. Oxford University Press, New York

& Delors, Jaeques (1996) *Learning the Treasure within Report to UNESCO of the Internal Commission on Education for Twenty First Century* UNESCO.

& Dewey I (1952) *Experience in Education*, Collier Macmillan.

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& Gandhi M. K. (1956) *Basic Education*, Ahmedabad Nalijiban.

& Government of India (1952) *Report of the Secondary Education Commission*, New

Delhi.- Ministry of Education.

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& Government of India MHRD (1986) (Revised 1992) *National Policy of Education*. New Delhi.

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& Kneller G. F. (1978) *Foundation of Education*. New York: Johri Willy and Sons.

& Kneller George (1978) *Introduction to Philosophy of Education*, New York: John Willey and Sons INC.

& Mani R S. (1964) *Educational Ideas and Ideals of Gandhi and Tagore*, New Book Society, New Delhi.

& Mathur S.S. (1988) *A Sociological Approach to Indian Education*, Agra. Vindo Prakashan.

& Mookherjee K.K. (1972) *Some Great Educators of the World*. Fas Gupta & Ce Put Ltd. Calcutta.

& Mukherjee S. N. (1966) *History of Education in India*, Baroda. Acharya Book Depot.

& Naik J. P. and Syed N (1974) *A Student's History of Education in India*, New Delhi. Macmillan Co.

& Naik J. P. (1975) *Equality, Quality & Quantity: The Elusive Tringle of Indian Education* Bombay : Allied Publishers.

& NCTE (1988) *Gandhi on Education* , New Delhi

& Salamaliha(1979) *Education in Social Context*. New Delhi. NCERT.

CC 2: Childhood & Growing Up

Objectives: ·

- To develop an understanding of different aspects of a child's physical, motor, social and emotional development.
- To understand the developmental process of children with diverse abilities in social, cultural and political context.
- To build sensitivity towards children's developmental needs and capabilities, within their socio-cultural context.
- To develop a sensitive and critical understanding of the different social/educational/cultural/political realities at the core of the exploration into childhood.
- To build an interdisciplinary frame work to interpret, analyse observations and interactions from cross culture psychology.
- To develop critical deconstruction of significant events that media highlights and creates during childhood
- To provide hands-on experiences to interact with children, and training in methods to understand aspects of the development of children.
- To develop the power to interpret how gender caste and social class may impact the lived experience of children.

CONTENT

Unit 1: Perspectives in Development

- Concept , Meaning ,Scope and Function and Educational Psychology
- Introduction to development: concept and introduction to perspectives in development, humanistic psychology and developmental theory
- Enduring themes in the study of development: development as multidimensional and plural; Development as continuing through the life span; ways in which development is continuous/discontinuous? ; Socio-cultural contexts influencing development
- Gathering data about children from different contexts: naturalistic observations; interviews; reflective journals about children; anecdotal records and narratives; clinical methods with reference to Piaget
- Method: Longitudinal, Cross Sectional, Sequential, Cohort methods: Biographical, Case study and Observational method

Unit 2: Stages of Human Development

- Child as a developing individual; a psycho-social entity; stages of development

- Developmental characteristics of a child and an adolescent: physical, cognitive, social, emotional, moral and language; their interrelationships
- Developmental tasks of childhood and adolescence and their implications
- Factors influencing development such as heredity& environment, media, nutrition, child-rearing practices, siblings and peers
- Commonalities and diversities within the notion of childhood and how multiple childhoods are constructed with particular reference to the Indian context-Living in an urban Slum, Growing girl, and Growing up in dalit household

Unit 3: Social and Emotional Development

- Basic understanding of emotions, how differential gender socialization occurs • Personality development: Freud; psycho-social development-Erikson; influence of early childhood experiences on later personality.
- Social theories and gender development: meaning of gender roles; influences on gender roles, stereotypes, gender in the playground.
- Development of emotions: functions of emotions, attachment-Bowlby.

Unit 4: Contexts of Socialization

- Concept of socialization: family and child relationships; parenting; child rearing practices
- Schooling: peer influences, school culture, relationships with teachers, teacher expectations and school achievement; being out of school, overage learner
- Relationships with peers: friendships and gender; competition and cooperation, competition and conflict; aggression and bullying from early childhood to adolescence.
- Social, economic and cultural differences in socialization: implications for inclusion.

Essential Readings

- Cole, M., Cole, S. R. and Lightfoot, C. (2004). The Development of Children. New York: Worth Publishers. Chapter 1: The study of Human Development.
- Newman, B. M. and Newman, P.H. (2007). Theories of Human Development. London: Lawrence Erlbaum Associates, publishers. Chapter 1: Introduction.
- Papalia, D. E. and Olds, S. W. (2003). Human Development. New York: McGraw Hill Higher Education. Chapter 1: The Study of Human Development, Chapter 2: Theory and Research, Chapter 4: Physical Development During the First Three Years, Chapter 7: Physical Development in Early Childhood, Chapter 9: Physical Development in Middle Childhood.
- Saraswathi, T.S. (Ed.) (1999). Culture, Socialization and Human Development: Theory, Research and Applications in India. Sage publications. Chapter 4:

Theoretical Frameworks in Cross-cultural Psychology. Chapter 6: Individualism in a Collective Culture: A Case of Co-existence of Opposites.

- Vasanta, D. (2004). Childhood, Work and Schooling: Some Reflections. Contemporary Education Dialogue, Vol. 2(1), 5-29. 6. Mukunda, K. V. (2009). What Did You Ask in School Today? A Handbook on Child Learning. Noida: Harper Collins. Chapter 4: Child Development, 79-96.
- Readings for Discussion 1. Aries, P. (1965). Centuries of Childhood-A social history of the family life. Random House Inc. Chapter 1: The Ages of Life, Chapter 2: The Discovery of Childhood, and Conclusion - The two concepts of childhood. 2. Harris, M. and Butterworth, G. (2002). Developmental Psychology: a student's handbook. New York: Taylor & Francis. Chapter 1: A Brief History of Developmental Psychology.

Advanced readings

- Kakkar, S. (1978). Indian Childhood: Cultural Ideas, And Social Reality. New Delhi: Oxford.
- Nambissan, G. (2010). Exclusion and Discrimination in Schools: Experiences of Dalit Children; Working paper series Volume 01, Number 01, Indian Institute of Dalit Studies and UNICEF.
- Kakkar S. (1991). The Inner World: A Psycho-analytic study of childhood and society in India. Delhi: Oxford University Press.
- Sandra, L. Bem (1987). Gender Schema Theory and its Implications for Child Development: raising gender a schematic children in a gender schematic society, in M.R. Walsh, (ed). The Psychology of Women. Harvard University Press Cambridge, 206-226.
- Weiner, M. (1991). The State and the Child in India: Child Labour and Education Policy in Comparative Perspective. Princeton: Princeton University Press.

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CC 3: Learning & Teaching

Aims of the Course

- To become aware of different contexts of learning and situate schools as a special environment for learning;
- To reflect on their own implicit understanding of the nature and kinds of learning;
- Gain an understanding of different theoretical perspectives on learning with a focus on cognitive views of learning as well as social– constructivist theories;
- Explore the possibilities of an understanding of processes in human cognition and meaning–making them as basis for designing learning environments and experiences at school; and
- Appreciate the critical role of learner's based on differences and contexts in making meanings, and hence draw out implications for schools and teachers.

UNIT 1: THEORETICAL PERSPECTIVES ON LEARNING

- Implicit knowledge and beliefs about learning (demystifying misconceptions).
- Perspectives on human learning: Behaviourist (conditioning paradigm in brief), cognitivist, information-processing view, humanist, social-constructivist (drawing selectively on the ideas of Skinner, Piaget, Rogers, Vygotsky).
- Concepts and principles of each perspective and their applicability in different learning situations.

UNIT 2: ROLE OF LEARNER IN LEARNING

- Role of learner in various learning situations, as seen in different theoretical perspectives
- Role of teacher in teaching-learning situations: a) transmitter of knowledge, b) model, c) facilitator, d) negotiator, e) co-learner. (The focus is on building understanding of different psychological perspectives of learning and helping student teachers to learn to apply them in different learning situations).
- Distinctions between learning as 'construction of knowledge' and learning as 'transmission and reception of knowledge'.

UNIT 3: LEARNING IN 'CONSTRUCTIVIST' PERSPECTIVE

- Social-constructivist perspective (also Bruner and Ausubel's perspective) and applications of Vygotky's ideas in teaching
- Understanding processes that facilitate 'construction of knowledge' :
  (i) Experiential learning and reflection
  (ii) Social mediation
  (iii) Cognitive negotiability
  (iv) Situated learning and cognitive apprenticeship
  (v) Meta-cognition.
- Creating facilitative learning environments, teachers' attitudes, expectations – enhancing motivation, positive emotions, self-efficacy, collaborative and self regulated learning. (The focus is on learning as a constructive rather than a

reproductive process. The learner- centered orientation has implications for understanding learning as contextual and self-regulated process and following suitable classroom practices)

UNIT 4: INDIVIDUAL DIFFERENCES AMONG LEARNERS

- Dimensions of differences in psychological attributes—cognitive abilities, interest, aptitude, creativity, personality, values.
- Understanding learners from multiple intelligences perspective with a focus on Gardner's theory of multiple intelligences. Implications for teaching-learning in the light of changing concept of intelligence, including emotional intelligence.
- Differences in learners based on predominant 'learning styles'.
- Differences in learners based on socio-cultural contexts. Impact of home languages of learners' and language of instruction, impact of differential 'cultural capital' of learners.
- Understanding differences based on a range of cognitive abilities— learning difficulties, slow learners and dyslexics, intellectual deficiency, intellectual giftedness. Implications for catering to individual variations in view of 'difference' rather than 'deficit' perspective.(The focus is on understanding the differential learning needs of the learners with regard to abilities, learning styles, language, socio-cultural differences/disadvantage, learning difficulties, and their implications for classroom practices and teaching).

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CC 4. Curriculum Development & School

OBJECTIVES:

- To acquaint students with the nature and types of curriculum.
- To acquaint students with the context of curriculum development and some Innovative Curriculum Models.
- To familiarize students with Designing of Curriculum.
- To give practical experience in Evaluating, Designing and Reviewing Curriculum.

CONTENT:

UNIT I:

- Curriculum – Meaning and Nature, types of Curriculum, Syllabus and Text books –their interrelationship. Issues and problems of existing Curriculum.

UNIT II:

- Curriculum Construction, Curriculum Development and Curriculum Designing. Concepts and differences. Determinants and motives of Curriculum Development. Different Curriculum Models-open university, Open School, etc.

UNIT III:

- Steps of Designing different Curriculum. Selection, Gradation and Organisation of Curriculum. Development and Implementation of Curriculum. Enrichment of Curriculum.

UNIT IV: PRACTICALS

- Evaluation of B.Ed. Curriculum
- Designing a Curriculum in a given condition
  Reviewing of Syllabus/Books

REFERENCES

- Ashcroft, Kate and Palacio, David. The Primary Teacher's Guide to the New National Curriculum. London: Flamer Press, 1995.
- Doll, Ronald C.: Curriculum Improvement – Decision Making and Process. London; Allyn and Bacon, 1996.

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- Saylor, J.G. and Alexander, W.H.: Curriculum, Planning for Modern Schools. London: Holt, Rinehart and Winston, Inc., 1966.
- Wiles, Jon. & Bondi, Joseph C.: Curriculum Development –A Guide to Practice. London: Charles E. Merrill Publishing Co., 1984.

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CC.5. EDUCATION POLICIES SCHOOL LEADERSHIP AND MANAGEMENT

Objectives :–

- To develop perception of the role and function of a teacher as envisaged in the NPE 1986 and to familiarizethe student teacher with the different projects and schemes at secondary level in Madhya Pradesh
- To develop an understand of the brief historical background of Indian Education with special reference to secondary education
- To acquire elementary knowledge of educational administration and management.

Unit-I :Educational Policies

- General aims and objectives of educational policies in reference of secondary education.
- Different education policies during pre and post – independence period wood dispatch, maqualey minutes, wardh summit, Indian Act -1935, Basic Shiksha (बुनियादी शिक्षा) and mudaliar Commission Taleem. Radha Krishnan commission, Kothari Commission , NPE-1986, NPE amended 1992, Sarva Shiksha Abhiyan and RTE-2010

Unit-II :School Curriculum

- Main features of secondary school curriculum and the process of curriculum development.
- General principles of school curriculums
- Critical analysis of secondary school curriculum in context of Madhya Pradesh

Unit-III :Leadership

- Leadership in school : Concept need and importance of leadership, Dimension and style of leadership at secondary levels. Role of leadership in school effectiveness.
- Implementation of leadership at secondary level issues and challenges.
- Types, styles problems of leadership role of school Head Master/Principal in institutional planning.

Unit-IV :Education Management

- Concept, need, characteristics, principles of educational management.

- Basic of management – planning, organization, control decision making and financing.
- Prevailing education management pattern in Madhya Pradesh

Unit-V :Function of Management

- Time management – Principles and Importance of time management in school curricular and co curricular activities.
- Resource management – Different types of resources at school level maximum optimization of resources

Reference :-

- Agrawal, J.C., 2005 : Nai Shiksha Nati, Prabhat Prakashan, New Delhi
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- Naik J.P. (1970) : On Planning, Asia Institute for Educational planning & Administration, New Delhi

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PC.1. Pedagogy of a School Subject – Part 1

Hindi

Objectives : Upon completion of the course, the student-teachers will be able to:

1. Appreciate the importance of teaching Hindi as a second / third Language.
2. Help the Students to understand the aims and objectives of teaching Hindi.
3. Help pupils to acquire basic skills of language teaching, Aims/Objectives.
4. Know the different methods of teaching.
5. Prepare a lesson notes and teach accordingly.
6. Appreciate and use of modern educational media.

Unit 1: Perspectives of Hindi Language, Aims and Objectives of Teaching Hindi

- Meaning and concept of language.
- Nature and importance of language
- Three language formula and Hindi
- Place of Hindi in the Secondary School Curriculum of M.P.
- Present position of Hindi in India
  a. In the constitution
  b. In the life of Indian people
- Aims of teaching Hindi as a second / third language.
- Functional aims of Hindi Teaching
- Cultural Aims of Hindi Teaching. National and International Aims of Hindi Teaching
- Instructional objectives with practical -- Theoretical background Writing of instructional objectives of Hindi Teaching
- Modification of Objectives in terms of behavioural changes.

Unit 2 : Planning Lessons, Resource Units, Unit Plan, Drill Lessons

- Planning of prose, poetry and Grammar lessons.
- Processing of lesson notes and micro lesson plans.
- Meaning and importance of a Unit plan and administration.
- Resource Units – Use and implications.
- Plan and process of lessons in Practice teaching.

Unit 3: Language Skills

- Development of language skills- listening objectives and importance – activities for its development
- Speaking – Objectives – activities for its development – role of learning by heart, role-play, extempore and prepared speeches, debates, languages games, substitution table need for correct pronunciation – Remedial Measures
- Reading – Objectives – Types of reading silent and loud, intensive – methods of teaching reading
- Writing – Objectives – Characteristics of handwriting – dictation
- Composition – Objectives – Types - Oral, written and picture composition – Free and guided composition, Translation – Objectives- Importance's – Characteristics of good translation

Unit 4 :Curriculum Design

- Principles of Curriculum construction of Hindi
- Curriculum Design in Hindi - Subject centered – Learner Centered – Problem centered.
- Transaction of curriculum / Co-curricular , Extra curricular activities pertaining to teaching and learning.
- Curriculum of prose – poetry and composition. Prose – Ancient / Medieval / Modern prose versions. Poetry – Bhakti period – Ritti period – Modern period. Composition – Exercises , Assignments and remedial teaching activities and Grammar – Translations.
- Curriculum development and evaluation.

Seminar Topics (any one)

a) Preparing scheme of assessment.
b) A study of an author / poet.
c) Developing Linguistics Skills.
d) System our examination.
e) Importance of teaching materials for effective teaching.

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Practicum

a) Review of Books – 8, 9 standard school text books.

b) Resource Unit Uses.

c) Unit plan processing.

d) A study of an Author / Poet.

e) Developing Linguistics Skills.

Assignments (any one)

1. Solving grammar exercise of 8th and 9th Standard Text books of second language Hindi/Third Language. Hindi
2. Preparing crossword puzzles on technical terms, difficult terms of prescribed Hindi Text Books.
3. Construction of substitution – tables on the concerned texts
4. Report on constitutional provisions – provided to Hindi and the implication.

Scheme of Assessment

01.	For test oriented Studies.	
	Preparation of test ---- ---	4Marks
	Presentation of test	2 Marks
	Analysis of data	2 Marks
	Drawing conclusions	2 Marks
02.	Report writing	
	Introduction of the topic	2 Marks
	Hypothetical study	4 Marks
	Analysis and Interpretation conclusion	4 Marks
	References.	

(Note: Records should be maintained).

References

& Bhai.Y (1978) *Hindi Bhasashikshan.* Vinod Pustak Mandir Agra.

& *Bhasa Vishesshank Patrick* (1980) Department of Education, Rajasthan , Bikaner

& Chaturvedi, V.S. (1999) *Adhapan Kala.* Varanasi: Gopinath Bhargav Nand Kishor and Sons.

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& Ryburu, W.M. (1950) *The Teaching of the Mother Tongue.* Madras: Oxford University Press.

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& Srivastava, B.D. (1968) *The Structural Approach to the Teaching of English.* Agsa: Ram Prasad and Sons.

& Sugandhi, Deepak (2004) *Hindi Shikha Pranali* . Ilkal : Neha Prakshan. Karnataka

& Sugandhi, V. (2003) *Hindi Adhayapan.* Kolhapur, Creative Publishers.

& Syandhya Mukarji (1989) *Hindi Bhasha Shikshan.* Lucknow: Prakshan Kendra. Uttar Pradesh.

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Sanskrit

Objectives - Upon completion of the course the student-teacher will be able to:

1. Understand the importance of Sanskrit language and its contribution to Indian culture and emotional integration.
2. Understand the aims and objectives of teaching Sanskrit and state them in the form of specific behavioural changes.
3. Prepare objective based lesson plans and implement them.
4. Understand the basic skills of language learning.
5. Understand the principles of curriculum construction in Sanskrit.
6. Understand the different methods of teaching Sanskrit and use them in his practice teaching lessons.
7. Understand the importance of appropriate instructional material and use them in his practice teaching lessons.
8. Understand the importance of Language Laboratory.
9. Understand the importance of Evaluation, prepare and use different tools of Evaluation in language learning.
10. Understand the importance of co-curricular activities in language learning.
11. Imbibe the special qualities of Sanskrit teacher.

Unit 1 : Sanskrit Language – Nature and Importance

- Importance of Sanskrit language
- Contributions of Sanskrit to other Indian Languages to Indian culture and tradition and
  to emotional integration

Unit 2 : Place of Sanskrit in the Secondary School Curriculum

- Aims & Objectives of teaching Sanskrit with reference to three language formula.
- Instructional Objectives - Specifications of each objective in the form of specific behavioural changes.

Unit 3 : Lesson Plan in Sanskrit Language

- Planning lesson plans in prose, poetry, grammar and composition.
- Unit plan : importance, characteristics, format

- Resource unit: importance, characteristics, format
- Micro lesson plan: importance, format, practice

Unit 4 : Development of Language Skills, Curriculum Design

- Listening: importance, activities for its development.
- Speaking: importance, characteristics of good speaking, activities for its development.
- Reading: mechanics of reading, objectives, different kinds of reading – silent reading and loud reading.
- Writing: importance of good handwriting - specialties of the Devanagari script, causes of spelling mistakes, remedial measures.
- Principles of curriculum construction of Sanskrit.
- Curriculum design in Sanskrit: subject centered, learner centered, problem centered.
- Transaction of curricular/ co-curricular activities.
- Curriculum development and evaluation.

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Reference

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& Shanbhag. D.N. (2002) *Subhoda Sanskrit Vyakarana.* Dharwad:Bharat Book Depot & Publications.

& Hulkerikar. G.S (1998) *The Problems of Sanskrit Teaching.* Kolhapur : Bharat Book Depot.

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& Patnayak. P. (1997) *Language Curriculum.* Mysore: CIIL Publications.

& Ramashakal Pandeya. (2000) *Sanskrit Shikshan.* Agra: Pustaka Mandir.

& Ramavarmaraja . K. (2000) *The Teaching of Sanskrit.* Madras : Sanskrit Education Society.

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English / Urdu

Objectives: upon completion of the course the student teacher will be able to:

1. To master the different techniques, devices of the Second language structure, sounds and vocabulary.
2. To understand the status of English language.
3. To distinguish between different approaches and methods of teaching English and their use in the classroom.
4. Acquire the basic skills of language learning.
5. Plan and execute of different types of lessons in prose, poetry according to classroom situations.
6. To appreciate the importance and use of suitable audio -visual aids in class room situations.
7. To know the principles of curriculum construction.
8. To prepare and use appropriate tools of evaluation to measure the linguistic abilities of the pupils.
9. To realize his/her responsibilities as language teacher and pursue towards the aims of professional growth.
10. To guide the students to use the language correctly.

Unit 1 : Nature of English Language

1.1 Language its nature and structure - Meaning of language, Functions of language - Informative, expressive and Directive Linguistic Principles.

1.2 Structure of English Language - phonological, morphological, Syntactic, Semantic and graphic (a brief explanation of the concepts)

Unit 2 : Aims and Objectives of Teaching English

2.1 Aims and objectives of teaching English at the Secondary School level as first and second language.

2.2 English as a library language, link language and international language.

2.3 Position of English in India before and after Independence - The three language formula its meaning and scope.

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Unit 3 : Instructional design of Teaching English Language

3.1 Teaching of Prose - detailed and non-detailed Objectives - Methods and Approaches steps in lesson planning.

3.2 Teaching of poetry - Objectives - Methods and Approaches - Steps in lesson planning.

3.3 Teaching of Grammar - Objectives - Formal and Functional -Methods of teaching grammar.

3.4 Use of mother tongue in teaching of English, different occasions for its effective use

3.5 Preparation of Unit plan, Resource Unit.

Units 4 : Methods, Approaches to Develop English Language Skills

Psychological principles of learning English as a foreign language. Methods and approaches of Teaching English

a. Grammar Translation Method.
b. Direct Method
c. Bilingual method.
d. Structural approach- Dr. WEST method
e. Communicative approach

4.1 Development of language skills - listening objectives and importance - activities for its development.

4.2 Speaking - Objectives - Activities for its development , role of learning by heart, role-play, extempore and prepared speeches, debates, language games, substitution table need for correct pronunciation, defects in pronunciation - Remedial Measures.

4.3 Reading - Objectives - Types of reading - silent and a loud, intensive - methods of teaching reading.

4.4 Writing - Objectives - Characteristics of handwriting - dictation

Composition - Objectives - Types (oral, written and picture composition) Free and guided composition Translation - Objectives– Importance - Characteristics of good translation.

Practicum

1. Preparing of substitution table and other drill exercise for practice of structures

Assignment/ Practical	10 marks
One test (internal)	10 marks
Participation in Group activities	5 marks
External Examination	50 marks
Total	75 marks

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SCIENCE

Objectives : -

- Develop insight on the meaning and nature of General science for determining aims and strategies of teaching- learning.
- Appreciate that science is a dynamic and expanding body of knowledge.
- Appreciate the fact that every child possesses curiosity about his/her natural surroundings.
- Identify and relate everyday experiences with learning of science.
- Appreciate various approaches of teaching- learning of science.
- Explore the process skill in science and role of laboratory in teaching- learning.
- Use effectively different activities / experiments/ demonstrations / laboratory experiences for teaching-learning of science.
- Integrate the science knowledge with other school subjects.
- Analyze the contents of science with respect to pots, branches, process skills, knowledge organization and other critical issues.
- Develop process-oriented objectives based on the content themes/units.
- Identify the concepts of science that are alternatively conceptualized by teachers and students in general.

Unit-I: Nature and Scope of Genral Science

- Concept, Nature, Need & Importace of Science & Science Teaching.
- Main discoveries and development of science (special reference to ancient India) Science as a domain of enquiry, as a dynamic and expanding body of knowledge, science as a process of constructing knowledge. Science as interdisciplinary area of learning (Physics, chemistry, biology etc) science for environment, health, peace & equity, science and society., Fact, concept, principles, laws and theories-their characteristics in context of general science.

Unit-II: Teaching-learning of social science

- Questioning; Collaborative strategies; games, simulations, dramatization, role plays; Values clarification; problem-solving, Discussion, story-telling,project and decision-making, use of media and technology, concept mapping.
- Methods. Interactive verbal learning; experiential learning through activities, experiments; Investigative field visits.
- Planning, organizing and conducting of small community survey.

Unit-III: Teaching-learning of Genral Science

- Principles of science and its applications consistent with the stages of cognitive development of learners.
- Pedagogical shift from science as fixed body of knowledge to constructing knowledge, scientific method – observation, enquiry, hypothesis,

experimentation, data collection, generalization (teacher-educator will illustrate taking examples from different stage-specific content arras keeping in mind the variation , e.g. structure and function, molecular aspects, interaction between living and non-living, biodiversity, etc). Communication in sciences.

- Questioning; Collaborative strategies; simulations, Demostration, lab Method, Problem Soliving, Heuristics Project Method, Inductive and deductive Method, Heurastic, use of media and technology, concept mapping.
- Innovative methods of science teaching.

Unit-IV: ICT & Materials in Teaching-learning of Genral Science

- Use of ICT: Video clips, Power points presentations, films etc.
- Planning, preparation and presentation of Instructional Material.
- Techniques: Using textbooks and atlas as a part of oral lessons, non-oral working lessons; using medium and large scale maps; using pictures, photographs, satellite imageries and aerial photographs; using audio-visual aids, CDs, multimedia and internet; case study approach.
- Planning , Organisation and activity of science club.

Unit-V: Teaching-learning Resources in Genral Science

- People as resource: the significance of oral data.
- Types of primary and secondary sources: data from field, textual materials, journals, magazines, newspapers, etc.
- Using the library for secondary sources and reference material, such as dictionaries and encyclopedias.
- Various teaching aids , Audio-visuals & online resourses.

Unit-VI: Assessment and Evaluation

- Meaning, concept and construction of Achievement test, diagnostic and remedial test.
- Blue print: Meaning, concept, need and construction.
- Open-book tests: Strengths and limitations.
- Continuous and Comprehensive Evaluation (CCE) in Sciences.
- Characteristics of Assessment in Sciences

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Physics / Chemistry

Objectives: Upon completion of the course, the student teacher will be able to:

1) Understand the nature, scope and importance of Physical science with special reference to secondary school content.
2) Understand the aims and objectives of teaching Physical science
3) State the specific behavioral changes under each objective.
4) Understand and make use of different approaches & methods of teaching Physical science.
5) Prepare objective based lesson plans and use them in their internship.
6) Understand and employ several teaching techniques helpful to develop scientific attitude and scientific method.
7) Plan, use and maintain the physical science laboratory systematically.
8) Understand the principles of text-book construction.
9) Understand the importance of appropriate instructional materials (hardwares and softwares) in teaching Physical science and use them by preparing/selecting them in their practice teaching.
10) Understand the importance of principles of curriculum construction in the organisation of Physical science contact.
11) Get mastery in Physical science content and imbibe the special qualities of Physical Science teacher.
12) Prepare and use different tools of evaluation to assess the achievements of students in Physical Science.
13) Develop professionally by attending lectures of professional interest, reading journals, and magazines and enroll as members of professional organisation
14) Organise co-curricular activities in science i.e. seminars, field trips, exhibitions discussions etc through the science club.
15) Apply the knowledge of physical science to develop scientific thinking and scientific out look.
16) Develop skills in analyzing the content in terms of concepts and in learning experiences.
17) Construct and administer unit test, conduct experiments improves teaching aids.

Unit 1: Meaning, Nature and Impact of Physical Science

- Concept of science - Science as process and science as a product;
- Nature and Scope of Physical Science
- Impact of Science and Technology on modern living.
- Scientific Attitude - Meaning definition and importance
- Qualities of a person who possesses scientific attitude.
- Scientific Method-Meaning, importance and steps involved (with an illustration).

8 hours

Unit 2: Aims and Objectives of Teaching Physical Science

- Aims of teaching Physical science in Secondary school:
  - ..1 Personal development aim,
  - ..2 Learner's academic and process skills development aim,
  - ..3 Disciplinary aim and
  - ..4 Cultural aim.
- Objectives of teaching physical science:
  - ..1 Bases for formulation of objectives
  - 2 Objectives of teaching Physical science at Secondary level; (To be Discussed keeping in view of the objectives of teaching Physical science enunciated in the physical science syllabi of secondary school of M.P.); Instructional objectives of teaching physical science and stating them in observable behavioral changes ; i) Knowledge ii) Understanding, iii) Application, iv) Skill, v) Attitude, vi) Interest, vii) Appreciation

10 hours

Unit 3: Approaches and Methods of Teaching Physical Science

- Enquiry Approach -Meaning, Uses with Illustrations, Advantages and disadvantages.
- Inductive Approach-Meaning, Uses with Illustrations, Advantages and disadvantages.
- Deductive Approach-Meaning, Uses with Illustrations, Advantages and disadvantages.
- Problem Solving Approach- Meaning, Uses with Illustrations, Steps, Advantages and disadvantages.
- Demonstration Method- Meaning, uses, Advantages and disadvantages.
- Lectures-Cum-Demonstration Method- Meaning, uses with Illustration, Advantages and disadvantages.

- Laboratory Method- Meaning, uses with Illustration, Advantages and disadvantages.
- Guided Discovery Method - Meaning, uses with Illustration, Advantages and disadvantages.
- Biographical Method-Meaning, uses with Illustration, Advantages and disadvantages.
- Individual Instruction Techniques and Active Learning Strategies.
- Concept Mapping: Its use for summarizing a unit and evaluating students understanding

Unit 4: Instructional Design, Resources and Teaching Aid for teaching Physical Science:

- Lesson Planning-Meaning, Steps, Importance and Format of Lesson Plan according to active learning strategies.
- Unit Plan-Meaning, Steps, Importance and Format of Lesson Plan
- Resource Unit-Meaning, Steps, Importance and Format of Lesson Plan
- Audio-Visual Aids (Preparation and Use)
  - I Charts;
  - ii Models;
  - iii OHP transparencies;
  - iv Filmstrips;
  - v slides;
  - vi Video tapes;
  - vii Films;
  - viii Educational C.D.'s
- Mass Media –
  - i Television (T.V.);
  - ii Radio - Meaning and importance.
- Community Resources and Self learning materials –
  - iii Meaning and importance.
- Physical Science Library;
- Importance & organizing of physical science library;
- Sections of science library;
- Choice of book for science library.

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Pedagogy of a School Subject part 2

Objectives:

1. To enable Students to responds to a variety of Maxims of Teaching.
2. To develop the teaching skills of Students.

Course Content:

Unit I- Maxims of Teaching and Micro Teaching

Meaning , Nature and Types of Maxims of Teaching

Meaning , Definition, Principles of Micro Teaching

Micro Teaching Cycle, Process of Micro Teaching

Advantages , limitations and uses of Micro Teaching

Unit II- TEACHING SKILLS

1) Introduction Skill

2) Fluency in Questioning

3) Probing Question

4) Explaining

5) Illustrating and use of Examples

6) Teacher's silences and Non Verbal Cues

7) Lecturing

8) Reinforcement

9) Stimulus variation

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10) Black board

11) Effective Communication

12) Recognizing and Attending Behaviours

13) Self Induction

14) Classroom Management

15) Planned repetition

16) Achieving Closure

PC. 2: PEDAGOGY OF SOCIAL SCEINCES (part-2)

This course in the teaching of Social Sciences introduces student teachers to matters of both content and pedagogy. Some emphasis on content seems necessary in view of the fact that many student teachers may not be having sufficient exposure to four major disciplines of Social Sciences. In fact, the pedagogy of a field of enquiry cannot be separated from its content. This course will help student teachers understand key concepts of the various Social Sciences as well as related pedagogical issues. Furthermore, student teachers should be encouraged to see interconnections between the different Social Sciences, i.e. see Social Sciences as an integrated area of study.

Social and economic issues and the concerns of Indian society have been introduced through real-life situations and primary sources of information. *Student-teachers are encouraged to grasp concepts and to develop thinking skills*. That is why, in certain cases, Case Studies for the transaction of topics have been indicated.

Aims of the Course

- To develop an understanding of the nature of Social Sciences, both of individual disciplines comprising Social Sciences, and also of Social Sciences as an integrated/ interdisciplinary area of study;
- To acquire a conceptual understanding of the processes of teaching and learning Social Sciences
- To enable student teachers examine the prevailing pedagogical practices in classrooms critically and to reflect on the desired changes;
- To acquire basic knowledge and skills to analyse and transact the Social Sciences curriculum effectively following wide-ranging teaching-learning strategies in order to make it enjoyable and relevant for life;
- To sensitize and equip student teachers to handle social issues and concerns in a responsible manner, e.g., preservation of the environment, disaster management, promoting inclusive education, preventing social exclusion of children coming from socially and economically deprived backgrounds, and saving fast depleting natural resources (water, minerals, fossil fuels etc.).

Course Outline

Part I

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UNIT I: SOCIAL SCIENCES AS AN INTEGRATING AREA OF STUDY: CONTEXT AND CONCERNS

- Distinguishing between Natural and Social Sciences: Major Social Sciences disciplines in Schools.
- What is 'social' about various Social Sciences?
- Uniqueness of disciplines vis-a-vis interdisciplinarity
- Linking child's natural curiosity with natural phenomena like weather, flora and fauna; spatial and temporal contexts; important social and economic issues and concerns of the present-day Indian society.
- Multiple perspectives/plurality of approaches for constructing explanations and arguments.

UNIT II: TEACHING-LEARNING RESOURCES IN SOCIAL SCIENCES

- People as resource: The significance of oral data.
- Types of Primary and Secondary Sources: Data from field, textual materials, journals, magazines, newspapers, etc.
- Using the library for secondary sources and reference material, such as dictionaries and encyclopaedias.
- Various teaching aids: Using atlas as a resource for Social Sciences; maps, globe, charts, models, graphs, visuals.
- Audio-visual aids, CD-Rom, multimedia, internet.

UNIT III: SOCIAL SCIENCES CURRICULUM FOR SCHOOLS IN INDIA

- Curriculum development process: National and State levels.
- Studying the Social Sciences syllabus - aims and objectives, content organisation and presentation of any State Board and CBSE for different stages of school education.

UNIT IV : TEACHING-LEARNING OF GEOGRAPHY—SPACE, RESOURCES AND DEVELOPMENT

- Meaning, Nature and Scope of Geography: Current Trends
- Teaching and Learning Major Themes and Key Concepts in Geography
- LOCATION: Absolute (Grid system of latitudes and longitudes) and relative location: two ways of describing the positions of places and people on the earth's surface. Differentiating between sites (location) and situation (place).
- PLACE: Distinct physical and human characteristic of places that distinguish one from the other.

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• MOVEMENTS: Interdependence and interaction across space, migration of people, transport and communication; trade and commerce, patterns of centres, pathways and hinterlands.

• REGIONS : Formation and change.

• The above content may be used to understand teaching, learning strategies and skill development in Geography.

• Developing Skills in Geography

• Observation, recording and interpretation of physical and social features and phenomena; Reading and interpreting geographical information through tables, figures, diagrams, photographs; Map reading and interpreting using scale (distance), direction, symbols, point, line and area; Visual-to-verbal and verbal-to-visual transformation leading to mental mapping; Identifying, constructing and asking geographical questions; Developing and gathering relevant information and data and analysing them to answer geographical questions and offering explanations and interpretations of their findings; applying acquired knowledge and skills for understanding the wider world and taking personal decisions; taking up activities to study environmental degradation in the local area and its preservation methods; studying any disaster involving all factors at the local/global levels.

• Teaching Strategies in Geography

• Questioning; Collaborative strategies; Games, simulations and role plays; Values clarification, Problem-solving and decision-making.

• METHODS : Interactive verbal learning; Experiential learning through activities, experiments; Investigative field visits based on students' own interests with teacher's support as facilitator; Engagement with 'places' at an emotional or sensory level using art, poetry and literature.

• TECHNIQUES: Using textbooks and atlas as a part of oral lessons, non-oral working lessons; using medium and large scale maps; using pictures, photographs, satellite imageries and aerial photographs; using audio-visual aids, CDs, multimedia and internet; case study approach.

• UNIT V: TEACHING-LEARNING OF ECONOMICS: STATE, MARKET, AND

• DEVELOPMENT

• As a branch of social science, economics is concerned with people. It studies how to provide them with means to realise their potential. This unit on economics deals with the broad themes of state, market, and development. Market and state are interrelated as instruments of development. The course endeavours to introduce the learners to key economic concepts and issues that affect their everyday lives.

• Meaning, Nature and Scope of Economics: Current Trends Key Concepts in Economics

• Scarcity and choice, opportunity cost, productivity, demand, supply and market mechanism, Division of labour and specialisation.

• Classification of Economic System
• Capitalism, Socialism, mixed economy (case study: India)
• Developmental Issues in Economics
• Sustainable Development—economic growth and economic development—indicators of measuring the well-being of an economy; Gross Domestic Product; economic planning; Poverty; Food Security; Price rise; Role and functions of Money—formal and informal financial institutions and budget; Classification of Production Activities—primary, secondary and tertiary;

• Economic Reforms and Globalisation (discuss these developmental issues with reference

to India).
• The above content may be used to undertstand the teaching, learning strategies and skill

development in economics.
• Teaching-Learning Methods in Economics
• In addition to usual methods like lecture, discussion, storytelling, other methods like problem-solving, simulation games, use of media and technology, concept mapping, project and activities like field visits (e.g. visit to a construction site for data on wages and employment), collection of data from documents (e.g. Economic Survey, Five Year Plan), analysing and interpreting data (using simple tables, diagrams and graphs) can be undertaken. Self-study and collaborative learning activities should be encouraged.
• Teaching-Learning Materials
• Using textbook, analysis of news (Newspaper, TV, and Radio); documents (e.g. Economics Survey, Five Year Plan), Journals and News Magazines.

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History / Civics

Objectives: Upon completion of the course the student-teacher will be able to:

1. Understand meaning, scope and importance of History and civics in the school curriculum.
2. Acquire content knowledge of methods of history and civics.
3. Acquire knowledge of aims and instructional objectives of teaching history and civics
4. Acquire skills in planning lessons in History and civics
5. Understand and apply the principles of organizing content in the teaching history and civics
6. Acquire knowledge about Local, Regional National, and World History.
7. Acquire the knowledge of Instructional Material and resources in teaching History and Civics
8. Preparing suitable teaching devices & using them & organizing field trips.
9. Proficiency in correlating History and civics with other school subjects.
10. Cultivate the qualities of a good History and civics teacher
11. Acquire the knowledge of content of History and civics for viii to xth standard in Karnataka
12. Evaluate History and civics text books and prescribed courses
13. Develop necessary skills in the application of methods and techniques in the classroom

Unit 1: Nature and Scope of History and Civics

1.1 Meaning, Nature, and scope of history

1.1.1. History - an art or Science

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1.1.2 Modern Concept of History, exploration, criticism synthesis and exposition

1.1.3 Different levels of History - World History, National, Regional and Local History

1.2. Meaning and scope of civics

2.1.1 Man as a social animal and as a citizen

Unit 2: Aims and Objectives of Teaching History and Civics

2.1 Meaning and Importance of teaching History and civics in Secondary Schools

2.2 Aims of teaching History and Civics

2.2.1 Political conciseness, understanding of current events, democratic citizenship, understanding of Union and the State Govt.

2.2.2 Functional awareness of Rights and Duties of citizens.

2.3 Instructional objectives and values of Teaching History and civics

2.3.1 Knowledge, understanding, critical thinking, skills, Attitude, Interests, Application - Analysis of these objectives in terms of specific behaviours of learners.

2.3.2 Spelling out Instructional objectives and learning outcomes

2.3.3 History and civics based hobby clubs, societies

2.4 Correlation of History and Civics with other School Subject

2.4.1 Meaning and Importance of correlation

2.4.2 Types of correlation.

2.4.3 Correlation of History with Geography, Economics, Literature

2.4.3 Co curricular /Activities in History and Civics

2.4.5 Importance of organization of field trips, visits.

Unit 3: Instructional design in Teaching History and Civics

3.1 Format of lesson plan: Its stages, Selection of relevant content, selection of appropriate teaching devices and assignments, and plan according to active learning strategies.

3.2 Resource Unit

3.3 Unit Plan

Unit 4: Methods, Techniques, and Instructional Materials of teaching History and civics

4.1 Meaning and need of methods

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4.2 Methods and techniques of teaching History –discussion, project, problem solving, source, dramatization and biographical, Active Learning Strategies.

4.3 Methods of teaching Civics - Survey observation, comparative and demonstration, Active Learning Strategies.

4.4 Instructional Materials in History and civics :

4.4.1 Collateral Reading – Importance, Reading materials, Historical Novels

4.4.2 Auto biographic, Magazines, News papers Drams, Journals Audio-Aids-Radio, Tape recorder, Visual-Aids-Maps- Importance,

4.4.3 Types, procedure of using maps, pictures, charts, models, film strips, diagrams ,

4.4.4 Audio-Visual Aids-Films, TV

a. History Room-Meaning and Importance, planning equipping

b. Computers, multimedia packages and Internet as an Instructional aid.

Practical

1. Critical evaluate History civics content of 8^{th} 9^{th} 10^{th} Standard.
2. Conducting quiz Competition in History/civics.
3. Survey of the locality and collection of information about places or institutions of historical interests.
4. Organizing short field trip to a place of historical / political interests
5. Preparing resource unit on a topic of your choice in History and Civics.
6. Preparation of materials for a History room or museum
7. Student is also allowed to do his own interested practical work pertaining to the syllabus.

Note:-

1. One assignment carries 10 marks
2. One internal test carries 10 marks

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Geography / Economics

Objectives: Upon completion of the course the student-teacher will be able to:

1. Acquire knowledge about basic facts, concepts, laws principles and trends in Geography and Economics
2. Acquire knowledge and understanding of the aims and objectives of Geography
3. Realize the values of learning geography
4. Make use of Audio-visual aids about Geography and Economics
5. Develop skills in equipping the Geography (i) Museum (ii) Room (iii) Library
6. Develop skills in organizing planning- learning experiments and in writing and organizing the lesson plan.
7. Acquire the knowledge of Geography Curriculum

Unit 1: Meaning, Nature and Scope of Geography and Economics

1.1 Meaning, Nature, Scope and importance of Geography

1.2 Branches of Geography and their importance- physical, economic, human and political.

1.3 Meaning, Nature, Scope and importance of Economics.

1.4 International relations and study of Geography and Economics

Unit 2: Aims and Objectives of teaching Geography and Economics

2.1 Aims/Values of teaching Geography and Economics

- 2.1.1 Intellectual aims
- 2.1.2 Cultural aims
- 2.1.3 Environmental aims
- 2.1.4 Utilitarian aims
- 2.1.5 Aesthetic aims

2.2 Taxonomy and objectives of teaching Geography and Economics

- 2.2.1 Knowledge
- 2.2.2 Understanding
- 2.2.3 Application
- 2.2.4 Attitude and interest
- 2.2.5 National Integration, International Understanding.

2.3 Co-relation of Geography and Economics with History, Science, Mathematics and languages

2.4 Trends in Geography Education

2.5 Importance and Organization of Field trips, Visits

2.6 Geography based hobby clubs / societies (National geography specials)

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Unit 3: Instructional Design in Geography and Economics :

3.1 Meaning, importance and format of lesson plan

3.2 Principles of lesson planning

3.3 Characteristics of a lesson plan

3.4 Prepare Lesson Plan according to Active Learning Strategies

3.4 Unit plan

3.5 Resource Unit

Unit 4 : Methods of Teaching Geography and Economics

4.1 Meaning and importance of methods of teaching Geography and Economics

4.2 Different Methods of teaching Geography and Economics

4.1.1 Lecture Method

4.1.2 Laboratory Method

4.1.3 Observation Method

4.1.4 Excursion Method

4.1.5 Project Method

4.1.6 Discussion Method

4.1.7 Active Learning Strategies

Practicum

1. Preparation of charts, globe and models of Geography.
2. Preparation of transparencies about- section of volcanoes, seabed, plains etc.
3. Interpretation of weather maps
4. Drawing of geographical maps
5. Preparation of resource unit in Geography

Assignments

1. Visit to an observatory, planetarium or Geography museum
2. Collection of specimens
3. Preparation of a project report – based on local geographical survey.

Scheme of Assessment

Item	Marks
a. Writing a report 5 to 6 pages	5
b. Collection and preservation of specimen's	5
Total	10

Note

1. Submission of report after doing any one of the above practical work
2. Each practical work carries 10 marks
3. one internal test carries 10 marks

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COMMERCE

Objectives:

1. To introduce student teachers with the methodology of teaching used in - teaching of Commerce in schools.
2. To make student teachers aware of the values of Commerce and the relationship of Commerce with other subjects.
3. To encourage student teachers to use a wider range of teaching techniques in order to enable them to plan their lessons in teaching of commerce.
4. To acquaint student teachers with the role of teaching aids, textbook, homework, libraries in commerce.
5. To equip student teachers with the curriculum.

COURSE CONTENT:

UNIT-1

1. Meaning, nature, scope and concept of Commerce.
2. Place of commerce in secondary school curriculum and its critical appraisal.
3. Commerce and its relationship with other Social Sciences.

UNIT - II

1. Different methods of teaching commerce, uses and critical analysis.
   a. Lecture Method
   b. Discussion Method
   c. Problem-Solving Method
   d. Project Method
   e. Survey Method
   f. Demonstration Method
2. Commerce Text-books and Supplementary Materials.
   Techniques of teaching commerce subject: Questioning – Answering, Assignment, Observation, Explanation and Illustration.

UNIT - III

1. Analysis and Discussion on skills of teaching Commerce (practice for developing atleast 5 micro skills).
   a. Skill of introducing the lesson
   b. Skill of questioning
   c. Skill of explanation
   d. Skill of stimulus variation
   e. Skill of black board writing

2. Lesson planning in commerce, Meaning, need and importance, construction of composite lesson plan. Lesson Plan according to Active Learning Strategies.

3. Development and utilization of teaching aids(projects, Non-projected and performing arts) required for commerce programme.

UNIT - IV

1. Qualification, Qualities and Professional growth of Commerce Teacher.

2. Role of Co-curricular activities in commerce.
3. Types and Techniques of evaluation.

PRACTICALS:

1. Evaluation of a commerce text-book at Secondary level.

2. Writing objectives and specifications on any one topic from commerce and discussions amongst the group regarding decision making while selecting objectives and difficulties faced.

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LIFE SCIENCE

Objectives : -

- Explore different ways of creating learning situations for different concepts of biological science.
- Formulate meaningful inquiry episodes, problem-solving situations, investigatory and discovery learning projects based on upper primary, secondary and senior secondary stages.
- Facilitate development of scientific attitudes in learners.
- Examine different pedagogical issues in learning biological science.
- Construct appropriate assessment tools for evaluating learning of biological science.
- Stimulate curiosity, inventiveness and creativity in biological science.
- Develop ability to use biological science concepts for life skills.
- Develop competencies for teaching, learning of biological science through different measures.
- To introduce with Professional development programmes of teachers.
- To plan organization and report on various programmes of Professional development of teachers.

Note- Any two activities are mandatory. Out of which one must be directly related to field.

Unit-I: Learning Resources (Any two activities are mandatory. Out of which one must be related to science club.)

- Identification and use of learning resources in biological science, exploring alternative sources.
- Developing science kit and biological science laboratory; Designing biology laboratory. Planning and organizing field observation; Textbooks, audio-visual materials, multimedia-selection and designing.
- Use of ICT experiences in learning biological science; using community resources for biology learning.
- Pooling of learning resources in school complex/ block/district level; handling hurdles in utilization of resources.
- Establish science club in school and conduct at least five activities related to biological science.

Unit-II : Tools and Techniques of Assessment

- Performance-based assessment; learner's record of observations, field diary, herbarium and collection of materials.
- Oral presentation of learners work in biological science, portfolio; collaborative learning.

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- Construction of test items (open-ended and structured) in biological science and administration of tests.
- Developing assessment framework in biological science; assessment of experimental work in biological science

Unit-III : Biological Science – Lifelong Learning

- Facilitating learning progress of learners with various needs in biology; ensuring equal partnership of learners with special needs. Stimulating creativity and inventiveness in biology; planning & organization of various curricular activities (such as debate, discussion, drama, poster making on issues related to science/biology;) Planning and organizing field experiences, science exhibition; Nurturing creative talent at local level and exploring linkage with district / state/ central agencies.

Unit-IV: Projects in Bilogical Science

- Projects in bilogical Sciences interconnections of science with other disciplines: selection of relevant problem, planning through group work, implementation & reporting.

Unit-V: Professional Development of Teachers

- Professional competancies of subject teacher
- Professional development programmes for teachers; planning, organization& evaluation Reflective & Innovative practices in professional development of teachers

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Mathematics

Objectives: Upon completion of this course student teachers will be able to-

1. Recall the meaning, nature and scope of mathematics.
2. Acquaint aims and objectives of teaching mathematics in Secondary school level.
3. Plan teaching in mathematics at micro and macro level.
4. Prepare unit plans, resource unit and organize lesson to meet at different class room situations.
5. Analyse and evaluate the curriculum of mathematics at Secondary school level.
6. Apply different approaches and methods of teaching mathematics in classroom situations.
7. Prepare and use instructional materials in teaching mathematics.
8. Prepare different kinds of test and understand the comprehensive evaluation.
9. Participate and organize the different co-curricular activities in mathematics.
10. Understand the professional competencies, commitments and expectations of mathematics teacher.

Unit 1: Meaning, Nature and Scope of Mathematics

1.1 Meaning of Mathematics

- 1.1.1. As a Science of Number
- 1.1.2. As a Science of Quantity
- 1.1.3. As a Science of Measurement
- 1.1.4. As a Science of Logical reasoning

1.2 Nature of Mathematics

1.3 Scope of Mathematics

- 1.2.1 Place of Mathematics in day today life activities
- 1.2.2 Mathematics use in day to day life activities
- 1.2.3 Relation with School subjects
- 1.2.4 Relation with other Disciplines – Engineering, Agriculture, Medicine

Unit 2: Aims and Objectives of Teaching Mathematics

2.1 Aims/Values of Teaching Mathematics

- 2.1.1 Meaning of Aim/Values
- 2.1.2 Utilitarian Aim/Values

2.1.3 Disciplinary Aim/Values

2.1.4 Cultural Aim/Values

2.1.5 Intellectual Aim/Values

2.1.6 Aesthetic and Recreational Aim/Values

2.2 Instructional objectives of Teaching Mathematics

2.2.1 Meaning of Instructional Objectives

2.2.2 Instructional Objectives and there specifications of teaching mathematics

2.2.3 Knowledge

2.2.4 Understanding

2.2.5 Application

2.2.6 Skill

2.2.7 Attitude

2.2.8 Appreciation

2.2.9 Interest

2.2.10 Formulation and Statement of objectives in behavioural terms

Unit 3: Instructional Design in Mathematics and Co-curricular Activities in Mathematics :

3.1 Lesson Planning: Meaning ,Steps , Importance and Format of Lesson Plan

3.2 Unit Plan-Meaning ,Steps , Importance and Format of Lesson Plan

3.3 Resource Unit-Meaning, Steps, Importance and Format of Lesson Plan

3.4 Yearly Planning-Meaning, Principles and Format

3.5 Mathematics Club : Objectives of Maths club, organisation and activities

3.6 Mathematics Olympiads : objectives and importance

3.7 Mathematics Quiz : Organisation and importance

3.8 Mathematics Museum : Organisation and importance

3.9 Mathematics Fair : Organisation and importance

3.10Mathematics Laboratory : Objective, importance and uses

3.11Recreational activities in mathematics : Games, Puzzles, Riddles, etc.,

3.12Ethno Mathematics

Unit 4: Approaches, Methods and Techniques of Teaching Mathematics

4.1 Learner Centered Approach

4.1.1 Inductive method and Deductive method

4.1.2 Analytical method and Synthetic method

4.2 Activity Centered Approach

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4.2.1 Guided discovery method and Problem Solving Method

4.2.2 Project Method and Discovery Learning Method

4.2.3 Active Learning Strategies

4.2.4 CAI in Teaching Mathematics

4.1 Concept Mapping-Meaning, Advantages and Disadvantages

4.4 Techniques of teaching Mathematics

4.4.1 Supervised study

4.4.2 Oral work and written work

4.4.3 Drill and Review

4.4.4 Assignment in Maths

4.4.5 Home work

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EPC 1 READING AND REFLECTING ON TEXTS

OBJECTIVES

- To enable the students to read and response to a Varity of text in different ways
- To develop Meta cognitive awareness
- To enhance the capacities as readers and writers by becoming participants in the process of reading
- To enable the student teachers to work on the field and make predictions and check their predictions and then to summarize.

UNIT I Reading Skills

- Creating environment for reading – reading clubs, class libraries
- Reading aloud and silent reading
- Scaffolding: concept and activities
- Reading different texts types like stories, poems, riddles, jokes, and instructions for games

UNIT II Reading with comprehension

- Reading for global and local comprehension
- Inferences, analysis and extrapolation
- Reading strategies including word-attack strategies
- Discourse analysis
- Using reading as a tool for reference skills i.e. use of dictionary, encyclopaedia and internet
- Using ideas of critical literacy to analyse chapters from textbooks .
- Acquisition of Reading Skills

UNIT III Types of text

- Narrative text
- Expository
- Autobiographical Narratives
- Field Notes
- Ethnographies
- Addressing different types of skills and strategies

Mode of Transaction

• Participating in tasks and activities to improve proficiency in the receptive and productive skills of English.

• Text analysis of school textbooks to improve skills in critical literacy.

• Reflecting on one's own learning to make connections with pedagogy.

Essential Readings

1. Lightbown, P. M & Spada, N. (1999). How Languages are Learned Oxford: Oxford University Press

2. Maley, A. & Duff, A. (1991). Drama techniques in language learning: A resource book of communication activities for language teachers (2nd ed.). Cambridge: Cambridge University Press.

3. Morgan, J. & Rinvolucri, M. (1983). Once upon a time: Using stories in the language classroom. Cambridge:. Cambridge University Press.

4. Wright, A. (1989). Pictures for Language Learning. Cambridge: Cambridge University Press.

Advanced Readings

1. Parrot M. (1993). Tasks for language teachers Cambridge: Cambridge University Press

2. Richards, J. & Lockhart, C. (1994). Reflective Teaching in Second Language Classrooms. Cambridge: Cambridge University Press

3. Slatterly, M. & Willis, J. (2001). English for primary teachers: A handbook of activities & classroom language. Oxford: Oxford University Press

EPC 2: DRAMA AND ART IN EDUCATION

Introduction

The need to integrate arts education in the formal schooling of our students is to retain our unique cultural identity in all its diversity and richness and encourage young students and creative minds to do the arts. An understanding of the arts will give our youth the ability to appreciate the richness and variety of artistic traditions as well as make them liberal, creative thinkers and good citizens of the Nation. Keeping in view some of these ideas, the National Curriculum Framework-2005, introduced arts education as a mainstream curricular area, which must be taught in every school as a compulsory subject (up to Class X) and facilities for the same may be provided in every school. Keeping this in view, it is all the more important that arts education is integrated in the school curriculum to provide an aesthetically viable atmosphere in schools encouraging creativity. For this, not only Art teachers but every teacher in the school system should be sensitized to understand and experience the use of Arts for holistic development of the learner, as a teacher as well as an individual.

OBJECTIVES

- Understanding basics of different Art forms – impact of Art forms on the human mind
- Enhance artistic and aesthetic sensibility among learners to enable them to respond to the beauty in different Art forms, through genuine exploration, experience and free expression
- Enhance skills for integrating different Art forms across school curriculum at secondary level
- Enhance awareness of the rich cultural heritage, artists and artisans.

COURSE CONTENT

UNIT 1: VISUAL ARTS AND CRAFTS (PRACTICAL)

- Experimentation with different materials of Visual Art, such as pastel, poster, pen and ink, rangoli materials, clay, etc.
- Exploration and experimentation with different methods of Visual Arts like Painting, block printing, collage, clay modelling, paper cutting and folding, etc.
- Paper framing and display of Art works.

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UNIT 2: PERFORMING ARTS: DANCE, MUSIC, THEATRE AND PUPPETRY (PRACTICAL)

• Listening/viewing and exploring Regional Art forms of music, dance, theatre and puppetry.

• Viewing/listening to live and recorded performances of Classical and Regional Art forms

• Participation and performance in any one of the Regional Arts forms keeping in mind the integrated approach

• Planning a stage-setting for a performance/presentation by the student-teacher.

UNIT 3: APPRECIATION OF ARTS

• Meaning and concepts of Arts and aesthetics and its significance at secondary level of school education

• What is the difference between Education in Arts and Arts in Education

• Identification of different performing Art forms and artists ; dance, music and musical instrument, theatre, puppetry, etc. (based on a set of slides, selected for the purpose)

• Knowledge of Indian Craft Traditions and its relevance in education (based on a set of slides, selected for the purpose)

• Knowledge of Indian Contemporary Arts and Artists; Visual Arts (based on a set of slides, selected for the purpose)

• Indian festivals and its artistic significance.

Project Work (Units 1 and 2)

Theme-based projects from any one of the curricular areas covering its social, economic, cultural and scientific aspects integrating various Arts and Craft forms; Textbook analysis to find scope to integrate Art forms either in the text or activities or exercises; Documentation of the processes of any one Art or Craft form with the pedagogical basis such as weaving or printing of textiles, making of musical instruments, folk performances in the community, etc – how the artist design their products, manage their resources, including raw materials, its marketing, problems they face, to make them aware of these aspects of historical, social, economic, scientific and environmental concerns. Student-teacher should prepare at least ten lesson plans in their respective streams of subjects (Science/Maths / Social Sciences/Languages etc.) while integrating different art forms.

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Workshop

Two workshops of half a day each, of one week duration for working with artists/artisans to learn basics of Arts and Crafts and understand its pedagogical significance. The Arts forms learnt during the course should be relevant to the student-teachers in their profession. Activities, such as drawing, and painting, rangoli, clay modelling, pottery, mixed collage, woodcraft, toy making, theatre, puppetry, dance, music, etc. region specific should be given more importance for making arts learner-centred. The focus of the workshops should be on how art forms can be used as tool/ method of teaching-learning of Languages, Social Sciences, Mathematics and Sciences.

PRACTICAL PART

1. **BODY MOVEMENT-** Different theatre games, Exercises, Martial Arts, Folk Dances.
2. **MEDITATION-** Focus, Concentration.
3. **SCRIPT WRITING-** characterization, dialogue, time and space, beginning, middle, end.
4. **POETRY RECITATION-** Rigved Mantras, Vaachik Abhinay.
5. **SELECTION OF PLAY FOR CHILDREN.**
6. **CASTING.**
7. **BUILDING OF A CHARACTER.**
8. **PARTS OF SPEECH-** Volume, Pitch, Speed, clarity, Audibility, Diction, Intonation, Feel and Toner Quality, Projection.
9. **DESIGN OF A PRODUCTION.**
10. **PRODUCTION-** Poster Making, Audience, Execution of Different Aspects of Production, Analysis of Increase in Understanding of Children through Drama.

Suggested Approach for Teaching-learning Process

Every student-teacher must participate and practice different Art forms. They need to be encouraged to visit places of arts/see performances/ exhibitions/art and craft fairs/local craft bazaars, etc. Artists and artisans may be invited for demonstrations and interactions from the community. Student-teachers should be encouraged to maintain their diary on

art interactions to enhance their knowledge and awareness in this area. Student-teachers can also be motivated to interpret art works/ commercials/events etc. to enhance their aesthetics sensibility.

A Resource Centre for Arts and Crafts should be a part of all the RIEs, where materials, including books, CDs, audio and video cassettes, films, software, props, art works of Regional and National level, books and journals must be displayed for the purpose of reference and continuous motivation.

Application of Arts and Aesthetics in day-to-day life, in the institute and in the community are some of the practical aspects, which needs to be taken care too. Student-teachers must organise and participate in the celebrations of festivals, functions, special days, etc.

Modes of Assessment

The complete course is of 50 marks. It is recommended that evaluation of this course should be done at both the levels; (i) Internal as well as (ii) External. Practical Activities (Units 1 and 2 of 30 marks) in nature are more on the process than the product, hence need continuous and comprehensive evaluation(CCE). Therefore, recommended to be evaluated by the internals. The theory and project part (Unit 3 and Project work of 20 marks) can be in viva-voce and in presentation mode therefore recommended to be evaluated by the externals. The engagement of student-teacher in the above set of experiences should be evaluated on continuous and comprehensive manner, based on (a) submission of work/project; (b) participation in the activities; (c) creative potential displayed; (d) application of aesthetic sensibility in campus events and in other course activities.

EPC 3. Educational Psychology Practical

PSYCHOLOGY TEST (ANY FIVE)

1.Intelligence Test- Verbal

2.Intelligence Test- Non Verbal

3.Interest Test

4.Attitude Test

5.Learning by Whole and Part Method

6.Personality test -Introvert and Extrovert

7.Value Test

8.Adjustment Test

9.Anxiety Test

10.Achievement Test

Second Year

CC 1 Gender, School and Society

Course Objectives:

To enable the Student Teacher to:

1. To acquaint the student teachers with the concept of gendered roles in society and their challenges.
2. To develop an understanding of the inequality and disparities in equal opportunities in education in societal context.
3. To enable the student teachers to critically examine the stereotypes and rethink their beliefs.
4. To help student teachers to develop abilities to handle notion of gender and sexuality.

Course Contents:

UNIT I Gender Issues: Key Concepts

1. The meaning and concept of gender and experience of gender in across different social groups, regions and time-periods. Challenges in gendered roles in society: Family, caste, religion, culture, the media and popular culture (films, advertisements, songs etc.), law and the state.
2. Unequal access of education to girls: access to schools; gender identity construction at home and in society.
3. Indian societal context: Power and authority in Indian Social System (patriarchy). Socialization of child into a specific gender influences, and opportunities for education.

UNIT II Gender Challenges and Education

4. Challenging gender inequalities or reinforcing gender parity: The role of schools, peers, teachers, curriculum and textbooks, etc.
5. Representation of gendered roles, relationships and ideas in textbooks and curricula.
6. Schools nurture or challenge creation of young people as masculine and feminine selves.

UNIT III Gender Issues and Role of Teacher

7. Counseling and Guidance: Teachers' need help to develop abilities to handle notions of gender and sexuality, (often addressing the issues under diverse cultural constraints, their own and their students', instead of shying away from the same.)
8. Sex Education: Perceptions of safety at school, home and beyond (The formulation of positive notions of sexuality among young people impact larger issues)

9. Identification of sexual abuse/violence and its verbalisation, (combating the dominant societal outlook of objectification of the female body, and so on.)

UNIT IV Role of the Media and Life Skills Education

10. Role of the media in propagation of popular beliefs, reinforcing gender roles in the popular culture and by implication, at school.
11. Life Skills courses in school: provisions to deal with some issues of gender identity roles and performativity for the development of positive notions of body and self.
12. Gender equality Education: of regions and exploring the roles of the institutions (family, caste, religion, culture, media and popular culture, law and the state).

Assignment:

1. **Group Discussion:**
   B.Ed. students will observe and study the distribution of roles and responsibilities in schools and classrooms, rituals and school routines, processes of disciplining distinctly as for girls and boys, and in classroom interaction. Studying the everyday activities where the majority of girls constitute the assembly choir group and the boys form the inter-school cricket team; girls partnered to be seated with other girl students and boys with boys; sciences associated with boys and humanities with girls; art and craft considered to be the domain of the girls and physical education that of the boys; etc. Teachers need to question such stereotypes and help students rethink their beliefs. Why these issues are delineated only for supplementary extra-curricular periods in school and not integrated into subjects of study need to be discussed.
2. **Group work& activities, brainstorming, audio-visual presentations:** prospective teachers to attend and themselves undertake sessions of open verbalization with school students, voluntary cum friendly involvement in discussions, , together with the co-participation of school (teachers, counselors and other resources), home (parents and siblings) and society (NGOs, other expert groups, etc.).
3. **Assignments and Projects:** Student-teachers will be exposed and trained to prepare pedagogic material and practice a pedagogy which can develop abilities and confidence in their students to critically evaluate and challenge gender inequalities, while being sensitive to social groups and

2. Educational Technology & ICT

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Objectives: Upon the completion of the course the student-teachers will able to:

- Explain meaning, components, functions of computer and its historical backgrounds.
- Understand the computer peripherals and its Organization in computer system.
- Develop skill in handling computer and using word documents.
- Develop skill in computation, analysis and interpretation of data by using Excel Spread sheets.
- Understand the Educational implications of Power Point Presentation and its use in classroom context.
- Understand the applications of Information Technology in the field of teacher education programme and training.

Unit 1 : Fundamentals of Computer

1.1 History and Generations of Computer

1.2 Meaning, Definition and Characteristics of Computer

1.3 Basic Functions of Computer - Input-Process-Output Concepts

1.4 Anatomy of Computer

1.5 Classification of Computers:

1.5.1 Based on size and capacity (Micro, Mini, Mainframe and Super Computers.)

1.5.2 Based on working principle (Analog, Digital and Hybrid Computers.)

Unit 2: Computer Organization: Hardware and Software

2.1 Input Devices:

2.1.1 Key Board, Mouse, Scanner, Digital Camera, Mike, Digital Board

2.2 Central Processing Unit:

Arithmetic and Logic Unit, Control Unit and Memory Units.

2.3 Memory Devices (Storage devices):

2.3.1 Primary memory Devices : RAM, ROM, PROM, EPROM and EEPROM.

2.3.2 Secondary memory Devices: Hard Disk, CD-Rom , DVD, Optical Disk, Pen drive.

2.4 Output Devices:

Monitor, Printer, Plotter, Speaker

2.5 Operating System:

2.1.1 Needs and Functions of Operating System

2.1.2 Types of Operating System – single user and multi user

2.6 Programming Languages: Types of Languages – LLL and HLL

2.7 Computer Software:

System Software, Application Software and Operating System

2.8 Computer Virus and its prevention.

Unit 3: Microsoft Windows (System Software)

3.1 Introduction to MS-Windows

Elements of MS-Windows, Start Menu, Desktop, Window Accessories, Control panel, Windows Explorer

3.2 Application Programme: MS-OFFICE **(Application Software)** MS-WORD, MS-EXCEL AND MS-POWERPOINT.

3.3 Microsoft Word :

3.3.1 Parts of Ms-Word windows, MS-Word Standard, Formatting, Drawing Toolbars.

3.3.2 Starting Ms-Word, Opening a new document. Opening old document, Naming the new document, Saving the document using save and save as commands.

3.3.3 Formatting the Document

Fonts: Font style, Size, Bold, Italics, Underline, Normal, Spacing.

Paragraph: Line spacing, Paragraph spacing, Paragraph borders, bullets, Numbered list, Shadings.

Page Setup: Paper orientation, Margins and Paper size. Alignment: Centre, Left, Right, Justified

3.3.4 Editing the Document

Cut, copy, paste, paste special, undo, redo, select all, find, replace, go to, page number, clear

3.3.5 Inserting: Frame, objects, pictures, headers, footers, page number, date and time

3.3.6 Tabs, Tables, Columns : Insert table, delete cells, merge cells, split cells, select row, select column, select table, table auto format, cell height and width headings, sort text and formula

3.3.7 Working with the Drawing Tools : Line, rectangle, ellipse, arc, style, freeform, text box, callout, format callout, fill colour, line colour, line bring to front, send to back, bring to front of text send behind text, flip vertical, flip vertical, rotate right, reshape

3.3.8 Page setting and printing the document and Mail merge

3.3.9 Educational based applications : Preparation of lesson plans using Ms Word

3.4 Microsoft Excel :

3.4.1 Parts of Excel windows, Excel Standard, Formatting, Drawing Toolbars.

3.4.2 Creating a new worksheet, Opening as existing worksheet, saving the worksheet.

3.4.2 Working with worksheet, Inserting and deleting rows & columns merge cells, formulae, sorting, inserting charts.

3.4.3 Preparation of School Time Table, Marks list, Salary Bill etc.

3.5 Microsoft Power Point :

3.5.1 Parts of PowerPoint windows, PowerPoint Standard, Formatting, Drawing Toolbars.

3.5.2. Working with Text –Changing Fonts, Changing Font Size and Bold, Alignments, Moving text etc

3.5.3. Working with Graphics – Moving the Frames and Inserting Clip Arts, Inserting pictures, Inserting New Slide, Organisation of Charts, Tables, Designing Templates, Master Slide, Colour box etc

3.5.4. Presentation of Slides – Saving Slides, Auto Content Wizard Slide Show, Animation, etc.

3.5.5. Educational based application, use of the Power Point.

Unit 4 :Applications Information and Communication Technology in Education

4.1 Introduction to ICT : Meaning, Need and importance of ICT

4.2 Introduction to Multi Media :

4.2.1 Meaning of Multi media

4.2.2 Scope of Multi media

4.2.3 Components of Multi media

4.2.4 Pre-requisites of Multi media PC

4.2.5 Graphic Effects and Techniques

4.2.6 Sound and Music

4.2.7 Uses of Multi media for teaching

4.2.8 Developing a lesson plan using a multimedia package

4.3 Introduction to Internet

4.3.1 Meaning of Internet

4.3.2 Characteristics of Internet

4.3.3 Uses of Internet

4.3.4 Educational based applications of Internet

4.4 Computer Application in Education

4.4.1 Computer Assisted Instruction : Concept, Characteristics, Modes, Merits and demerits.

4.4.2 Computer Assisted Testing : concept, characteristics, modes, merit and demerits

4.4.3 Computer Managed Instruction : concept, characteristics, modes, merits and demerits

6. Introduction to/ website –meaning and importance

4.5.1 Social websites (Blog/Twitter/face book)

Requirements :

1. Infrastructure requirements: In order to implement ICT literacy in in-service teacher education and ICT laboratory/Multimedia centre may have to be setup No. of PCs /Systems will be required.
2. It is recommended that for each student teacher get hands on experience atleast one hour per week. College is free to design the practical time table.
3. It is recommended that out of 4 Hours a week. (2 Hours theory and 2 hour practicals.)

4. Institution should have to appoint ICT Teacher with minimum qualification of PGDCA/BCA/MCA

Assignments: (Any One Uniform pattern)

1. Write the History and Generations of Computer.
2. Write the Input, Output and Storage devices of Computer system.
3. Preparation of a Lesson Plan, Student List, Letters, Invitations – Hard copy and Soft copy.
4. MS Excel: Preparation of a School Time table, Marks List – Analysis of Data and Graphical representation - Hard copy and Soft copy.
5. MS PowerPoint: Preparation of Animated slides (Insert Pictures, Cliparts, Word art, sound, effects, animation, etc...)for teaching any concept on your subjects.
6. Internet: Surfing Educative websites, downloading, taking a printout, creating E-mail Id.

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& Subramanian N. (1986) , *Introduction to Computer Fundamentals*, New Delhi: Tata McGraw Hill Publishing Company Limited.

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3: CREATING AN INCULSIVE SCHOOL

Objectives:

On completion of the Course the Student Teacher will be able to :

1.Identify the children of special needs

2.Underestand the nature of special needs their psychoeducational characterstics and functional limitation.

3. familiarize with assessment and placement procedure for children with special needs.

4.develope understanding about accommodating special needs in regular classroom.

5. appreciate the education of children with special needs.

Course Content:

Unit 1- Special needs and education

-Concept and types of special needs.

-education of children with special needs and its implecation for universilisation of elementary education.

-understanding and respecting diversity

-trends of education for children with special need in india.

-policies schemes and legistations about the education of children with special educational needs.

Unit 2- nature ,types and characterstics of children with special needs

-psycho-social and educational characterstics functional limitations with reference to-

+locomoter impairment

+hearing impairment

+visual impairment

-learning disability

-gifted and disadvantaged children

-mental retardation and slow learners.

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Unit III- Inclusive Education

-concept and philosophy of inclusive education

-teaching competencies required for inclusive education

-Roll of class teachers and Resource teachers in inclusive education.

-School and classroom managmant for implementing inclusive education.

-guidance and councelling in inclusive education.

-Specific roll of family and community participation.

-Support services needed for inclusive schools

UNIT IV- identification and assessment of children with special educatioanl needs

- Concept and techniques of assessment
- -identification and functional assessment of children with special needs
- -implecatin of assessment for instructional planning and curriculum.
- curriculum ,adaptation, teaching strategies and evaluation in inclusive school.
- -Principles and methods of curriculum adapatation and adjustment to address diversity.
- teaching learning strategies for children with special educational needs:
- comparetive learning ,peer tutoring ,behavior modification, multisensory approach,perceptual strategy and system approach.
- individual educational program (IEP) and use of emerging technology
- adaptation in evaluation procedures.

Practicum: Any one of the following :

(suggested practicum but more activities can be take up by the teacher based on any topic from above unit)

1. Prparation of a report on importance of education for children with special needs
2. Case study of children with special needs school in school situation.
3. Observation of class room situation and identification of special needs.
4. Identification of gifted /creative /slow learner/children with learning disability using standardized test.
5. Preparation of teaching plan for accommodation special need(Any one type) in regular classroom.
6. List out the resources for effective implementation of integration programme with reference to any one category of special needs.

Apart from the above similar activities from the five units will be identified and given.

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3.Hallahan and Kuffiman J.M.(1984) excetional children ,Prentice hall

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4. Optional Course:

(Any One of the Subject mentioned below)

A. EDUCATIONAL ADMINISTRATION & MANAGEMENT

COURSE OBJECTIVES

1. To acquaint the student teachers with the concept and concerns of educahonal administra-tion.

2. To develop an understanding of the role of the headmaster and the teacher in school management.

3. To enable the students to understand to concept at Importance of communication and its possible barriers in educational administration.

4. To enable the student teacher to critically analyse the administrative scenario In relation to the functioning of the other secondary schools of the area.

5. To acquaint the student teacher with the scientific practices of educational management

and keep him to apply it In work situation.

COURSE CONTENTS

UNIT-I

- Conceptual framework concept of educational administration.

- Concept of educational management human beings as inputs, process and products inputs.

- Nature, objectives and scope of educational aciministration

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UNIT-II

- Role and functions of headmaster/teacher: Basic functions administration planning, organising directing and controlling.

- Maintenance of discipline, control management.

- Co-ordination and growth, development,

- Supervision and inspection, defects in the present supervision and inspection.

- Scope of educational supervision,

- Types of supervision.

- Providing guidance; leadership function,

- Crisis In management

- Decision making.

UNIT-III

- Communication in Educational Administration Role of communication in effective manage-ment and administration.

- Methods of communication.

- Barriers of communication in educational administration.

- Overcoming barriers to communication and effective communication In educational admin-iteration.

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UNIT-IV

- Management of Schools : Role of headmaster in planning of school activities, approaches to management - manpower approach, cost benefit approach, social demand approach, social justice approach.
- Involvement of other functionaries and agencies In the preparation of a plan.
- Delegation of authority and accountability.
- Role of the headmaster in monitoring, supervision and evaluation.
- Role of the headmaster in motivating the staff, in resolution of interpersonal conflicts.
- Role of the headmaster In creating resources and managing financial matters.
- Optimum use of available resources for growth and development of the school.
- Staff development programmes.
- Role of teachers in school management and administration.

UNIT-V

- Educational administration in the state : The administrative structure in the field of education in the state.
- Control of school education in the state - a critical analysis.
- Functions of the state government in relation to secondary and higher secondary schools.
- Functions of the board of secondary education in controlling secondary schools.
- Problems of secondary school administration in government schools.

PRACTICUM

- The student-teacher is expected to conduct a study on any issue or problem relating to a school administration. The report should be in about 700 words.

REFERENCE

1. Bhatnagar, R.P. & Verma. I.B.: Educational Administration, Lyall Book Depot Meerut.

2. Bhatnnagar, R.R & Agrawal, Vidya : Educational Administration, Supervision Planning and Financing. R. Lall nook Depot. Meerut.

B. Value Education

Objectives: Upon completion of the course the student-teachers will be able to:

1. Understand the concept and types of values.
2. Understand the meaning and basic-theories of axiology.
3. Get an insight into the strategies of inculcation of values among children.
4. Develop awareness about the different agencies working in the sphere of value education.
5. Develop skills and techniques needed to teach value education.
6. Understand the role of the teacher in value education.

Unit 1: Introduction to Values

1.1 Values: Concept, Nature, Types and Significance

1.2 Classification of Values - Intrinsic Values, Instrumental Values, Moral Values, Aesthetic Values, Economic Values, Social Values

1.3 Contemporary Values in Indian Context

1.3.1 Panchakosha Theory of Values

1.3.2 Basic Human Values – Truth, Beauty, Goodness, Love, Peace, Non-Violence

1.3.3 Contemporary Values – Scientific Temper, Intellectual Honesty, Social Service and Protection of Environment.

Unit 2: Strategies of Inculcation of Values

2.1 Sources of Value Education – Autobiography and Biography of Great People, Parables, Vedas, Bhagavadgita, Shlokas, Poems, Newspaper Clippings, Episodes from Real Life, Documents etc.

2.2 Techniques of Inculcating Values in Life

2.2.1 Ashtangayoga (Yama, Niyama, Asana, Pranayama, Prathyahara, Dhyana, Dharana, and Samadhi)

2.3 Role of Teachers in Value Education.

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Unit 3: Role of Social Agencies in Value Education

3.1 Family

3.2 Religion

3.3 Educational Institutions

3.4 Community

3.5 Mass Media (Print and Electronic)

3.6 Information and Communication Technology (Computer and Internet)

Unit 4: Value Education in Secondary Schools

4.1 Integrated approach

4.2 Direct Approach

4.3 Incidental approach

4.4 Co-curricular and Extra-Curricular Activities

4.1.1 Resolving Value Conflicts (value crisis)

4.1.2 Discussion of Burning Social and Moral Problems

4.1.3 Project Work and Community Centered Activities

Assignments (any one)

1. Visit to religious institutions which are involved in Educational endeavor
2. Documentation of the contributions of the great personalities and institutions for the promotion and protection of values
3. Selection of incidences/ episodes from the biographies depicting particular/ selected value
4. Preparation of Value Judgment Scale

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& Peters, R.S. (1963) Authority, Responsibility and Education. London: George Allen and Unwin.

& Rogers, C.R. (1980) A Way of Being. Houghton Mifflin, Boston.

& Russell, B. (1972) Education and the Good Life. New York: Leveright.

& Venkataiah N. (Ed). (1998) Value Education. New Delhi: APH Publishing Corporat

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C. Health and Physical Education

Objectives : Upon completion of the course the student–teacher will be able to :

1. Understand the significance of Health Education for the all-round development.
2. Maintain and promote good health
3. Develop the understanding of physical education and its related fields.
4. Acquire the knowledge about the teaching methods of physical education and its activities.
5. Know about the effective organization of physical education activities.

Unit 1 : Health and Physical Education

1.1 Health : Meaning, Aims and Objectives, Importance and Scope

1.2 Physical Education : Meaning, Aims and Objectives, Importance and Scope

1.3 Related fields – Recreation, Health Education and Education

1.4 National and Emotional Integration through Sports and Physical Education

1.5 Yoga – Meaning – Astanga Yoga – Significance in Modern Society.

Unit 2 : Health Service and Supervision

2.1 Medical Inspection – Meaning, Procedure and Importance

2.2 Personal Care – Skin, Eyes, Ears and Teeth

2.3 Safety Education – Meaning and Significance, Safety in Classrooms, Play field, Gymnasium, Roads and Homes.

2.4 First Aid – Meaning, Significance, principles of giving first aid

2.5 Fatigue – Meaning, Causes and Remedies.

2.6 Balanced DIET – Meaning and Benefits.

Unit 3 : Leadership, Discipline, Incentives and Awards

3.1 Leadership

3.1.1 Qualities of good leader in physical education

3.1.2 Teacher leadership

3.1.3 Student leadership

3.2 Discipline

3.2.1 Meaning

3.2.2 Common forms of indiscipline in schools

3.2.3 Causes for indiscipline

3.2.4 Steps to check indiscipline

3.2.5 Rewards and discipline

3.2.6 Punishment and discipline

3.3 Incentives and Awards

3.3.1 Letter – Crest

3.3.2 Cup

3.3.3 Trophy

3.3.4 Medal

3.3.5 Honour Board

3.3.6 Scholarship

3.3.7 Certificate

3.3.8 Cash prize – based on the Player's Performance

Unit 4 : Organization of Physical Education Activities

4.1 Intramural and Extramural Competitions: Meaning, Organization, Benefits

4.2 Tournaments : Meaning, Types – Knock-out and league, Benefits.

4.3 Sports meet : Meaning, Organization, Benefits

4.4 Camps and Hikes : Meaning, Organization, Benefits.

Practicum

1. Participation in any one major game and one sports item
2. Ground marking for selected games and sports
3. Commands, line formation and marching, ceremonial parade
4. Participation in two National festival programmes for flag hoisting

References

& Kamalesh and Sangral, (2000), *Principles and History of Physical Education*, Ludhiana : Tandon Publication,

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& Nadgir, K.G. (1998) , *Sharir Shikshanad Vidhanagalu*, Dharwad : Mallesajjan Vyayama Shale.

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& Sarojkant Bihari and Prasanna Kumar Chowdhary (2003), *Health and Physical Education*. Ludhiana : Kalyeni Publishers.

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Note

1. One Assignment among the practical activities mentioned above, for ten marks
2. Internal test for ten marks

D. Guidance and Counselling in Schools

Objectives: Upon completion of this course the student-teacher will be able to :

1. Understand the principles, scope and need of guidance and counselling in schools
2. Acquaint himself with nature of different problems faced by children in context of learning and development.
3. Understand the acquisition and process of learning in children with special needs.
4. Acquaint himself with learning disabilities of children and its remedies
5. Take up minimum guidance programme at school level.

Unit 1: Guidance and Counselling

1.1 Introduction to Guidance and Counselling

1.2 Nature, Purpose and Scope of Guidance and Counselling

1.3 Difference between Guidance and Counselling

1.4 Counselling

1.4.1 Principles

1.4.2 Approaches

1.5 Areas of Guidance

1.5.1 Educational Guidance

1.5.2 Vocational Guidance

1.5.3 Personal Guidance *

Unit-2: Problems of Developments in Children

2.1 Problems related to physical development

2.1.1 Common problems faced by children

2.1.2 Nutrition

2.2 Problems related with Emotional Development

2.2.1 Adjustment to Home

2.2.2 Adjustment to School

2.2.3 Adjustment to Peer Group

2.2.4 Problems related to academic achievement

2.2.5 Problems related to Gender bias and Gender related issues

2.5 Applications of the whole child concept for parents, teachers and counselors

2.6 Acquisition and Process of Learning

2.6.1 Concept of learning

2.6.2 Factors affecting learning

2.6.3 Physiological factors

2.6.4 Psychological factors

2.6.5 Socio-emotional factors

2.6.6 Educational factors

Unit 3: Learning Disabilities of Children

3.1 Factors Contributing to Learning Problems

3.4.1 External factors – Psychological and Educational

3.4.2 Internal factors – Low general ability, Attention, Specific reading, writing etc

3.2 Assessment of the child

3.2.1 Case history

3.2.2 Assessment of general abilities

3.3 Remediation

3.3.1 Principles of Guidance Services

3.3.2 Designing remedial strategies.

Unit 4: Guidance for Children with Special Needs

4.1 Meaning, definitions and types of exceptional children

4.2 Gifted and Creative children

4.3 Slow learners and backward children

4.4 Strategies for helping exceptional children to overcome their problems.

Assignments (any one)

1. Case study of a child with special problem.
2. Publication of a career bulletin based on authentic sources of Jobs. Employment
3. Organization of career conference , Campus Interviews, etc.
4. Organization of Counselling session for (Individual / Groups) students who are genuinely in need of Counselling.

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5. Organization of Guidance sessions about services and facilities available in a school or college.

References

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E. Action Research

Objectives : Upon completion of this course the student-teacher will be able to:

1. Acquire the knowledge of concept of research and educational research.
2. Understand the concept of basic, applied and action research and their differences.
3. Understand the meaning, significance and scope of action research.
4. Become aware of action research problems in different areas in schools.
5. Acquire the knowledge of steps involved and tools used in action research.
6. Acquire the skills of conducting action research and to develop the skills of interpreting and reporting the findings of action research.

Unit 1 : Research and Educational Research

1.1 Research – meaning, definition and importance.

1.2 Educational Research – meaning, definition and importance.

1.3 Steps in Educational Research.

1.4 Types of Research : Fundamental/Basic, Applied and Action Research – meaning definition and importance.

1.5 Methods of research : Historical, Experimental and Survey

1.6 Differences between applied and action research with reference to –

i) purpose, ii) definition, iii) hypotheses, iv) sample, v) data collection instruments, vi) data analyses, vii) generalization, viii) limitations

Unit 2 : Action Research

2.1 Meaning, definition and scope of action research.

2.2 Importance of action research to classroom teachers, administrators and guidance personnel.

2.3 Limitations of action research

2.4 Action problems in different areas in schools – examples.

Unit 3 : Research Steps and Tools

3.1 Steps in Action Research

3.1.1 Identifying the problem area (examples – experimental design and qualitative design).

3.1.2 Pinpointing the problem.

3.1.3 Problem analysis in terms of causes.

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3.1.4 Identifying the objectives.

3.1.5 Formulating action hypotheses.

3.1.6 Designing action plan.

3.1.7 Execution of the plan.

3.1.8 Analysing the data.

3.1.9 Findings

3.1.10 Reporting.

3.2 Tools of Data Collection.

3.2.1 Achievement Test, Questionnaire, Interview Schedule, Checklist, Rating Scale – meaning, need, advantages and limitations.

3.2.2 Tests/Inventories of Aptitude, Attitude, Interest, Personality, Values, Intelligence and Creativity (Knowledge of at least 2 tests in each category).

3.2.3 Measures in classroom – Sociometric technique and Classroom Social Distance Scale (uses of these tools in action research)

3.3 Quantitative and Qualitative data : meaning and examples.

3.3.1 Analysis of the Data – frequency distribution, measures of central tendency, variability.

3.3.2 Co-efficient of correlation (Pearson's rank difference method).

3.3.3 Interpretation of data with an example – descriptive and graphical.

(Note : to be discussed without computation)

Unit 4 : Action Research Report

4.1 Format of report in terms of steps of action research (as in 3.1 above).

4.2 Summary, bibliography and appendix.

Assignments (any one)

Preparation of an action plan on a classroom problem such as :

a. identifying causes of poor reading ability and suggesting remedial measures.

b. identifying the causes and types of spelling errors and suggesting remedial measures.

c. identifying the causes of poor map-reading skills and suggesting remedial measures.

d. identifying the causes for poor drawing of diagrams and suggesting remedial measures.

e. identifying the causes of truancy and suggesting remedial measures.

f. identifying the causes of problem behaviour of students in the classroom and suggesting remedial measures.
(any other problems similar to above mentioned)

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5: EPC 4 : Understanding the Self

OBJECTIVES:

- The main aim of this course is to facilitate the development of individuals who can take responsibility for their own learning and give a conscious direction to their lives. Students are encouraged to explore and develop through self-reflection a greater insight into their aims of life, strengths and weaknesses and dynamics of formation of identity and a true individuality.
- Students also develop a capacity for social-relational sensitivity, effective communication skills and ways to create harmony within one's own self and society. The workshops are also aimed at equipping the students with positive attitudes, attributes and skills that help in facilitating the personal growth of their own students while teaching.
- To help student teachers discover and develop open-mindeness, the attitude of a self-motivated learner, having self-knowledge and self-restraint.
- To help student teachers develop the capacity for sensitivity, sound communication skills and ways to establish peace and harmony.
- To develop the capacity to facilitate personal growth and social skills in their own students

Unit 1: Exploring the Aim of Life Objectives

• To enable students to develop a vision of life for themselves.

• To encourage students to give conscious direction to their lives to take responsibility for their actions. • To develop a holistic and integrated understanding of the human self and personality.

Workshop Themes

• Vision as a person: Aspiration and purpose of life.

• Giving a conscious direction to life.

• Understanding different dimensions of self and personality and way in which they influence the dynamics of identity formation, values and direction of life.

Unit 2: Discovering one's True Potential

• To facilitate the personal growth of the students by helping them to identify their own potential • To develop the power of positive attitude.

• To encourage students to develop the capacity for self-reflection and personal integration.

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Workshop Themes

• Understanding one's strengths and weaknesses through self observation exercises.

• Taking responsibility for one's own actions.

• Developing positivity, self esteem and emotional integration.

• Exploring fear and trust; competition and cooperation

• Developing skills of inner self organization and self reflection

• Writing a self-reflective journal

Unit 3: Developing Sensitivity

• To enable students to examine and challenge the stereotypical attitudes and prejudices that influence identity formation and the process of individuation.

• To encourage students to develop the capacity for perspective taking and appreciating different points of view.

• To develop sensitivity towards needs of children by connecting with one's own childhood experiences Workshop Themes • Understand and challenge the unconscious, conditioned attitudes that are stereotyped and prejudiced (gender, caste, class, race, region, disability etc.) and critically examine the sources of stereotyped messages (e.g., media).

• Defining consciously one's own values towards self and society and develop a capacity to understand and appreciate divergent points of view. Widening their realm of consciousness.

• Developing the capacity for empathic listening and communication skills.

• Understanding one's own childhood and adult-child gaps in society.

Unit 4: Peace, Progress and Harmony

• To develop the capacity to establish peace within oneself

• To develop the capacity to establish harmony within a group and methods of conflict resolution

• To understand the meaning of leadership and develop attitudes and skills of a catalyst

• To understand the basis of social disharmony, the factors those contribute to it and ways to facilitate change

Workshop Themes

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• Establishing peace within oneself: exercises of concentration and meditation

• Understanding group dynamics and communication

• Creating group harmony: exploring methods of creating a collective aspiration for progress and conflict resolution

• Exploring the bases of social disharmony: becoming the agents and catalysts of change and exploring methods of facilitating change

Unit 5: Facilitating Personal Growth: Applications in Teaching

• To explore attitudes and methods needed for facilitating personal growth in students

• To explore ways of integrating the facilitation of personal growth and social skills within the formal curriculum

Workshop Themes

Becoming a self-reflective practitioner: becoming conscious of one□s own attitudes and communication pattern while teaching.

• Observing children: appreciating social, economic, cultural and individual differences in children and relating with them

• Exploring and practicing ways to facilitate personal growth and develop social skills in students while teaching

Mode of Transaction

There is no standard prescribed material for these workshops. The professional experts are expected to engage with the students with specially designed activities. These could be based on the facilitator□s personal integration and unique individual and group characteristics and are rooted within the context of student's lives and contemporary realities. It is suggested that the students be given space to explore and articulate their own sense of life and its issues. They can be encouraged to think a fresh on issues that most closely concern them and use creativity and imagination to develop a perspective on them. The resource materials are an aid in this process. The resource materials can also include newspaper/web articles on contemporary concerns and movies/documentaries and other audio-visual materials. There is a suggested list of resource materials which should be contextualised and updated periodically. Expertise/ Specialization required to teach this course Specialists who have conducted personal development workshops and who have a qualification in clinical and counseling Psychology

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Essential Readings

1. Antoine de Saint-Exupery. (1977). The Little Prince. London, UK: Wordsworth Edition Translated by Irene Testot-ferry (available in Hindi).

2. Dalal, A.S. (2001). Our Many Selves. Pondicherry, India: Sri Aurobindo Ashram.

3. Frankl, V. (1946). Man's Search for Meaning. New York: Pocket Books.

4. Joshi, K. (ed) (2005). The Aim of Life. Auroville, India: Sailer.

5. Krishnamurti, J. (1953). Education and the Significance of Life, Ojai, California, USA: Krishnamurti Foundation Trust.

6. NCERT, (2006). Education for Peace, Position Paper. New Delhi: NCERT. 7. Walk with Me: A Guide for Inspiring Citizenship Action. (2006). New Delhi: Pravah Pub.

Readings for Discussion 1. Bach, R. (1994). Jonathan Livingston Seagull, London, UK: Harper Collins Publications.

2. Chatterjee, D. (1998). Leading Consciously, MA, USA: Butterworth-Heinemann.

3. Gibran, K. (1996). The Prophet, Calcutta, India: Rupa & Co.

4. Gupta, L. (2008). Growing up Hindu or Muslim: How Early does it Happen. Economic and Political Weekly, 63(6), 35-41.

5. Haldar, B. (2006). A Life Less Ordinary. New Delhi: Penguin Books. Translated by Urvashi Butalia.

6. Hall, E. and Hall, C. (1988). Human Relations in Education. London, UK: Routledge.

7. Joshi, K. (1996). Education for Character Development. Dharam Hinduja International Centre for Indic Research.

8. Joshi, P. (2006). Negotiating Identity: Voices of Children with Disabilities in Regular Schools. Contemporary Education Dialogue. 3(2), 1175-195.

9. Kumar, K. (1986). Growing Up Male, Seminar, No. 318.

10. Seminar, Identity. No. 387, November 1991. New Delhi. 11. UNESCO, (2001). Learning the Way of Peace: A Teachers' Guide to Peace Education. New Delhi: United Nations Educational, Scientific and Cultural Organization.

Suggested Audio-Visual Resources

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1. Aim of Life by Kireet Joshi (DVD) for DVD/facilitation contact mothersinstitute@hotmail.com

2. Full of Life: A sensitive Japanese Teachers explores feelings, death with 10 year olds. (http://www.arvindguptatoys.com/films.html)

3. Personality Development (Interactive CD, Computer Only) With Yoga and Guided Meditation Modules, Indus Quality Foundation

4. The House on Gulmohar Avenue by Samina Mishra (www.cultureunplugged.com)

Advanced Readings 1. Csikzentmihalyi, M. (1993). The Evolving Self: A Psychology for the Third Millennium. New York: Harper Collins. 2. Dalal, A.S. (1987). Living Within, Pondicherry, India: Sri Aurobindo Ashram Trust. 3. Dalal, A.S. (2001). A Greater Psychology. Pondicherry, India: Sri Aurobindo Ashram Trust

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6: EPC 5 : Understanding of ICT

Objectives: Upon the completion of the course the student-teachers will able to

- Develop skill in handling computer and using word documents.
- Develop skill in computation, analysis and interpretation of data by using Excel Spread sheets.
- Understand the Educational implications of Power Point Presentation and its use in classroom context.
- Understand the applications of Information Technology in the field of teacher education programme and training.

Practicum :

1. **Computer Fundamental**
   - Instructions on operating the Computer
   - Connecting of all peripherals to CPU for a system
   - Switching on/off/restart
   - Inserting/removing a floppy from the floppy drive
   - Running a file from a floppy using floppy drive
   - Copying a file from hard disk to floppy disk
   - Inserting/removing a CD from the CD-ROM drive
   - Running a file from a CD-ROM using CD-ROM drive
   - Copying files from one drive to another
   - Creating a new folder
   - Running a file from hard disk
   - Connecting the printer and print out hard copies
2. **Exercise in Ms-Word**
   - Creating a new document
   - Formatting and editing of a document
   - Inserting pictures, objects, frames and tables
   - Practicing Mail-Merge facility
   - Working with the drawing tools
3. **Exercise in Ms-Excel**
   - Creating a new worksheet
   - Inserting and deleting rows/columns in worksheet
   - Formatting and editing of a document - sorting
   - Preparation of statement of marks and using of some statistical concepts – Descriptive Statistics
   - Preparation of School Time Table
   - Preparation of Tables
4. **Exercise in Ms-Power Point**
   - Preparation of MS-PowerPoint presentation using text, picture, sound,

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word art, clipart, and the other available tools with animation

5. **Exercise in Information and Communication Technology**
   - Browsing the Internet and down loading – search word using search engine
   - Working with Multimedia
   - Receiving/Sending of E mail and attachment

7: School Internship

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Bachelor of Education

Internship Guide

Description of Roles

Interns are students who is a graduate in their subject major, and are spending a four month working with experienced mentor teachers on their teaching practice while taking graduate courses in the Teacher Education department.

Mentor Teachers are experienced school teachers who mentor interns. They provide guidance, insight and opportunities for supported practice.

Supervisors work with school administrators/ Mentors to determine school experience for interns, mediate in difficult situations, and oversee interns' progress in schools and with respect to program requirements. They are faculty who organize campus based lectures and seminars in each subject area. They provide supervision and guidance for the interns in and out of the campus.

Intern Responsibilities

Interns are students of teaching. In contrast to traditional student teaching programs, interns are not expected to begin the year ready to teach on their own. Instead, they are expected to engage in observations, co-planning and co-teaching with their mentor teachers and to build their capacity toward assuming responsibility for extended lead teaching during the semester.

Interns are in a period of transition from students to professional teachers. During this transition, they must retain the perspective of a learner as they take on the new and unfamiliar role of a teacher. Interns are expected to take an active role in their own learning and to contribute to the learning of fellow interns.

Planning and Communication

- Keep supervisor informed about classroom schedules and events
- Direct questions or concerns to supervisors or mentor

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- Schedule observations and conferences with the mentor and inform supervisor of changes promptly

- Meet regularly with the mentor to discuss planning for instruction

- Prepare written lesson and unit plans according to both mentor teacher and supervisor's expectations

- Arrange to share all plans and materials with the mentor in a timely way, to allow for feedback before using them

- Keep the focus class binder up to date with plans and materials and ensure that it is accessible to the mentor and supervisor at all times

- Engage in reflective diary writing or other communication forums required by mentors and/or supervisors

- Provide mentor/supervisor with copies of plans and materials

- Confer regularly with the mentor teacher and supervisor about progress and concerns

Professional Activities

- Prepare for and participate in seminars

- Participate in orientation activities, faculty meetings and other school events

- Initiate introductions to school faculty, staff and administrators

- Maintain accurate contact information for mentor teacher(s) and supervisor

- In case of absence, inform everyone affected promptly, i.e. prior to the absence

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- Comply with the school absence policies and have substitute teacher plans available if scheduled to teach lessons during the absence
- Comply with the internship attendance policy

- Dress professionally

- Comply with the Professional Conduct policy

- Consult mentor teacher and supervisor about the work schedule for any part time job and arrange a mutually acceptable schedule

Personal Learning

- Take initiative in asking questions, searching out resources, inviting feedback and creating opportunities to learn.

- Reflect on teaching and learning through discussions and assignments

- Prepare a professional portfolio (reflective diary)

- Work with intern as a co-teacher as soon as possible, sharing decisions and observations

- Observe intern's teaching and help the intern think about student understanding, alternative approaches, grouping, management, etc.

- Provide interns with oral and written feedback about their teaching, including written feedback

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- Observe teachers and students carefully, taking notes and asking questions

- Study and participate in the formation and maintenance of a classroom learning community

- Begin the year co-planning and co-teaching lessons and activities, moving toward independent planning and teaching as the year progresses

Mentor Teacher Responsibilities

Planning and Communication

- Negotiate with intern and supervisor a sequence of intern responsibilities in accordance with the program standards

- Provide intern with an outline or list of topics intern will be responsible for teaching, allowing extra time for intern to locate resources, plan, receive feedback from mentor teacher and supervisor, and revise

- Establish regular times to confer with the intern about unit planning and provide support for identifying big ideas and appropriate curriculum materials
- Help identify places in the curriculum where the intern can try out ideas learned in seminars

- Confer regularly with the supervisor about progress and concerns

- Participate in all school activities from morning assembly to evening assembly

Supporting Intern Learning

- Facilitate and monitor intern's progress from observation to co-planning and co-teaching to lead teaching
- Guide the intern through daily school-based experiences such as working with other teachers, dealing with classes on an assembly day, etc.

- Provide appropriate, classroom-based learning opportunities throughout the year.

- Reflect with the intern about teaching, student learning and ideas and strategies studied in seminars.

Assessment

- Participate in assessment conferences
- Write and submit an Exit Performance Description at the end of the internship programme
- Help interns think about their careers as educators and assist with reviewing portfolios, videotaping, writing letters of recommendation, etc.

Supervisor Responsibilities

Meetings, Observation Visits, and Assessments

- Provide copies of written assessments to interns and mentor teachers
- Conduct five feedback sessions with the intern and mentor teacher, at the appropriate point of time
- Prepare participants for sessions by explaining what to bring and topics to discuss
- Make at least five observation visits during a week
- Prepare written assessments prior to feedback sessions, using the appropriate forms for your intern's subject area, and provide copies for the intern and mentor teacher at the conference
- Write and submit an Exit Performance Description at the end of the internship programme

Communication

- Facilitate communication among interns, mentor teachers and others involved with the internship
- Communicate regularly with each intern, at least every other day
- Communicate regularly with each mentor teacher
- Communicate regularly, as scheduled, with subject area leaders about interns' progress and problems

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- Provide the intern and mentor teacher with detailed notes and written feedback about observation visits

- Make sure intern and mentor clearly understand expectations and program standards
- Keep informed about program developments and pass this information on to interns and mentors promptly

- Know where to direct questions and relay answers as soon as possible

Support of Intern Learning by the supervisor

- Observe the intern's teaching and confer about the planning and teaching of each observed lesson

- Provide constructive written and oral feedback for each observed lesson

- Identify the intern's specific needs and work on them with the intern and mentor teacher

- Inform subject area leader about problems promptly

- Help interns to develop their portfolios by giving feedback on materials,

assisting with videotaping, etc. Records

- Keep notes of all observation visits including date, progress observed, suggestions made and actions taken

- Keep notes of all communication with interns and mentor teachers

- Keep examples of intern work indicative of progress or problems

- Keep copies of all written assessments and professional development plans

- Submit evaluation reports and professional development plans to the department head

This highlights the intern's field experience that contribute to the overall design of the internship year experience. In schools with other configurations of class time, interns and mentors should discuss with their field instructors how the intern's lead teaching time will be distributed throughout the year. Key aspects of any intern's lead teaching schedule include:

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• After the initial week or two of school, the intern should have lead teaching responsibility (but not sole teaching responsibility) for at least one class period in a week .

• Interns are novice teachers for whom out-of-class preparation and reflection takes longer than it does for more experienced teachers. Having regular time during the school day to plan well for their teaching and reflect carefully on it is vital for the growth of the intern's practice and for the quality of the instruction they can provide to

the students they share with their mentor Interns may spend some of this time outside the classroom, and they may spend some of it in observation and analysis of the mentor's teaching.

• In the initial internship programme, short periods of increased lead(sole) teaching responsibilities should be preceded and followed by periods during which interns return to teaching only the focus class. From each period of increased lead teaching responsibility to the next, the demands on the intern's planning, teaching, and/or assessing should increase.

• Interns' on-campus classes do not meet every week of the internship. During certain weeks, the classes do not meet so that interns can be in their placement schools all five days of the week. Interns' obligations to their courses during this time focus more on at-school or in-class activities and less on lengthy reading or writing assignments.

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DEPARTMENT OF MATHEMATICAL SCIENCES

COURSE STRUCTURE

for

M.Sc. (Mathematics)

Four Semesters (Two Years)

Programme

Based on

Choice Based Credit System (CBCS)
(As per ordinance-14)

I & II Semester 2020-21

III & IV Semester 2021-22

AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

Semester Course of M.Sc. Mathematics Based on CBCS

Vision of the University:

To be the premier institution that offers teaching and learning programmes of the best quality, graduate students who excel and become leaders in the chosen profession contributing to the community, the nation and the world, and prepares individuals of the highest moral fibre. The vision of university is:

To create an ideal society and an intellectual environment that initiates, nourishes and perpetuates values of co-existence and to fulfil and achieve excellence.

The university, under the dynamic leadership of our honourable Vice-chancellor is working on quite a few ambitious plans. The idea is to develop the university as a knowledge city.

About the Department:

The department came into existence in September 1984 with its initial name 'Department of Mathematics & Statistics'. The foundation stone of the building where the department came into existence was laid down by the then chief minister of Madhya Pradesh Shri Motilal Vora. However, from April 1999, its name has been changed to be known now onwards as the 'Department of Mathematical Sciences'. Initially Prof. R. B. Misra (Professor & Head), Dr. C. K. Sharma (Reader), Dr. N. P. Singh and Dr. J. P. Singh (Lecturers) joined as faculty members in the year 1985. In 1989, Dr. R. N. Singh joined the department as a lecturer. Dr. (Mrs.) Kavita Shrivastava and Dr. Akhileshwar Prasad were appointed as lecturer in the department in years 1994 and 1996 respectively. Prof. R. B. Misra had been the Vice-Chancellor of Avadh University, Faizabad during 1989-92. Prof. C. K. Sharma served as acting Vice-Chancellor of Awadhesh Pratap Singh University, Rewa in the year 2003.

The department runs M.A./M.Sc., M.Phil. and Ph.D. programs in Mathematics. Currently around one hundred fifty students are studying in the department. The department has made notable research contributions in the areas of Special Functions, General Relativity, Cosmology and Differential Geometry. Researchers of the department have been visiting and interacting with various research institutions of the country. The department received library grant from 'National Board for Higher Mathematics, Mumbai'. More than 250 research papers and articles have been published by the faculty of the department in National/International journals. The research papers of the faculty members are also cited in reference books and journals of high impact factor. Four students of the department have qualified NET/SET examination. Since the inception of the department, more than 45 students have been awarded Ph. D. degree and over 250 students have obtained M. Phil. degree.

The department received international recognition in the year 1987 when it was selected under federation scheme of the "International Centre for Theoretical Physics, Trieste (Italy)" Since then the federation was renewed annually till 1992. It provided rare opportunity to the faculty

members and students of the department to visit the I.C.T.P. for the improvement of their knowledge with the financial support offered by the Centre. The department successfully organized the 65th Annual Conference of Indian Mathematical Society during Dec. 20-23 1999. Some of the notable personalities who visited the department from time to time are Prof. Franco Fava (Italy), Prof. P. C. Vaidya, Prof. Nand Lal, Prof. B. B. Sinha, Prof. K. K. Azad, Prof. J. B. Rao, Prof. Nand Kishor, Prof. K. P. Singh, Prof. S. R. Roy, Prof. H. C. Khare, Prof. David Gauld (New Zealand), Prof. A. N. Roy, Prof. T. Pati, Prof. Bill Fieldman (U. S. A.), Prof. U. C. De, Prof. M. A. Pathan, Prof. P. N. Pandey and Prof. S. D. Tripathi et al.

The department has organised Invited Talks, Workshops and Seminars to improve the knowledge of students regarding the latest developments in the field of Mathematical Sciences.

Faculty:

1. Prof. R. N. Singh — Professor and Head
2. Dr. Shravan K. Pandey — Full Time Faculty
3. Dr. Anamika Dubey — Full Time Faculty
4. Dr. Jai Prakash Patel — Full Time Faculty

Aims:

1. Developing the Mathematical Skills among the students and preparing them to take up a career in research.
2. Create more interest in the subject and motivate students for self learning.
3. Strengthening the logical reasoning which is the main ingredient to understand Mathematical concepts.

Objectives:

1. To develop deep understanding of the fundamental axioms/concepts in Mathematics and capability of developing ideas based on them.
2. To encourage students for research studies in Mathematics and related fields.
3. To enable the students being life-long learner who are able to independently expand their mathematical expertise when needed.

Programme: **M.Sc. Mathematics**

Programme Code: **063**

Duration: **4 Semesters (Two Year)**

Number of Seats: **72**

Eligibility:

B.Sc. with Mathematics as a subject.

Age Limit: No age limit.

Admission Procedure:

The admission will be done as per merit of qualifying examinations.

PROGRAMME OUTCOMES (POs)

PO#	PROGRAMMEOUTCOMES
PO1	**Critical Thinking:** Inculcate critical thinking to carry out scientific investigation objectively. Formulate coherent arguments; critically evaluate practices, policies and theories by following scientific approach to knowledge development. Critically evaluate ideas, evidence and experiences from an open-minded and reasoned perspective.
PO2	**Scientific Communication Skills:** Imbibe effective scientific and / or technical communication in both oral and writing. Ability to show the importance of the subject as precursor to various scientific developments since the beginning of the civilization.
PO3	**Social Interaction:** Elicit views of others, mediate disagreements and help reach conclusions in group settings.
PO4	**Enlightened Citizenship:** Create awareness to become an enlightened citizen with commitment to deliver one's responsibilities within the scope of bestowed rights and privileges.
PO5	**Ethics:** Continue to acquire relevant knowledge and skills appropriate to professional activities and demonstrate highest standards of ethical issues in the subject concerned. Ability to identify unethical behaviour such as fabrication, falsification or misrepresentation of data and adoptive objective, unbiased and truthful actions in all aspects.
PO6	**Environment and Sustainability:** Understand the issues of environmental contexts and sustainable development.
PO7	**Lifelong Learning:** Ability to think, acquire knowledge and skills through logical reasoning and to inculcate the habit of self-learning throughout life, through self- paced and self- directed learning aimed at personal development, and adapting to changing academic demands of work place through knowledge/ skill development/ reskilling.

PROGRAMME SPECIFICOUT COMES (PSOs) (M.Sc. Mathematics)

PSO #	PROGRAMME SPECIFIC OUTCOMES
PSO1	**Strong Foundation in Knowledge:** Have strong foundation in core areas of Mathematics and able to communicate Mathematics effectively.
PSO2	**Problem Solving:** Solve complex problems by critical understanding, analysis and synthesis, Evaluate hypotheses, theories, methods and evidence within their proper contexts.
PSO3	**Application and Research Efficiency:** Provide a systematic understanding of the concepts and theories of mathematics and their application in the real world- to an advanced level, and enhance career prospects in a huge array of fields, viz. in industry, commerce, education, finance and research.
PSO4	**Lifelong Practical Knowledge:** Recognize the need to engage in lifelong learning through continuous education and research leading to higher degrees like Ph.D., D.Sc. etc.

COURSE STRUCTURE FOR M.SC. MATHEMATICS AT A GLANCE

Semester-I

Core Courses								
S. No.	Course Code	Title of the Course	Credit	Maximum Marks		Total	Minimum Pass Marks	
				Theory	Cont. Evln.		Theory	Cont. Evln.
1.	MAT-C101	Advanced Abstract Algebra-I	4	60	40	100	21	14
2.	MAT-C102	Real Analysis	4	60	40	100	21	14
3.	MAT-C103	Topology-I	4	60	40	100	21	14
4.	MAT-C104	Complex Analysis	4	60	40	100	21	14
		Total Core Credits	**16**	**240**	**160**	**400**	**-**	**-**
Generic Elective (Any one of the following)								
5.	MAT-GE105	Tensor Analysis	4	60	40	100	21	14
6.	MAT-GE106	Linear Programming Problems	4	60	40	100	21	14
7.	MAT-GE107	Computational Mathematics	4	60	40	100	21	14
		Total Generic Elective Credit	**4**	**60**	**40**	**100**	**-**	**-**
8.	MAT-C108	Comprehensive Viva-Voce	4	-	-	100	35	-
		Total (Core+ Generic Elective + Comprehensive Viva)	**24**	**300**	**200**	**600**	**-**	**-**

Semester-II

Core Courses								
S.No.	Course Code	Title of the Course	Credit	Maximum Marks		Total	Minimum Pass Marks	
				Theory	Cont. Evln.		Theory	Cont. Evln.
1.	MAT-C201	Advanced Abstract Algebra-II	4	60	40	100	21	14
2.	MAT-C202	Lebesgue Measure and Integration	4	60	40	100	21	14
3.	MAT-C203	Topology-II	4	60	40	100	21	14
4.	MAT-C204	Differential Geometry	4	60	40	100	21	14
		Total Core Credits	**16**	**240**	**160**	**400**	**-**	**-**
Generic Elective (Any one of the following)								
5.	MAT-GE205	Number Theory	4	60	40	100	21	14
6.	MAT-GE206	Wavelet Analysis	4	60	40	100	21	14
7.	MAT-GE207	Quantitative Techniques	4	60	40	100	21	14
		Total Generic Elective Credit	**4**	**60**	**40**	**100**	**-**	**-**
8.	MAT-C208	Comprehensive Viva-Voce	4	-	-	100	35	-
		Total (Core+ Generic Elective + Comprehensive Viva)	**24**	**300**	**200**	**600**	**-**	**-**

Semester-III

Core Courses								
S. No.	Course Code	Title of the Course	Credit	Maximum Marks		Total	Minimum Pass Marks	
				Theory	Cont. Evln.		Theory	Cont. Evln.
1.	MAT-C301	Functional Analysis-I	4	60	40	100	21	14
2.	MAT-C302	Advanced Special Functions-I	4	60	40	100	21	14
3.	MAT-C303	Riemannian Geometry-I	4	60	40	100	21	14
		Total Core Credits	**12**	**180**	**120**	**300**	**-**	**-**
Discipline Centric Elective (Any one of the following)								
4.	MAT-DCE304	Integral Transforms-I	4	60	40	100	21	14
5.	MAT-DCE305	Differential Geometry of Manifolds-I	4	60	40	100	21	14
6.	MAT-DCE306	General Theory of Relativity and Cosmology –I	4	60	40	100	21	14
		Total Discipline Centric Elective Credits	**4**	**60**	**40**	**100**	**-**	**-**
Generic Elective (Any one of the following)								
7.	MAT-GE307	Operations Research-I	4	60	40	100	21	14
8.	MAT-GE308	Advanced Discrete Mathematics-I	4	60	40	100	21	14
9.	MAT-GE309	Bio-Mathematics	4	60	40	100	21	14
		Total Generic Elective Credit	**4**	**60**	**40**	**100**	**-**	**-**
10.	MAT-C310	Comprehensive Viva-Voce	4	-	-	100	35	-
		Total (Core+ Discipline Centric Elective+ Generic Elective + Comprehensive Viva)	**12+4+ 4+4= 24**	**300**	**200**	**500 +100 =600**	**-**	**-**

Semester-IV

Core Courses								
S. No.	Course Code	Title of the Course	Credit	Maximum Marks		Total	Minimum Pass Marks	
				Theory	Cont. Evln.		Theory	Cont. Evln.
1.	MAT-C401	Functional Analysis-II	4	60	40	100	21	14
2.	MAT-C402	Advanced Special Functions-II	4	60	40	100	21	14
3.	MAT-C403	Riemannian Geometry-II	4	60	40	100	21	14
		Total Core Credits	**12**	**180**	**120**	**300**	**-**	**-**
Discipline Centric Elective (Any one of the following)								
4.	MAT-DCE404	Integral Transforms-II	4	60	40	100	21	14
5.	MAT-DCE405	Differential Geometry of Manifolds-II	4	60	40	100	21	14
6.	MAT-DCE406	General Theory of Relativity and Cosmology –II	4	60	40	100	21	14
		Total Discipline Centric Elective Credits	**4**	**60**	**40**	**100**	**-**	**-**

Generic Elective (Any one of the following)								
7.	MAT-GE407	Operations Research-II	4	60	40	100	21	14
8.	MAT-GE408	Advanced Discrete Mathematics-II	4	60	40	100	21	14
9.	MAT-GE409	Cryptography	4	60	40	100	21	14
Total Generic Elective Credit			**4**	**60**	**40**	**100**	**-**	**-**
10.	MAT-C410	Comprehensive Viva-Voce	4	-	-	100	35	-
	Total (Core+ Discipline Centric Elective+ Generic Elective + Comprehensive Viva)		**12+4+ 4+4= 24**	**300**	**200**	**500 +100 =600**	**-**	**-**
	Total Semester (I+II+III+IV)		**96**	**1200**	**800**	**2400**		

Programme Administration

Evaluation:

1. Each course will be assessed for 100 marks, out of which 60 marks will be for end-semester examination and 40 marks will be for Continuous Evaluation. The duration of end-semester examination for each course shall be of three hours.
2. The question paper of end-semester examination of each course will consist of two sections A & B. Section A will consist of short answer type questions each carrying 4 marks and section B of long answer type questions each carrying 8 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.
3. During the semester, a teacher offering the course will do the continuous evaluation of the student at three points of time by conducting three tests of 20 marks each. Of these, two must be written tests and third may be written test/Quiz/Seminar/Assignment. Marks obtained in two best tests out of three will be awarded to the student.
4. Total of Marks obtained in end-semester examination and best two tests under continuous evaluation will decide the grade in the course.

COURSE STRUCTURE

Under CBCS

M.Sc. MATHEMATICS

SEMESTER-I

Core Courses								
S. No.	Course Code	Title of the Course	Credit	Maximum Marks		Total	Minimum Pass Marks	
				Theory	Cont. Evln.		Theory	Cont. Evln.
1.	MAT-C101	Advanced Abstract Algebra-I	4	60	40	100	21	14
2.	MAT-C102	Real Analysis	4	60	40	100	21	14
3.	MAT-C103	Topology-I	4	60	40	100	21	14
4.	MAT-C104	Complex Analysis	4	60	40	100	21	14
		Total Core Credits	**16**	**240**	**160**	**400**	**-**	**-**
Generic Elective (Any one of the following)								
5.	MAT-GE105	Tensor Analysis	4	60	40	100	21	14
6.	MAT-GE106	Linear Programming Problems	4	60	40	100	21	14
7.	MAT-GE107	Computational Mathematics	4	60	40	100	21	14
		Total Generic Elective Credit	**4**	**60**	**40**	**100**	**-**	**-**
8.	MAT-C108	Comprehensive Viva-Voce	4	-	-	100	35	-
		Total (Core+ Generic Elective + Comprehensive Viva)	**24**	**300**	**200**	**600**	**-**	**-**

M.Sc. MATHEMATICS (Under CBCS)
SEMESTER-I

Credit: 4	Max. Marks	Min. Pass Marks
Theory	60	21
Cont. Evln.	40	14

Course Code: MAT-C101 Advanced Abstract Algebra – I

Course Objectives: The objective of this course is to study the concepts of Normal series, Composition series, Zessenhaus lemma, Solvable groups, Nilpotent groups and fields in detail with a focus on Galois theory which provides a link between group theory and roots of polynomials.

Note: The question paper will consist of two sections A & B. Section A will consist of short answer type questions each carrying 4 marks and section B of long answer type questions each carrying 8 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Unit 1-

Normal and Subnormal series of groups, Composition series, Zessenhaus lemma, Schreier's theorem, Jordan-Hölder theorem.

Unit 2-

Solvable and Nilpotent groups.

Unit 3-

Extension fields, Roots of polynomials, Algebraic and transcendental extensions, Splitting fields, Separable and inseparable extensions.

Unit 4-

Perfect fields, Finite fields, Primitive elements, Algebraically closed fields.

Unit 5-

Automorphism of extensions, Galois extensions, Fundamental theorem of Galois theory, Solution of polynomial equations by radicals, Insolvability of general equation of degree 5 by radicals.

Recommended Books:

[1] I.N. Herstein, Topics in Algebra, Wiley Eastern Ltd. New Delhi, 1975.
[2] Vivek Sahai and Vikas Bist, Algebra, Narosa Publishing House, 1999.
[3] P.B. Bhattacharya, S.K.Jain and S.R.Nagpaul, Basic Abstract Algebra (2nd Edition), Cambridge University Press, Indian Edition, 1997.

Reference Books:

[1] N. Jacobson, Basic Algebra, Vols. I & II, W.H. Freeman, 1980(also published by Hindustan Publishing Company).
[2] S. Lang, Algebra, Addison-Wesley.
[3] I.S. Luther and I.B.S. Passi, Algebra, Vol.I-Groups, Vol. II-Rings, Narosa Publishing House (V0l. I-1996, Vol. II- 1999).

Course Learning Outcomes: After studying this work student will be able to:

CO1: Understand the proof of Schreier's theorem and Jordan-Holder theorem and also able to prove fundamental theorem of arithmetic using Jordan-Holder theorem.

CO2: Able to discuss Solvable and Nilpotent groups.

CO3: Characterize perfect fields using separable extensions and the proof of fundamental theorem of Galois theory.

CO4: Classify finite fields using roots of unity and understand Galois theory.

CO5: Apply Galois theory of equations to prove that a polynomial equation over a field of characteristic is solvable by radicals iff its group (Galois) is a solvable group.

M.Sc. MATHEMATICS (Under CBCS)
SEMESTER-I

Credit: 4	Max. Marks	Min. Pass Marks
Theory	60	21
Cont. Evln.	40	14

Course Code: MAT-C102 Real Analysis

Course Objectives: The main objective of this course is to study the concepts of Riemann-Stieltjes integral, Integration of vector valued functions, Sequence and series of functions, Functions of several variables, Inverse function theorem and Implicit function theorem and to prepare students for further research in analysis and differential geometry.

Note: The question paper will consist of two sections A & B. Section A will consist of short answer type questions each carrying 4 marks and section B of long answer type questions each carrying 8 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Unit 1-

Definition and existence of Riemann-Stieltjes integral and its properties, Integration and differentiation, The fundamental theorem of calculus.

Unit 2-

Integration of vector-valued functions, Rectifiable curves, Rearrangement of terms of series, Riemann's theorem.

Unit 3-

Sequence and series of functions, Pointwise and uniform convergence, Cauchy criterion for uniform convergence, Weierstrass M-test, Abel's and Dirichlet's test for uniform convergence and continuity, Uniform convergence and Riemann-Stieltjes integration , Uniform convergence and differentiation, Weierstrass approximation theorem, Power series, Uniqueness theorem for power series, Abel's and Tauber's theorems.

Unit 4-

Functions of several variables, Linear transformations, Derivatives in an open subset of R^n, Chain rule, Partial derivatives, Interchange of the order of differentiation, Derivatives of higher orders, Taylor's theorem, Inverse function theorem.

Unit 5-

Implicit function theorem, Jacobians, Extremum problems with constraints, Lagrange's multiplier method, Differentiation of integrals, Partitions of unity, Differential forms, Stoke's theorem.

Recommended Books:

[1] Walter Rudin, Principles of Mathematical Analysis (3rd Edition), McGraw-Hill, Kogakusha, 1976, International Student Edition.

Reference Books:

[1] T.M.Apostol, Mathematical Analysis, Narosa Publishing House, New Delhi, 1985.
[2] H.L. Royden, Real Analysis, Macmillan Publishing Co. Inc., 4th Edition, New York, 1993.

Course Learning Outcomes: After studying this work student will be able to:

CO1: Describe the Riemann-Stieltjes integral and its properties and learns the fundamental theorem of calculus.

CO2: Understand the theory of sequence and series of functions, Pointwise and uniform convergence, Power series.

CO3: Able to describe functions of several variables.

CO4: Understand and evaluate Inverse function theorem and implicit function theorem.

CO5: Able to apply Partitions of unity, Differential forms, Stoke's theorem.

M.Sc. MATHEMATICS (Under CBCS)
SEMESTER-I
Course Code: MAT-C103 Topology-I

Credit: 4	Max. Marks	Min. Pass Marks
Theory	60	21
Cont. Evln.	40	14

Course Objectives: Topology is concerned with the properties of geometric objects that are preserved under continuous deformations such as stretching, twisting, crumpling and bending but not tearing and gluing. The objective of this course is to study cardinal numbers, Zorn's lemma, Well-Ordering theorem, definition and examples of topological spaces, Neighbourhood systems, Continuous functions and Homeomorphism, First and second countable spaces, Separable spaces, Connected spaces and Path connectedness.

Note: The question paper will consist of two sections A & B. Section A will consist of short answer type questions each carrying 4 marks and section B of long answer type questions each carrying 8 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Unit 1-

Countable and uncountable sets, Infinite sets and the axiom of choice, Cardinal numbers and its arithmetic. Schroeder-Bernstein theorem, Cantor's theorem and the continuum hypothesis, Zorn's lemma, Well-ordering theorem.

Unit 2-

Definition and examples of topological spaces, Closed sets, Neighbourhoods, Closure, Dense sets, Interior, Exterior and boundary, Accumulation points and derived sets, Bases and sub-bases, Subspaces and relative topology.

Unit 3-

Alternate methods of defining a topology in terms of Kuratowski closure operator and Neighbourhood systems, Continuous functions and homeomorphism.

Unit 4-

First and second countable spaces, Separable spaces, Second countability and Separability.

Unit 5-

Connected spaces, Connectedness on real line, Components, Locally connected spaces, Path-connectedness.

Recommended Books:

[1] James R. Munkres, Topology: A First Course, Prentice-Hall of India Pvt. Ltd. New Delhi, 2000.

Reference Books:

[1] K.D.Joshi, Introduction to General Topology, Willey Eastern Limited, 1983.
[2] G.F. Simmons, Introduction to Topology and Modern Analysis, McGraw-Hill Book Company, 1963.
[3] J.Dugundji, Topology, Allyn and Bacon, 1966(Reprinted in India by Prentice-Hall of India Pvt. Ltd.).
[4] N. Bourbaki, General Topology Part-I (Transl.) Addition Wesley Reading 1966.

Course Learning Outcomes: After studying this work student will be able to:

CO1: distinguish countable and uncountable sets.

CO2: Understand Topological spaces and evaluate Neighbourhoods, Closure, Dense sets, Interior, Exterior and boundary, Accumulation points and derived sets, Bases and sub-bases.

CO3: Understand Continuous functions and homeomorphism

CO4: Able to distinguish First and second countable spaces, Understand Separable spaces, Second countability and Separability.

CO5: Understand the definition and basic properties of connected spaces, Path connectedness.

M.Sc. MATHEMATICS (Under CBCS)
SEMESTER-I
Course Code: MAT-C104 Complex Analysis

Credit: 4	Max. Marks	Min. Pass Marks
Theory	60	21
Cont. Evln.	40	14

Course Objectives: The course aims to familiarize the learner with complex function theory, analytic functions theory, the concept of index and Cauchy's theorems, integral formulas, singularities and contour integrations and finally provide a glimpse of maximum principle and Schwarz' lemma.

Note: The question paper will consist of two sections A & B. Section A will consist of short answer type questions each carrying 4 marks and section B of long answer type questions each carrying 8 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Unit 1-

Complex Integration, Cauchy-Goursat theorem, Cauchy integral formula, Higher order derivatives.

Unit 2-

Morera's theorem, Cauchy's inequality, Liouville's theorem, The fundamental theorem of algebra, Taylor's theorem.

Unit 3-

The maximum modulus principle, Schwartz lemma, Laurent's series, Singularities, Meromorphic functions, The argument principle, Rouche's theorem, Inverse function theorem.

Unit 4-

Residues, Cauchy's residue theorem, Evaluation of integrals, Branches of many valued functions with special reference to arg z, log z, z^a.

Unit 5-

Conformal Mappings, Mobius (Bilinear) Transformations involving circles and half-planes, Fixed point, Cross ratio, Transformations $w = z^2$, $w = \tan^2(z/2)$. Power Series and its Convergence.

Recommended Books:

[1] J.B. Conway, Functions of One Complex Variable, Springer-Verlag, International Student Edition, Narosa Publishing House,1980.

Reference Books:

[1] S. Ponnusamy, Foundations of Complex Analysis, Narosa Publishing House,1997.
[2] L.V. Ahlfors, Complex Analysis, McGraw-Hill, 1979.
[3] J.W.Brown and R.V.Churchill, Complex Variables and Applications, 2004.

Course Learning Outcomes: After studying this course the student will be able to:

CO1: Understand Complex integration, Cauchy's theorems and integral formulas on open subsets of the plane.

CO2: Able to understand Morera's theorem as converse of Cauchy's theoerem.

CO3: Understand the kind of singularities of a meromorphic functions which helps in residue theory and contour integrations.

CO4: Able to deduce Residues, and to apply Cauchy's residue theorem, Evaluation of integrals.

CO5: Understand Conformal Mappings, Mobius (Bilinear) Transformations involving circles and half-planes, Fixed point, Cross ratio, Power Series and its Convergence.

COURSE STRUCTURE

Under CBCS

M.Sc. MATHEMATICS

SEMESTER-I

Generic Elective (Any one of the following)								
S. No.	Course Code	Title of the Course	Credit	Maximum Marks		Total	Minimum Pass Marks	
				Theory	Cont. Evln.		Theory	Cont. Evln.
5.	MAT-GE105	Tensor Analysis	4	60	40	100	21	14
6.	MAT-GE106	Linear Programming Problems	4	60	40	100	21	14
7.	MAT-GE107	Computational Mathematics	4	60	40	100	21	14
Total Generic Elective Credit			**4**	**60**	**40**	**100**	**-**	**-**
8.	MAT-C108	Comprehensive Viva-Voce	4	-	-	100	35	-
	Total (Core+ Generic Elective + Comprehensive Viva)		**24**	**300**	**200**	**600**	**-**	**-**

M.Sc. MATHEMATICS (Under CBCS)
SEMESTER-I
Course Code: MAT-GE105 Tensor Analysis

Credit: 4	Max. Marks	Min. Pass Marks
Theory	60	21
Cont. Evln.	40	14

Course Objectives: Tensors have their applications to Riemannian Geometry, Mechanics, Elasticity, Theory of Relativity, Electromagnetic Theory and many other disciplines of Science and Engineering. The aim of this course is to study fundamental concepts of tensor and tensor analysis.

Note: The question paper will consist of two sections A & B. Section A will consist of short answer type questions each carrying 4 marks and section B of long answer type questions each carrying 8 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Unit 1-

Coordinate systems and their transformation laws, Kronecker deltas, Contravariant and Covariant vectors and tensors, Mixed tensors, Algebra of tensors, Quotient law.

Unit 2-

Symmetric and Skew-symmetric tensors, Contraction and transvection of tensors, Metric tensor and its associated tensor.

Unit 3-

Christoffel symbols and their coordinate transformation laws.

Unit 4-

Covariant derivatives, Gradient, Divergence and Curl.

Unit 5-

Intrinsic derivative, Levi-Civita concept of parallelism, Curvature tensor.

Recommended Books:

[1] R.S. Mishra, A course in Tensors with Applications to Riemannian Geometry, Pothishala Pvt. Ltd., Allahabad,1965.
[2] B.B.Sinha, Differential Geometry-An Introduction, Shyam Prakashan Mandir, Allahabad, 1978.

Reference Books:

[1] C.E.Weatherburn, An Introduction to Tensor Calculus and Riemannian Geometry, Cambridge University Press, London, 1942 and Radha Publishing House Calcutta, Indian Edition, 1995.
[2] T.J.Willmore, Differential Geometry, Oxford University Press, London, 1959 and Indian XI Edition, New Delhi, 1993.
[3] L.P. Eisenhart, Differential Geometry with the use of Tensors, Princeton University Press, New Jersey, 1949.

Course Learning Outcomes: After studying this course the student will be able to:

CO1: Understand coordinate systems and their transformation laws, concepts of tensors and their types, Quotient law.

CO2: Able to differ between tensor quantities and scalar or vector quantities.

CO3: Understand Contraction and transvection of tensors, Metric tensor and its associated tensor, Christoffel symbols and their coordinate transformation laws.

CO4: Able to handle Covariant derivatives, Gradient, Divergence and Curl.

CO5: Understand Intrinsic derivative, Levi-Civita concept of parallelism, Curvature tensor.

M.Sc. MATHEMATICS (Under CBCS)
SEMESTER-I
Course Code: MAT-GE106 Linear Programming Problems

Credit: 4	Max. Marks	Min. Pass Marks
Theory	60	21
Cont. Evln.	40	14

Course Objectives: The objective of Linear programming problems is to introduce students to use quantitative methods and techniques for effective decisions–making; model formulation and applications that are used in solving business decision problems.

Note: The question paper will consist of two sections A & B. Section A will consist of short answer type questions each carrying 4 marks and section B of long answer type questions each carrying 8 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Unit-I:

Linear Programming Problems, Formulation of the Linear Programming Problems, Graphical solution of LP Problems, Lines and Hyperplanes, Convex set, Extreme points of a convex set, Convex combination, Convex Hull, Convex Polyhedron, Fundamental theorem of Linear Programming, Trial and Error method.

Unit-II:

General Linear Programming Problem, Simplex method, Artificial variable technique, Two phase method, Big-M method, Problem of degeneracy, Method to resolve degeneracy.

Unit-III:

Duality in Linear Programming, Fundamental theorem of duality and theorems of duality, Dual simplex method.

Unit-IV:

Assignment Problem : Mathematical formulation of Assignment Problem, Solution of Assignment Problem, Unbalanced assignment problem, Sensitivity in assignment problems, The Traveling-Salesman Problem, Formulation of Traveling -Salesman Problem as an assignment problem and solution procedure.

Unit-V:

Transportation Problem : Mathematical Formulation of Transportation Problem, Initial Basic Feasible Solution : North-West Corner Rule, Lowest-Cost Entry Method, Vogel's Approximation Method, Optimality Test by MODI Method, Stepping Stone Method, Degeneracy in Transportation Problem.

Recommended Books:

[1] Kanti Swarup, P. K. Gupta and Manmohan, Operations Research, Sultan Chand & Sons, New Delhi.

Reference Books:

[1] S. D. Sharma, Operations Research, Kedar Nath Ram Nath & Co., 1996.
[2] F. S. Hillaer and G. J. Lieberman, Industrial Engineering Series, 1995.
[3] G. Hadley, Linear Programming, Narosa Publishing House, 1995.
[4] H. A. Taha, Operations Research-An Introduction, Macmillan Publishing Co. Inc. New York.
[5] P. K. Gupta and D. S. Hira, Operations Research-An Introduction, S. Chand & Sons, New Delhi.
[6] N. S. Kambo, Mathematical Programming Technique, Affiliated East West Pvt. Ltd.

Course Learning Outcomes: After studying this course the student will be able to:

CO1: Able to understand Linear programming problem and to formulate some real-life problems into Linear programming problem.

CO2: Understand the simplex method to find an optimal vector for the standard linear programming problem and the corresponding dual problem.

CO3: Understand Duality in Linear Programming, Fundamental theorem of duality and Dual simplex method.

CO4: Understand Assignment Problems and able to obtain optimum solution of Assignment problems.

CO5: Understand Transportation Problems and able to obtain optimum solution of Transportation problems. Able to distinguish Transportation and Assignment problems.

M.Sc. MATHEMATICS (Under CBCS)
SEMESTER-I

Credit: 4	Max. Marks	Min. Pass Marks
Theory	60	21
Cont. Evln.	40	14

Course Code: MAT-GE107 Computational Mathematics

Course Objectives: The course is framed to extend the students knowledge about understanding numerical techniques, to solve various categories of problems. This course will also help in developing deep understanding of the approximation techniques and problem solving capabilities.

Note: The question paper will consist of two sections A & B. Section A will consist of short answer type questions each carrying 4 marks and section B of long answer type questions each carrying 8 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Unit 1-

Binary Systems: Digital Systems, Binary numbers, Binary Codes, Error detecting code, Computer arithmetic number base conversions, Octal and Hexadecimal conversions.

Unit 2-

Errors and approximation: Representation of integers and fractions, fixed point and floating point arithmetic, error propagation, loss of significance, condition and instability, computational method of error propagation.

Unit 3-

Solution of Non-linear equations, iterative methods of 2nd degree, Muller's method, Chebyshev's method, multi-point method, Modified secant and Newton Raphson method, Methods of Multiple roots, Convergence of Methods.

Unit 4-

Solution of Linear Systems: Elimination with and without pivoting, Triangular factorization, Error and residual of an approximate solution, Backward error and iterative improvement. Polynomial interpolation: Existence and uniqueness of interpolation polynomial, error of interpolating polynomial, Interpolation using differences.

Unit 5-

Extrapolation methods, Numerical Differentiation, Numerical Integration: Newton Cote's integration, Solution of ODE's.

Books Recommended:

[1] John P. Hayes, Computer Architecture and Organization,3rd ed, McGraw Hill, 1998.
[2] Nicholas Carter, Computer Architecture, 2nd ed., Schaum's Outline Series, 2011.
[3] S.S. Sastry, Introductory Methods of Numerical Analysis, 3rd ed., Prentice Hall of India,1998.
[4] M.K. Jain, S.R.K.Iyengar and R.K.Jain, Numerical Methods for Scientific and Engineering Computations, Wiley Eastern Ltd., 1984.
[5] G. Shanker Rao, Numerical Analysis, 3rd ed., New Age International (P) Ltd.

Course Learning Outcomes: After studying this course the student will be able to:

CO1: Able to handle binary number system, computer arithmetic number base conversion.

CO2: Understand the errors, source of error and its effect on any numerical computations and also analyse the efficiency of any numerical algorithms.

CO3: Understand how to obtain numerical solution of nonlinear equations using bisection, secant, Newton and fixed-point iterations methods and convergence analysis of these methods.

CO4: Able to solve linear and nonlinear systems of equations numerically.

CO5: Understand Extrapolation methods, Numerical Differentiation, Numerical Integration: Newton Cote's integration, Solution of ODE's.

COURSE STRUCTURE
Under CBCS

M.Sc. MATHEMATICS

SEMESTER-II

Core Courses								
S. No.	Course Code	Title of the Course	Credit	Maximum Marks		Total	Minimum Pass Marks	
				Theory	Cont. Evln.		Theory	Cont. Evln.
1.	MAT-C201	Advanced Abstract Algebra-II	4	60	40	100	21	14
2.	MAT-C202	Lebesgue Measure and Integration	4	60	40	100	21	14
3.	MAT-C203	Topology-II	4	60	40	100	21	14
4.	MAT-C204	Differential Geometry	4	60	40	100	21	14
Total Core Credits			**16**	**240**	**160**	**400**	**-**	**-**
Generic Elective (Any one of the following)								
5.	MAT-GE205	Number Theory	4	60	40	100	21	14
6.	MAT-GE206	Wavelet Analysis	4	60	40	100	21	14
7.	MAT-GE207	Quantitative Techniques	4	60	40	100	21	14
Total Generic Elective Credit			**4**	**60**	**40**	**100**	**-**	**-**
8.	MAT-C208	Comprehensive Viva-Voce	4	-	-	100	35	-
	Total (Core+ Generic Elective + Comprehensive Viva)		**24**	**300**	**200**	**600**	**-**	**-**

M.Sc. MATHEMATICS (Under CBCS)
SEMESTER-II

Credit: 4	Max. Marks	Min. Pass Marks
Theory	60	21
Cont. Evln.	40	14

Course Code: MAT-C201 Advanced Abstract Algebra-II

Course Objectives: In this course a new algebraic structure, namely, modules is introduced and studied in detail. Modules are the generalization of vector spaces when the underlying field is replaced by an arbitrary ring. The study of modules over a ring also provides an insight into the structure of ring.

Note: The question paper will consist of two sections A & B. Section A will consist of short answer type questions each carrying 4 marks and section B of long answer type questions each carrying 8 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Unit 1- Introduction to Modules, Examples, Submodules, Quotient modules, Homomorphism and Isomorphism, Finitely generated modules, Cyclic modules.

Unit 2- Simple modules, Semi-simple modules, free modules, Schur's lemma.

Unit 3- Noetherian and Artinian modules and rings, Hilbert bases theorem, Wedderburn-Artin theorem.

Unit 4- Uniform modules, Primary modules and Noether-Lasker theorem, Fundamental structure theorem of modules over a Principal Ideal Domain and its application to finitely generated abelian groups.

Unit 5- Similarity of linear transformations, Invariant subspaces, Reduction to triangular forms, Nilpotent transformations, Index of nilpotency, Invariants of a nilpotent transformation, The Primary decomposition theorem.

Recommended Books:

[1] I.N. Herstein, Topics in Algebra, Wiley Eastern Ltd. New Delhi, 1975.
[2] Vivek Sahai and Vikas Bist, Algebra, Narosa Publishing House, 1999.
[3] P.B. Bhattacharya, S.K.Jain and S.R.Nagpaul, Basic Abstract Algebra (2nd Edition), Cambridge University Press, Indian Edition, 1997.

Reference Books:

[1] N. Jacobson, Basic Algebra, Vols. I & II, W.H. Freeman, 1980(also published by Hindustan Publishing Company).
[2] S. Kumaresan, Linear Algebra-A Geometric Approach, Prentice Hall of India Ltd.
[3] I.S. Luther and I.B.S. Passi, Algebra, Vol.I-Groups, Vol. II-Rings, Narosa Publishing House (V0l. I-1996, Vol. II- 1999).

Course Learning Outcomes: After studying this course the student will be able to:

CO1: Understand Modules, Identify and construct example of module sand apply homomorphism theorems on thesame.

CO2: Distinguish between free, simple and semi-simple modules.

CO3: Understand Noetherian and Artinian modules and rings, Able to prove Hilbert bases theorem, Wedderburn-Artin theorem.

CO4: Understand Uniform modules, Primary modules and able to prove Noether-Lasker theorem.

CO5: Able to Understand similarity of linear transformations, triangular forms, Nilpotent transformations, Able to prove the Primary decomposition theorem.

M.Sc. MATHEMATICS (Under CBCS)
SEMESTER-II

Credit: 4	Max. Marks	Min. Pass Marks
Theory	60	21
Cont. Evln.	40	14

Course Code: MAT-C202 Lebesgue Measure and Integration

Course Objectives: This course provides the essential foundations of important aspect of mathematical analysis. Measure theory and theory of the integration have numerous applications in other branches of pure and applied mathematics, for example in the theory of (partial) differential equations, functional analysis and fractal geometry. The objective of this course is to give mathematical foundation to probability theory and statistics, and on the real line it gives a natural extension of the Riemann integral which allows for better understanding of the fundamental relations between differentiation and integration.

Note: The question paper will consist of two sections A & B. Section A will consist of short answer type questions each carrying 4 marks and section B of long answer type questions each carrying 8 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Unit 1-Lebesgue outer measure, Measurable sets, Regularity, Measurable function, Borel and Lebesgue measurability, Non-measurable sets.
Unit 2- Integration of non-negative functions, The general integral, Integration of series, Riemann and Lebesgue integrals.
Unit 3- The four derivatives, Functions of bounded variations, Lebesgue differentiation theorem, Differentiation and integration.
Unit 4- The L^p -spaces, Convex functions, Jensen's inequality, Hölder and Minkowski inequalities, Completeness of L^p .
Unit 5- Dual of space, Convergence in measure, Uniform convergence and Almost uniform convergence.

Recommended Books:
[1] G.de Barra, Measure Theory and Integration, Wiley-Eastern Ltd.,1981.

Reference Books:
[1] Walter Rudin, Principles of Mathematical Analysis (3rd Edition), McGraw-Hill, Kogakusha, 1976, International Student Edition.
[2] H.L. Royden, Real Analysis, Macmillan Publishing Co. Inc., 4th Edition, New York, 1993.
[3] I.K.Rana, An Introduction to Measure and Integration, Narosa Publishing House, 1997.
[4] P.K.Jain and V.P.Gupta, Lebesgue Measure and Integration, New-Age International (P) Ltd., New Delhi, 1986.

Course Learning Outcomes: After studying this course the student will be able to:
CO1: Understand and identify Lebesgue outer measure, Measurable sets, Regularity, Measurable function, Borel and Lebesgue measurability, Non-measurable sets.
CO2: Able to do Integration of non-negative functions, The general integral, Integration of series, Able to apply Riemann and Lebesgue integrals.
CO3: Understand the four derivatives, Functions of bounded variations, Lebesgue differentiation theorem.
CO4: Understand the L^p -spaces, Convex functions, Jensen's inequality, Able to prove Hölder and Minkowski inequalities, To check Completeness of L^p .
CO5: Understand Dual of space, Convergence in measure, Uniform convergence and Almost uniform convergence.

M.Sc. MATHEMATICS (Under CBCS)
SEMESTER-II
Course Code: MAT-C203 Topology-II

Credit: 4	Max. Marks	Min. Pass Marks
Theory	60	21
Cont. Evln.	40	14

Course Objectives: It is a second course in Topology with main objective to teach students many important results on several useful topics including local compactness, one point compactification, separation axioms, Urysohn lemma, Tietze extension theorem, Tychonoff's theorem, Filters and Nets. In addition, the course aims to provide students the awareness of tools for carrying out advanced research later in Topology and related areas.

Note: The question paper will consist of two sections A & B. Section A will consist of short answer type questions each carrying 4 marks and section B of long answer type questions each carrying 8 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Unit 1-Separation Axioms- T_0, T_1, T_2, T_3, T_4 -spaces, Their characterization and basic properties, Urysohn's lemma, Tietze extension theorem.

Unit 2- Compactness, Continuous functions and Compact sets, Basic properties of compactness, Compactness and finite intersection property, Sequentially and countably compact sets, Local compactness and one point compactification, Stone-Cech compactification, Compactness in metric spaces, Equivalence of compactness, Countable compactness and Sequential compactness in metric spaces.

Unit 3- Tychonoff product topology in terms of standard subbase and its characterizations, Projection maps, Separation axioms and product spaces, Connectedness and product spaces, Compactness and product spaces, Tychonoff's theorem, Countability and product spaces.

Unit 4- Filters, Filter base, Convergence of filters, Cluster points of a filter, Ultrafilters, Ultrafilters and compactness.

Unit 5- Nets- Topology and convergence of nets, Hausdorffness and nets, Ultranets, Compactness and nets, Canonical way of converting nets to filters and vice-versa. Embedding and Metrization, Embedding lemma and Tychonoff embedding, Urysohn Metrization theorem.

Recommended Books:

[1] James R. Munkres, Topology: A First Course, Prentice-Hall of India Pvt. Ltd. New Delhi, 2000.

Reference Books:

[1] K.D.Joshi, Introduction to General Topology, Willey Eastern Limited, 1983.
[2] G.F. Simmons, Introduction to Topology and Modern Analysis, McGraw-Hill Book Company, 1963.
[3] J.Dugundji, Topology, Allyn and Bacon, 1966(Reprinted in India by Prentice-Hall of India Pvt. Ltd.).
[4] N. Bourbaki, General Topology Part-I (Transl.) Addition Wesley Reading 1966.

Course Learning Outcomes: After studying this course the student will be able to:

CO1: Understand separation axioms T_0, T_1, T_2, T_3, T_4 -spaces their characterization and basic properties.

CO2: Understand compactness, sequentially and countably compact sets, Stone-Cech compactification.

CO3: Understand Tychonoff product topology in terms of standard subbase and its characterizations, Able to prove Tychonoff's theorem, Understand Countability and product spaces.

CO4: Understand Filters and Ultrafilters.

CO5: Understand Nets, Embedding and Metrization, Able to prove Urysohn Metrization theorem.

M.Sc. MATHEMATICS (Under CBCS)
SEMESTER-II

Credit: 4	Max. Marks	Min. Pass Marks
Theory	60	21
Cont. Evln.	40	14

Course Code: MAT-C204 Differential Geometry

Course Objectives: The objective of this course is to study geometry of curves and surfaces in three dimensional space using calculus techniques.

Note: The question paper will consist of two sections A & B. Section A will consist of short answer type questions each carrying 4 marks and section B of long answer type questions each carrying 8 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Unit 1-

Three-dimensional Euclidean space, Parametric representation of a curve and a surface, Linear element of a curve, Tangent to a curve, Osculating plane, Contact of surface with a curve.

Unit 2-

Curvature and principal normal, Circle of curvature, Centre and radius of curvature, Binomial and torsion, Plane curve, Frenet-Serret formulae, Helices.

Unit 3-

Locus of centre of curvature, Osculating sphere, Locus of centre of spherical curvature, Involutes and Evolutes of a curve, Co-ordinates in terms of arc-length parameter, Intrinsic equation of a curve.

Unit 4-

Various forms of Surfaces, Explicit form, Gaussian and Monge's forms, Different types of Surfaces, right helicoids, Conicoid, Surface of Revolution, Tangent plane to a surface, One Parameter family of a surfaces, their characteristic curves and envelope. Ruled surfaces: Developables and skew-surfaces, Properties of Developable, Developable associated with space-curves.

Unit 5-

Curvilinear co-ordinates, Fundamental Magnitude of first order Christoffel symbols, Direction on a surfaces, Angle between two directions. Orthogonality and parallelism of two directions determined by a quadratic equation. Inclinations of directions with parametric curves. Normal to a surface, Fundamental magnitudes of second order. Derivatives of unit normal to a surface.

Recommended Books:

[1] R.S. Mishra, A course in Tensors with Applications to Riemannian Geometry, Pothishala Pvt. Ltd., Allahabad,1965.
[2] B.B.Sinha, Differential Geometry-An Introduction, Shyam Prakashan Mandir, Allahabad, 1978.

Reference Books:

[1] C.E.Weatherburn, An Introduction to Tensor Calculus and Riemannian Geometry, Cambridge University Press, London, 1942 and Radha Publishing House Calcutta, Indian Edition, 1995.
[2] T.J.Willmore, Differential Geometry, Oxford University Press, London, 1959 and Indian XI Edition, New Delhi, 1993.
[3] L.P. Eisenhart, Differential Geometry with the use of Tensors, Princeton University Press, New Jersey, 1949.

Course Learning Outcomes: After studying this course the student will be able to:

CO1: Understand parametric representation of a curve and a surface, Osculating Plane.

CO2: Understand curvature and principal normal, Circle of curvature, Centre and radius of curvature, Binomial and torsion, Plane curve, Able to prove Frenet-Serret formulae.

CO3: Understand Locus of centre of curvature, Osculating sphere, Locus of centre of spherical curvature, Involutes and Evolutes of a curve.

CO4: Understand various forms of Surfaces such as Explicit form, Gaussian and Monge's forms, Able to derive tangent plane to a surface, Understand Ruled surfaces, Developable and skew-surfaces.

CO5: Introduce with curvilinear co-ordinates, Understand Fundamental Magnitude of first order, Christoffel symbols, Normal to a surface, Fundamental magnitudes of second order.

COURSE STRUCTURE
Under CBCS

M.Sc. MATHEMATICS

SEMESTER-II

Generic Elective (Any one of the following)								
S. No.	**Course Code**	**Title of the Course**	**Credit**	**Maximum Marks**		**Total**	**Minimum Pass Marks**	
				Theory	**Cont. Evln.**		**Theory**	**Cont. Evln.**
5.	MAT-GE205	Number Theory	4	60	40	100	21	14
6.	MAT-GE206	Wavelet Analysis	4	60	40	100	21	14
7.	MAT-GE207	Quantitative Techniques	4	60	40	100	21	14
Total Generic Elective Credit			**4**	**60**	**40**	**100**	**-**	**-**
8.	MAT-C208	Comprehensive Viva-Voce	4	-	-	100	35	-
	Total (Core+ Generic Elective + Comprehensive Viva)		**24**	**300**	**200**	**600**	**-**	**-**

M.Sc. MATHEMATICS (Under CBCS)
SEMESTER-II
Course Code: MAT-GE205 Number Theory

Credit: 4	Max. Marks	Min. Pass Marks
Theory	60	21
Cont. Evln.	40	14

Course Objectives: The purpose of the course is to give a simple account of classical number theory, prepare students to graduate-level courses in number theory and algebra, and to demonstrate applications of number theory (such as public-key cryptography). Upon completion of the course, students will have a working knowledge of the fundamental definitions and theorems of elementary number theory, be able to work with congruences, solve congruence equations and systems of equations with one and more variables, and be literate in the language and notation of number theory. They will also have an exposure to cryptography.

Note: The question paper will consist of two sections A & B. Section A will consist of short answer type questions each carrying 4 marks and section B of long answer type questions each carrying 8 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Unit 1-

Divisibility: Some basic terms and properties, Division algorithm, Common divisor, Greatest Common Divisor (gcd), Theorems on gcd, Euclid's lemma, Relatively prime, Euclidean algorithm, least common multiple (lcm), Theorems on lcm, Fundamental theorem of arithmetic, Euclid's theorem.

Unit 2-

Congruences: Theorem of Congruences, Residue and Complete residue system, Reduced residue system, Euler's ϕ-function, Euler's theorem.

Unit 3-

Fermat's theorem, Wilson's theorem, Converse of Wilson theorem, Solutions of Congruences, Degree of Congruences, Chinese remainder theorem, Method of Solution of Congruences.

Unit 4-

Prime modules and Cryptography: Prime modules, Power residues, Number theory from algebraic point of view, Introduction of Cryptography, Some simple cryptosystems, Enciphering Matrices.

Unit 5-

Quadratic reciprocity: Quadratic residues, Gauss lemma, Gaussian reciprocity law, Jacobi symbol, Greatest integer function, Arithmetic function, multiplication of arithmetic functions, M*ö*ebius function, M*ö*ebius inversion formula, Converse of M*ö*ebius formula, Recurrence functions, Fibonacci numbers.

Recommended Books:

[1] Niven and Zuckermann, An Introduction to Theory of Numbers, Wiley Eastern Ltd.
[2] Ireland and Rosen,A Classical Introduction to Modern Number Theory, Springer Verlag.
[3] Tom Apostol, Introduction to Analytic Number Theory, Narosa Publications, New Delhi.
[4] H. Delfs and H. Knebl, Introduction to Cryptography, Springer.
[5] N. Koblitz, Algebraic Aspects of Cryptography, Springer.

Course Learning Outcomes: Upon completion of this course, the student will be able to:

CO1: Understand the properties of divisibility and prime numbers, compute the greatest common divisor and least common multiples and handle linear Diophantine equations.

CO2: Understand the operations with congruences, linear and non-linear congruence equations.

CO3: Understand and apply Chinese Remainder Theorem, Lagrange theorem, Fermat's theorem, Wilson's theorem.

CO4: Understand prime modules and Cryptography.

CO5: Apply arithmetic functions in areas of mathematics.

M.Sc. MATHEMATICS
SEMESTER-II
Course Code: MAT-GE206 Wavelet Analysis

Credit: 4	Max. Marks	Min. Pass Marks
Theory	60	21
Cont. Evln.	40	14

Course Objectives: The main objectives of this course is to study Fourier and inverse Fourier transforms convolution and delta function, Fourier transform of square integrable functions, wavelet transform, time frequency Analysis, Gabor transform, Dyadic wavelets and inversion, frames, Wavelet series, Scaling functions and wavelets, Multi resolution analysis, compactly supported wavelets and their duals, orthogonal wavelets and wavelet packet, orthogonal decomposition of wavelet series.

Note: The question paper will consist of two sections A & B. Section A will consist of short answer type questions each carrying 4 marks and section B of long answer type questions each carrying 6 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Unit 1-

Fourier analysis: Fourier and inverse Fourier transforms, Convolution and delta function, Fourier transform of Square integrable functions. Fourier series, Poisson's Summation formula.

Unit 2-

Wavelet Transforms and Time Frequency Analysis: The Gabor Transform. Short-time Fourier transforms and the uncertainty principle. The integral wavelet transforms Dyadic wavelets and inversions.

Unit 3-

Frames, Wavelet Series. Scaling Functions and Wavelets, Multi resolution analysis, scaling functions with finite two scale relations. Direct sum decomposition of $L^2(R)$: Linear phase filtering.

Unit 4-

Compactly supported wavelets, Wavelets and their duals, Orthogonal Wavelets and Wavelet packets, Example of orthogonal Wavelets.

Unit 5-

Identification of orthogonal two-scale symbols, Construction of Compactly supported orthogonal wavelets, Orthogonal wavelet packets, orthogonal decomposition of wavelet series.

Recommended Books:

[1] C. K. Chui, A First Course in Wavelets, Academic press NY 1996.
[2] I. Daubechies, Ten Lectures on Wavelets, Society for Industrial and Applied Maths, 1992.

Course Learning Outcomes: After the course the students will be able to:

CO1: Apply arithmetic functions in areas of mathematics.

CO2: Understand Wavelet Transforms and Time Frequency Analysis.

CO3: Able to Understand and Analyze Frames, Wavelet Series. Scaling Functions and Wavelets.

CO4: Understand Compactly supported wavelets, Wavelets and their duals, Orthogonal Wavelets and Wavelet packets, Example of orthogonal Wavelets.

CO5: Able to construct Compactly supported orthogonal wavelets, Orthogonal wavelet packets, orthogonal decomposition of wavelet series.

M.Sc. MATHEMATICS (Under CBCS)
SEMESTER-II
Course Code: MAT-GE207 Quantitative Techniques

Credit: 4	Max. Marks	Min. Pass Marks
Theory	60	21
Cont. Evln.	40	14

Course Objectives: The main objectives of this course is to study basic ideas of measures of central tendency, Measures of Dispersion, Standard Deviation, Relation between Standard Deviation and other Measures, , Measure of Skewness, Methods of Least Square, Curve Fitting, Basic Concepts of Sampling, Efficiency of Sampling Methods.

Note: The question paper will consist of two sections A & B. Section A will consist of short answer type questions each carrying 4 marks and section B of long answer type questions each carrying 8 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Unit 1- Introduction to Statistics, Statistics and Statistical Methods, Characteristics of Statistics, Functions of Statistics, Limitations of Statistics, Statistics in Business and Management, Distrust of Statistics.

Unit 2- Data Collection, Data Classification, Measures of Central Tendency, Measures of Dispersion, Objectives of Measuring Dispersion, Characteristics of Measure of Dispersion, Range, Quartile Deviation, Average Deviation, Standard Deviation, Relation between Standard Deviation and other Measures, Relative Measures of Dispersion, Lorenz Curve.

Unit 3- Skewness, Measure of Skewness, Moments, Moments about the Mean in term of Moments about any point, Effect of change of Origin and Scale on Moments, Factorial Moments, Absolute Moments, Sheppard's Corrections for Moments, Charliers's Checks, Pearson's β and γ Coefficients, Kurtosis.

Unit 4- Methods of Least Square, Curve Fitting, Normal Equations, Fitting of the curve of the type $y = ab^x$, $y = ax^b$, $y = ae^{bx}$. Correlation Analysis, Regression Analysis.

Unit 5- Introduction to Sampling Techniques, Need for Sampling, Basic Concepts, Efficiency of Sampling Methods, Alternative Sampling Methods.

Books Recommended:

[1] Ken Black, Business Statistics for Contemporary Decision making, 5th edition, Wiley Publications (Indian Edition).
[2] D.R. Anderson, D.J. Sweeney and T.A Williams, Statistics for Business and Economics, 12th edition, Cengage Learning.
[3] T. N. Shrivastava and Shailja Rego, Statistics for Management, 2nd edition, TMH.
[4] S. P. Gupta, Statistical Methods, 34th edition, Sultan Chand & Sons.
[5] M. Ray, H.R. Sharma and Chaudhary, Mathematical Statistics, 11th edition, Ram Prasad and Sons, 2006.

Course Learning Outcomes: After studying this course the student will be able to

CO1: Understand need of Statistics, Characteristics and Limitations of Statistics.

CO2: Able to Data Collection, Data Classification and Data Gathering, Drafting Questionnaires, Sample Selection, Data Presentation.

CO3: Understand and apply Measure of Skewness**.**

CO4: Understand and apply Methods of Least Square, Curve Fitting**.**

CO5: Understand and apply Sampling Techniques and Need for Sampling.

COURSE STRUCTURE

Under CBCS

M.Sc. MATHEMATICS

SEMESTER-III

Core Courses								
S. No.	Course Code	Title of the Course	Credit	Maximum Marks		Total	Minimum Pass Marks	
				Theory	Cont. Evln.		Theory	Cont. Evln.
1.	MAT-C301	Functional Analysis-I	4	60	40	100	21	14
2.	MAT-C302	Advanced Special Functions-I	4	60	40	100	21	14
3.	MAT-C303	Riemannian Geometry-I	4	60	40	100	21	14
		Total Core Credits	**12**	**180**	**120**	**300**	**-**	**-**
Discipline Centric Elective (Any one of the following)								
4.	MAT-DCE304	Integral Transforms-I	4	60	40	100	21	14
5.	MAT-DCE305	Differential Geometry of Manifolds-I	4	60	40	100	21	14
6.	MAT-DCE306	General Theory of Relativity and Cosmology –I	4	60	40	100	21	14
		Total Discipline Centric Elective Credits	**4**	**60**	**40**	**100**	**-**	**-**
Generic Elective (Any one of the following)								
7.	MAT-GE307	Operations Research-I	4	60	40	100	21	14
8.	MAT-GE308	Advanced Discrete Mathematics-I	4	60	40	100	21	14
9.	MAT-GE309	Bio-Mathematics	4	60	40	100	21	14
		Total Generic Elective Credit	**4**	**60**	**40**	**100**	**-**	**-**
10.	MAT-C310	Comprehensive Viva-Voce	4	-	-	100	35	-
		Total (Core+ Discipline Centric Elective+ Generic Elective + Comprehensive Viva)	**12+4+ 4+4= 24**	**300**	**200**	**500 +100 =600**	**-**	**-**

M.Sc. MATHEMATICS (Under CBCS)
SEMESTER-III
Course Code: MAT-C301 Functional Analysis-I

Credit: 4	Max. Marks	Min. Pass Marks
Theory	60	21
Cont. Evln.	40	14

Course Objectives: To familiarize with the basic tools of Functional Analysis involving normed spaces, Banach spaces and Hilbert spaces, their properties dependent on the dimension and the bounded linear operators from one space to another.

Note: The question paper will consist of two sections A & B. Section A will consist of short answer type questions each carrying 4 marks and section B of long answer type questions each carrying 8 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Unit 1- Normed linear spaces, Banach spaces and Examples, Properties of normed linear spaces.

Unit 2- Subspaces, Quotient space of normed linear space and its completeness, Completion of normed linear spaces.

Unit 3- Bounded linear operators and continuous operators on normed linear spaces, Spaces of bounded linear operators.

Unit 4- Finite dimensional normed linear spaces, Basic properties of finite dimensional normed linear spaces, Equivalent norms, Riesz Lemma and Compactness.

Unit 5-Bounded linear functionals, Dual spaces with examples.

Recommended Books:

[1] P.K. Jain, O.P. Ahuja and Khalil Ahmad, Functional Analysis, New Age International (P) Limited, 1997.

[2] K.K. Jha, Functional Analysis and its Applications, Students' Friend, 1986.

[3] B.V. Limaye, Functional Analysis, Wiley Eastern Ltd.

[4] G.F. Simmons, Introduction to Topology and Modern Analysis, McGraw Hill, New York.

[5] S.K. Bose, Functional Analysis,

Course Learning Outcomes: After studying this course the student will be able to:

CO1: Understand Normed linear spaces, Banach spaces, Properties of normed linear spaces.

CO2: Understand Subspaces, Quotient space of normed linear space and its completeness, Completion of normed linear spaces.

CO3: Able to check boundedness of a linear operator and relate to continuity.

CO4: Able to prove Riesz-lemma and compactness.

CO5: Understand Bounded linear functionals, Dual spaces with examples.

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SEMESTER-III

Credit: 4	Max. Marks	Min. Pass Marks
Theory	60	21
Cont. Evln.	40	14

Course Code: MAT-C302 Advanced Special Functions-I

Course Objectives: The objectives of this course is to study The Euler or Mascheroni constant γ, A series for Γ'(z)/ Γ(Z), Beta function, Factorial function, Legendre's duplication formula, Gauss multiplication theorem, Hypergeometric and Generalized hypergeometric functions, Hyperhgeometrical differential equation and its solutions, F(a,b;c;z) as function of its parameters, Generating function, Bessel Function and Legendre polynomials.

Note: The question paper will consist of two sections A & B. Section A will consist of short answer type questions each carrying 4 marks and section B of long answer type questions each carrying 8 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Unit 1- Gamma and Beta Functions: The Euler or Mascheroni constant γ, Gamma function, A series for Γ'(z)/ Γ(Z), Difference equation Γ(z+1) = z Γ(z).

Unit 2- Beta function, value of Γ(z) Γ(1-z), Factorial function, Legendre's duplication formula, Gauss multiplication theorem.

Unit 3- Hypergeometric and Generalized hypergeometric functions: Function ${}_2F_1(a,b;c;z)$ A simple integral form, Evaluation of ${}_2F_1(a,b;c;z)$, Contiguous function relations.

Unit 4- Hypergeometrical differential equation and its solutions, F(a,b;c;z) as function of its parameters. Elementary series manipulations, Simple transformation, Relations between functions of z and 1-z.

Unit 5- Bessel Function and Legendre polynomials: Definition of $J_n(Z)$, Bessel's differential equation, Generating function, Bessel's integral with index half and an odd integer.

Recommended Books:

[1] E.D. Rainville, Special Functions, The Macmillan Co., New York, 1971.
[2] H.M.Srivastava, K.C.Gupta and S.P.Goyal, The H-function of One and Two variables with applications, South Asian Publication, New Delhi.
[3] N. Saran, S.D.Sharma and T.N. Trivedi, Special Functions with applications, Pragati Prakashan, 1986.
[4] N.N. Lebdev, Special functions and their applications, Prentice Hall, Englewood Cliffs, New Jersey, USA, 1965.

Course Learning Outcomes: After studying this course the student will be able to:

CO1: Understand Gamma and Beta Functions, Difference equation Γ(z+1) = z Γ(z).
CO2: Able to derive value of Γ(z) Γ(1-z), Factorial function, Legendre's duplication formula, Gauss multiplication theorem..
CO3: Understand Hypergeometric and Generalized hypergeometric functions, Contiguous function relations.
CO4: Able to handle Hypergeometrical differential equation and its solutions, Elementary series manipulations.
CO5: Understand Bessel Function and Legendre polynomials, Generating function.

M.Sc. MATHEMATICS (Under CBCS)
SEMESTER-III

Credit: 4	Max. Marks	Min. Pass Marks
Theory	60	21
Cont. Evln.	40	14

Course Code: MAT-C303 Riemannian Geometry-I

Course Objectives: The main objectives of this course is to study differentiable manifolds, tangent spaces, vector fields, Affine connections, Covariant derivatives, Curvature tensor, Exterior derivative, Riemannian manifolds, Riemannian connection, Schur's theorem,Geodesics in Riemannian manifolds, Projective curvature tensor, Conformal curvature tensor.

Note: The question paper will consist of two sections A & B. Section A will consist of short answer type questions each carrying 4 marks and section B of long answer type questions each carrying 8 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Unit 1- Definition and examples of Differentiable manifolds, Tangent spaces, Jacobian mappings.

Unit 2- Vector fields, Lie-bracket, Affine connections, Covariant derivatives, Curvature tensor, Bianchi identities.

Unit 3- Exterior algebra and Exterior derivative.

Unit 4- Riemannian manifolds, Riemannian connection, Curvature tensors, Sectional curvature, Schur's theorem.

Unit 5- Geodesics in Riemannian manifolds, Projective curvature tensor, Conformal curvature tensor.

Recommended Books:

[1] R.S. Mishra, A course in Tensors with Applications to Riemannian Geometry, Pothishala Pvt. Ltd., Allahabad,1965.

[2] B.B.Sinha, Differential Geometry-An Introduction, Shyam Prakashan Mandir, Allahabad, 1978.

Reference Books:

[1] C.E.Weatherburn, An Introduction to Tensor Calculus and Riemannian Geometry, Cambridge University Press, London, 1942 and Radha Publishing House Calcutta, Indian Edition, 1995.

[2] K.Yano, The Theory of Lie Derivatives and its Applications, North Holland Publishing Co. Amsterdam, 1957.

Course Learning Outcomes: After studying this course the student will be able to:

CO1: Understand Differentiable manifolds, Tangent spaces, Vector fields.

CO2: Understand Affine connections, Covariant derivatives, Curvature tensor.

CO3: Able to understand and apply Exterior derivative and Exterior algebra.

CO4: Understand Riemannian manifolds, Riemannian connection, Sectional curvature, Able to Schur's theorem.

CO5: Able to introduce and analyze Geodesics in Riemannian manifolds, Projective curvature tensor, Conformal curvature tensor.

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SEMESTER-III

Discipline Centric Elective (Any one of the following)								
S. No.	**Course Code**	**Title of the Course**	**Credit**	**Maximum Marks**		**Total**	**Minimum Pass Marks**	
				Theory	**Cont. Evln.**		**Theory**	**Cont. Evln.**
4.	MAT-DCE304	Integral Transforms-I	4	60	40	100	21	14
5.	MAT-DCE305	Differential Geometry of Manifolds-I	4	60	40	100	21	14
6.	MAT-DCE306	General Theory of Relativity and Cosmology –I	4	60	40	100	21	14
Total Discipline Centric Elective Credits			**4**	**60**	**40**	**100**	**-**	**-**
Generic Elective (Any one of the following)								
7.	MAT-GE307	Operations Research-I	4	60	40	100	21	14
8.	MAT-GE308	Advanced Discrete Mathematics-I	4	60	40	100	21	14
9.	MAT-GE309	Bio-Mathematics	4	60	40	100	21	14
Total Generic Elective Credit			**4**	**60**	**40**	**100**	**-**	**-**
10.	MAT-C310	Comprehensive Viva-Voce	4	-	-	100	35	-
	Total (Core+ Discipline Centric Elective+ Generic Elective + Comprehensive Viva)		**12+4+ 4+4= 24**	**300**	**200**	**500 +100 =600**	**-**	**-**

M.Sc. MATHEMATICS (Under CBCS)
SEMESTER-III
Course Code: MAT-DCE304 Integral Transforms-I

Credit: 4	Max. Marks	Min. Pass Marks
Theory	60	21
Cont. Evln.	40	14

Course Objectives: This course is intended to prepare the student with mathematical tools and techniques that are required in advanced courses offered in the applied mathematics and engineering programs. The objective of this course is to enable students to apply transforms for solving one dimensional and two dimensional heat conduction equations.

Note: The question paper will consist of two sections A & B. Section A will consist of short answer type questions each carrying 4 marks and section B of long answer type questions each carrying 8 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Unit 1-

Laplace Transform and its Applications.

Unit 2-

Laplace Equations and related problems.

Unit 3-

Laplace's Wave Equations and related problems.

Unit 4-

One dimensional Heat conduction equations and its Applications.

Unit 5-

Two dimensional Heat Conduction Equations and its Applications.

Recommended Books:

[1] J.K. Goyal and K.P. Gupta, Integral Transforms, Pragati Prakashan.

[2] L. Debnath and D. Batta, Integral Transforms and Their Applications, 2nd ed., Chapman & Hall/CRC, 2007.

Course Learning Outcomes: After studying this course the student will be able to:

CO1: Understand Laplace Transform and its Applications

CO2: Derive Laplace Equations and solve related problems.

CO3: Understand Laplace's Wave Equations and related problems.

CO4: Understand One dimensional Heat conduction equations and its applications.

CO5: Understand Two-dimensional Heat Conduction Equations and its applications.

Credit: 4	Max. Marks	Min. Pass Marks
Theory	60	21
Cont. Evln.	40	14

M.Sc. MATHEMATICS (Under CBCS)
SEMESTER-III
Course Code: MAT-DCE305 Differential Geometry of Manifolds-I

Course Objective: The paper of Differential Geometry of Manifolds is introduced to M.Sc. classes for the study of differentiable manifolds, Tangent spaces, One parameter group of transformations, Lie-derivatives, Immersions and Embeddings, Distributions, Exterior algebra, Exterior derivative, Topological groups, Lie groups and Lie algebras, One parameter subgroup and Exponential maps, General linear groups, Principle fibre bundle, Linear frame bundle.

Note: The question paper will consist of two sections A & B. Section A will consist of short answer type questions each carrying 4 marks and section B of long answer type questions each carrying 8 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Unit 1-

Definition and examples of differentiable manifolds, Tangent spaces, Jacobian map, One parameter group of transformations.

Unit 2-

Lie-derivatives, Immersions and Embeddings, Distributions, Exterior algebra, Exterior derivative.

Unit 3-

Topological groups, Lie groups and Lie algebras, Product of two Lie groups.

Unit 4-

One parameter subgroup and Exponential maps, Examples of Lie groups.

Unit 5-

Homomorphism and Isomorphism, Lie transformation groups, General linear groups, Principle fibre bundle, Linear frame bundle.

Recommended Books:

[1] B.B.Sinha, An Introduction to Modern Differential Geometry, Kalyani Publishers, New Delhi, 1982.

[2] K.Yano and M.Kon, Structures on Manifolds, World Scientific Publishing Co.Pvt.Ltd., 1984.

Reference Books:

[1] R.S.Mishra, A Course in Tensors with Applications to Riemannian Geometry, Pothishala Pvt. Ltd., 1965.

[2] R.S. Mishra, Structures on Differentiable Manifolds and their Applications, Chandrama Prakashan Allahabad, 1984.

Course Learning Outcomes: After studying this course the student will be able to:

CO1: Able to demonstrate an intuitive and computational understanding of differentiable manifolds, Tangent spaces, Jacobian map, One parameter group of transformations.

CO2: Understand Lie-derivatives, Immersions and Embeddings, Distributions.

CO3: Able to Understand and Analyze Topological groups, Lie groups and Lie algebras, One parameter subgroup and Exponential maps.

CO4: Able to illustrate Lie groups, Understand One parameter subgroup and Exponential maps.

CO5: Able to understand and distinguish Principle fibre bundle, Linear frame bundle.

M.Sc. MATHEMATICS (Under CBCS)
SEMESTER-III

Credit: 4	Max. Marks	Min. Pass Marks
Theory	60	21
Cont. Evln.	40	14

Course Code: MAT-DCE306 General Theory of Relativity and Cosmology-I

Course Objectives: The objective of this course is to study Transformation of coordinates, Einstein summation convention and Kroneker delta, Tensors, Algebra of tensors, Contraction of tensors and Quotient law, Riemannian metric, Fundamental tensor, Christoffel symbols, Covariant derivatives, Intrinsic derivatives, Geodesics, Riemann Christoffel curvature tensor and its symmetry properties, Bianchi identities, Ricci tensor, Einstein tensor, General theory of Relativity, Principle of equivalence and general covariance, Newtonian approximation of equation of motion, Search for Einstein's field equations, Its reduction to Poisson's equation, Gravitational field in empty space.

Note: The question paper will consist of two sections A & B. Section A will consist of short answer type questions each carrying 4 marks and section B of long answer type questions each carrying 8 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Unit 1- Transformation of coordinates, Einstein summation convention and Kroneker delta, Tensors, Algebra of tensors, Group properties of transformations, Symmetric and skew symmetric tensors.

Unit 2- Contraction of tensors and Quotient law, Riemannian metric, Fundamental tensor, Angle between two coordinate curves, Conjugate and associated tensors, Levi-Civita tensor.

Unit 3- Christoffel symbols, Transformation law of Christoffel symbols, Covariant derivatives, Intrinsic derivatives, Gradient, Divergent and Curl.

Unit 4- Geodesics, Riemann Christoffel curvature tensor and its symmetry properties, Bianchi identities, Ricci tensor, Einstein tensor.

Unit 5- General theory of Relativity, Principle of equivalence and general covariance, Geodesic principle, Newtonian approximation of equation of motion, Search for Einstein's field equations, Its reduction to Poisson's equation, Gravitational field in empty space.

Recommended Books:

[1] S.R.Roy and Raj Bali: Theory of relativity, Jaipur Publishing House, Jaipur, 1987.
[2] S.K. Shrivastava: General Theory and Cosmology, P.H.I., New Delhi.
[3] J.V.Narlikar: General Relativity and Cosmology, Macmillan Comp. of India Ltd.1978.

References:

[1]C.E.Weatherburn, An Introduction to Riemannian Geometry and the Tensor Calculus, Cambridge University Press, 1950.
[2] H. Stephani,General Relativity: An Introduction to the theory of the gravitational field, Cambridge University Press, 1982.
[3] A.S. Eddington, The Mathematical theory of Relativity, Cambridge University Press, 1965.

Course Learning Outcomes: After studying this course the student will be able to:

CO1: Understand tensors, Algebra of tensors, Symmetric and skew symmetric tensors.

CO2: Able to Contraction of tensors and understand Quotient law, Riemannian metric, Levi-Civita tensor.

CO3: Able to Understand Christoffel symbols, Transformation law of Christoffel symbols, Covariant derivatives, Gradient, Divergent and Curl.

CO4: Understand Geodesics, Riemann Christoffel curvature tensor and its symmetry properties, Ricci tensor, Einstein tensor.

CO5: Understand and work with General theory of Relativity, Principle of equivalence and general covariance, Search for Einstein's field equations, Gravitational field in empty space.

COURSE STRUCTURE

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M.Sc. MATHEMATICS

SEMESTER-III

Generic Elective (Any one of the following)								
S. No.	**Course Code**	**Title of the Course**	**Credit**	**Maximum Marks**		**Total**	**Minimum Pass Marks**	
				Theory	**Cont. Evln.**		**Theory**	**Cont. Evln.**
7.	MAT-GE307	Operations Research-I	4	60	40	100	21	14
8.	MAT-GE308	Advanced Discrete Mathematics-I	4	60	40	100	21	14
9.	MAT-GE309	Bio-Mathematics	4	60	40	100	21	14
Total Generic Elective Credit			**4**	**60**	**40**	**100**	**-**	**-**
10.	MAT-C310	Comprehensive Viva-Voce	4	-	-	100	35	-
	Total (Core+ Discipline Centric Elective+ Generic Elective + Comprehensive Viva)		**12+4+ 4+4= 24**	**300**	**200**	**500 +100 =600**	**-**	**-**

M.Sc. MATHEMATICS (Under CBCS)
SEMESTER-III
Course Code: MAT-GE307 Operations Research-I

Credit: 4	Max. Marks	Min. Pass Marks
Theory	60	21
Cont. Evln.	40	14

Course Objectives: Operations research helps in solving problems in different environments that needs decisions. This module aims to introduce students to use quantitative methods and techniques for effective decisions–making; model formulation and applications that are used in solving business decision problems.

Note: The question paper will consist of two sections A & B. Section A will consist of short answer type questions each carrying 4 marks and section B of long answer type questions each carrying 8 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Unit 1-

Operations Research and its scope, Origin and Development of Operations Research, Characteristics of Operations Research.

Unit 2-

Model in Operations Research, Phase of Operations Research, Use and Limitations of Operations Research, Linear Programming Problems.

Unit 3-

Mathematical Formulation, Graphical Solution Method.

Unit 4-

General Linear Programming Problem: Simplex Method exceptional cases, artificial variable techniques, Big M method, two phase Method and cyclic Problems, Problem of degeneracy.

Unit 5-

Duality, Fundamental properties of duality and theorem of duality.

Recommended Books:

[1] Kanti Swarup, P.K.Gupta and Manmohan, Operations Research, Sultan Chand & Sons, New Delhi.

Reference Books:

[1] S. D. Sharma, Operations Research, Kedar Nath Ram Nath & Co., 1996.
[2] F.S. Hiller and G.J.Lieberman, Industrial Engineering Series,1995.
[3] G. Hadley, Linear Programming, Narosa Publishing House,1995.
[4] G. Hadley, Linear and Dynamic Programming, Addison-Wesley Reading Mass.
[5] H.A. Taha, Operations Research-An Introduction, Macmillan Publishing Co.Inc. New York.
[6] Prem Kumar Gupta and D.S.Hira, Operations Research-An Introduction, S.Chand & Sons Company Ltd.,New Delhi.
[7] N.S.Kambo, Mathematical Programming Technique, Affilated East West Pvt.Ltd.

Course Learning Outcomes: After studying this course the student will be able to:

CO1: Understand scope, origin and development of Operations Research, characteristics of Operations Research.

CO2: Understand Model in Operations Research, Use and limitations of Operations Research, Able to introduce Linear Programming Problems.

CO3: Able to formulate some real-life problems into Linear programming problem.

CO4: Able to apply the simplex method to find an optimal vector for the standard linear programming.

CO5: Able to prove the optimality condition for feasible vectors for Linear programming problem and Dual Linear programming problem.

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SEMESTER-III

Credit: 4	Max. Marks	Min. Pass Marks
Theory	60	21
Cont. Evln.	40	14

Course Code: MAT-GE308 Advanced Discrete Mathematics-I

Course Objectives: The objective of this course is to prepare students to develop mathematical foundations to understand and create mathematical arguments required in learning many mathematics and computer science courses and to motivate students how to solve practical problems using discrete mathematics.

Note: The question paper will consist of two sections A & B. Section A will consist of short answer type questions each carrying 4 marks and section B of long answer type questions each carrying 8 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Unit 1- Subgroups and Monoids-Definitions and examples of Semigroups and Monoids (including those pertaining to concatenation operation). Homomorphism of semigroups and Monoids. Congruence relation and quotient semigroups. Subsemigroup and submonoids. Direct products, Basic homomorphism theorem.

Unit 2- Lattices- Lattices as partially ordered sets, Their properties, Lattices as algebraic systems, Sublattices, Direct products and homomorphisms, Some special lattices e.g. Complete, Complemented and Distributive lattices.

Unit 3- Boolean Algebras- Boolean Algebras as lattices, Various Boolean identities, The switching algebra example, Subalgebras, Direct products and homomorphisms, Join irreducible elements, Atoms and Minterms, Boolean forms and their equivalence, Minterm Boolean forms, Sum of products, canonical forms, Minimization of Boolean functions, Application of Boolean algebra to switching theory (using AND, OR & NOT gates), The Karnaugh map method.

Unit 4- Graph theory- Definition of (undirected) graphs, Paths, Circuits, Cycles and subgraphs, Induced subgraphs, Degree of vertex, Connectivity, Planar graphs and their properties, Trees.

Unit 5- Euler's formula for connected planar graphs, Complete and Complete Bipartite graphs, Kurtowski's theorem (statement only) and its use. Spanning trees, Cut-Sets, Fundamental Cut-Sets and Cycles, Minimal spanning trees and Kruskal's algorithm, Matrix representation of graphs.

Recommended Books :

[1] J.P.Trambly and R. Manohar, Discrete Mathematical Structures with Application to Computer Science, McGraw-Hill book Co., 1997.

[2] N. Deo, Graph Theory with Application to Engineering and Computer Sci., Prentice Hall of India.

Reference Books:

[1] J.L. Gersting, Mathematical Structure for Computer Science (3rd Edition), Computer Science Press, New York.

[2] Seymour Lepschutz, Finite Mathematics (Internat. Edition, 1983), McGraw Hill Co., New York.

[3] S.Wiitala, Discrete Mathematics-A Unified Approach, McGraw Hill Book Co.

[4] J.E. Hopcroft and J.D. Ullman, Introduction to Automata Theory Languages and Computation, Narosa Publishing House.

[5] C.L. Liu, Elements of Discrete Mathematics, McGraw Hill Book Co.

Course Learning Outcomes: After studying this course the student will be able to:

CO1: Able to understand and analyze Subgroups, Semigroups, Monoids, Homomorphism, Congruence relation.

CO2: Able to Understand Lattices, Complete, Complemented and Distributive lattices.

CO3: Understand Boolean Algebras, canonical forms, Application of Boolean algebra to switching theory.

CO4: Understand and distinguish various Graphs, Paths, Circuits, Cycles and subgraphs, Induced subgraphs, Planar graphs, Trees.

CO5: Understand and prove Euler's formula for connected planar graphs, Kurtowski's theorem, Minimal spanning trees and Kruskal's algorithm.

M.Sc. MATHEMATICS (Under CBCS)
SEMESTER-III

Credit: 4	Max. Marks	Min. Pass Marks
Theory	60	21
Cont. Evln.	40	14

Course Code: MAT-GE309 Bio-Mathematics

Course Objectives: The objective of this course is to show how mathematics and computing can be used in an integrated way to analyse biological systems and to introduce students to the application of mathematical modelling in the analysis of biological systems.

Note: The question paper will consist of two sections A & B. Section A will consist of short answer type questions each carrying 4 marks and section B of long answer type questions each carrying 8 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Unit 1-Introduction, Definition and Scope of Bio-Mathematics, Role of Mathematics in BioSciences, Bio-fluid dynamics, Human Cardiovascular System and blood flow, Blood flow through artery with mild stenosis.

Unit 2-Two layered flow in a tube with mild stenosis, Pulsatile flow of blood, Analysis and Applications of arterial flow dynamics, derivation of aortic Diastolic-Systolic pressure waveforms, Moens-Korteweg expression for pulse wave velocity in an inviscid fluid filled elastic cylindrical arterial tube model.

Unit 3-Analysis and applications of left ventricular mechanics, analysis and applications of heart wave vibration, Human respiratory system.

Unit 4-Gas exchange and air flow in human lungs, Consumption and transport of Oxygen, Weibel's model for flows in human lung airways.

Unit 5-Diffusion, Fick's laws of diffusion, diffusion equation and its solutions, Modification of the diffusion equation, Diffusion in artificial kidney, Hemodialyser, Types of Hemodialyser.

Books Recommended:

[1] J.N. Kapur, Mathematical Models in Biology and Medicine, Affiliated East-West Press Pvt. Ltd., New Delhi, 1985.
[2] Y.C. Fung, Bio-Mechanics, Springer-Verlag, New York Inc., 1990.
[3] Stanley E. Charm and George S. Kurland, Blood flow and Microcirculation, John Wiley & Sons, 1974.
[4] S.A. Levin, Frontiers in Mathematical Biology, Springer-Verlag, 1994.
[5] S.K.Pundir & R. Pundir, Biomathematics, Pragati Prakashan, 2010.
[6] J. Mazumdar, An Introduction to Mathematical Physiology and Biology, Cambridge University Press.

Course Learning Outcomes: After studying this course the student will be able to:

CO1: Understand Scope of Bio-Mathematics, Role of Mathematics in Bio-Sciences, Bio-fluid dynamics, Human Cardiovascular System and blood flow.

CO2: Able to understand Pulsatile flow of blood, Analysis and Applications of arterial flow dynamics.

CO3: Able to Analysis and applications of left ventricular mechanics, analysis and applications of heart wave vibration, Human respiratory system.

CO4: Understand Gas exchange and air flow in human lungs, Consumption and transport of Oxygen, Weibel's model for flows in human lung airways.

CO5: Understand Diffusion, Fick's laws of diffusion, diffusion equation and its solutions, Diffusion in artificial kidney.

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Core Courses								
S. No.	Course Code	Title of the Course	Credit	Maximum Marks		Total	Minimum Pass Marks	
				Theory	Cont. Evln.		Theory	Cont. Evln.
1.	MAT-C401	Functional Analysis-II	4	60	40	100	21	14
2.	MAT-C402	Advanced Special Functions-II	4	60	40	100	21	14
3.	MAT-C403	Riemannian Geometry-II	4	60	40	100	21	14
		Total Core Credits	**12**	**180**	**120**	**300**	**-**	**-**
Discipline Centric Elective (Any one of the following)								
4.	MAT-DCE404	Integral Transforms-II	4	60	40	100	21	14
5.	MAT-DCE405	Differential Geometry of Manifolds-II	4	60	40	100	21	14
6.	MAT-DCE406	General Theory of Relativity and Cosmology –II	4	60	40	100	21	14
		Total Discipline Centric Elective Credits	**4**	**60**	**40**	**100**	**-**	**-**
Generic Elective (Any one of the following)								
7.	MAT-GE407	Operations Research-II	4	60	40	100	21	14
8.	MAT-GE408	Advanced Discrete Mathematics-II	4	60	40	100	21	14
9.	MAT-GE409	Cryptography	4	60	40	100	21	14
		Total Generic Elective Credit	**4**	**60**	**40**	**100**	**-**	**-**
10.	MAT-C410	Comprehensive Viva-Voce	4	-	-	100	35	-
		Total (Core+ Discipline Centric Elective+ Generic Elective + Comprehensive Viva)	**12+4+ 4+4= 24**	**300**	**200**	**500 +100 =600**	**-**	**-**
		Total Semester (I+II+III+IV)	**96**	**1200**	**800**	**2400**		

M.Sc. MATHEMATICS (Under CBCS)
SEMESTER-IV
Course Code: MAT-C401 Functional Analysis-II

Credit: 4	Max. Marks	Min. Pass Marks
Theory	60	21
Cont. Evln.	40	14

Course Objectives: The main aim of this course is to provide students basic concepts of functional analysis to facilitate the study of advanced mathematical structures arising in the natural sciences and the engineering sciences and to grasp the newest technical and mathematical literature

Note: The question paper will consist of two sections A & B. Section A will consist of short answer type questions each carrying 4 marks and section B of long answer type questions each carrying 8 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Unit 1-

Uniform boundedness principle and some of its consequences, Open mapping and closed graph theorems.

Unit 2-

Hahn-Banach theorem for real linear spaces, Hahn-Banach theorem for complex linear spaces and normed linear spaces and some of its consequences, Reflexivity of Normed spaces.

Unit 3-

Inner product spaces, Examples and Properties, Convex sets, Riesz lemma on closed convex set, orthogonality of vectors, Projection theorem, Hilbert spaces.

Unit 4-

Orthonormal Sets, Bessel's inequality, Complete orthonormal sets and Parseval's Identity, Riesz representation theorem, Reflexivity of Hilbert spaces.

Unit 5-

Adjoint of an operator on a Hilbert space, Self-adjoint operators, Positive operators, Projection, Normal and Unitary operators.

Recommended Books:

[1] P.K.Jain, O.P. Ahuja and Khalil Ahmad, Functional Analysis, New Age International (P) Limited, 1997.

[2] K.K.Jha, Functional Analysis and its Applications, Students' Friend, 1986.

[3] B.V. Limaye, Functional Analysis, Wiley Eastern Ltd.

[4] G.F.Simmons, Introduction to Topology and Modern Analysis, McGraw Hill, New York.

[5] S.K. Bose, Functional Analysis,

Course Learning Outcomes: Upon completion of this course, the student will be able to:

CO1: Understand uniform boundedness principle and some of its consequences, Open mapping and closed graph theorems.

CO2: Understand Hahn-Banach theorem and some of its consequences, Reflexivity of Normed spaces.

CO3: Understand inner product spaces, orthogonality and Hillbert spaces.

CO4: Able to prove Bessel's inequality and Parseval's Identity, Riesz representation theorem.

CO5: Able to apply linear operators in the formulation of differential and integral equations.

M.Sc. MATHEMATICS (Under CBCS)
SEMESTER-IV
Course Code: MAT-C402 Advanced Special Functions-II

Credit: 4	Max. Marks	Min. Pass Marks
Theory	60	21
Cont. Evln.	40	14

Course Objectives: The objectives of this course is to study generating function for Legendre polynomials, Rodrigues formula, Bateman's generating function, Hermite polynomials, Laguerre Polynomials , Orthogonality, Jacobi Polynomials, Differential Recurrence Relations, Pure Recurrence Relations.

Note: The question paper will consist of two sections A & B. Section A will consist of short answer type questions each carrying 4 marks and section B of long answer type questions each carrying 8 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Unit 1-

Generating function for Legendre polynomials, Rodrigues formula, Bateman's generating function, Additional generating functions, Hypergeometric forms of $P_n(X)$, Special properties of $P_n(X)$, Some more generating functions, Laplace's first integral form, Orthogonality.

Unit 2-

Definition of Hermite polynomials $H_n(X)$, Pure recurrence relations, Differential recurrence relations, Rodrigue's formula, Other generating functions, Orthogonality, Expansion of polynomials, more generating functions.

Unit 3-

The Laguerre Polynomials $L_n(X)$, Generating functions, Pure recurrence relations, Differential recurrence relation, Rodrigue's formula, Orthogonality, Expansion of polynomials, special properties, Other generating functions.

Unit 4-

Jacobi Polynomials, Bateman's Generating Functions, Rodrigues Formula, Orthogonality.

Unit 5-

Differential Recurrence Relations, Pure Recurrence Relations, Mixed Relations, Appell's functions of two variables, An elementary generating function.

Recommended Books:

[1] E.D. Rainville, Special Functions, The Macmillan Co., New York, 1971.

[2] H.M.Srivastava, K.C.Gupta and S.P.Goyal, The H-function of One and Two variables with applications, South Asian Publication, New Delhi.

[3] N. Saran, S.D.Sharma and T.N. Trivedi, Special Functions with applications, Pragati Prakashan, 1986.

[4] N.N.Lebdev, Special functions and their applications, Prentice Hall, Englewood Cliffs, New Jersey, USA, 1965.

Course Learning Outcomes: After studying this course the student will be able to:

CO1: Able to work with Generating function for Legendre polynomials, Understand Rodrigues formula, Bateman's generating function, Hypergeometric forms of $P_n(X)$, Orthogonality.

CO2: Understand Hermite polynomials, Pure recurrence relations, Differential recurrence relations.

CO3: Able to illustrate the Laguerre Polynomials $L_n(X)$, Jacobi Polynomials.

CO4: Understand Jacobi Polynomials, Bateman's Generating Functions.

CO5: Understand and distinguish Differential Recurrence Relations, Pure Recurrence Relations, Mixed Relations.

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SEMESTER-IV

Credit: 4	Max. Marks	Min. Pass Marks
Theory	60	21
Cont. Evln.	40	14

Course Code: MAT-C403 Riemannian Geometry-II

Course Objectives: The main objectives of this course is to study Ricci's Coefficient of Rotation, Congruence, Gaussian and Riccian curvature, Submanifolds and hypersurfaces of a Riemannian manifold, Gauss Formulae, Weingarten formulae, Totally geodesic subspaces, Asymptotic direction, Meunier's theorem, Principal curvatures and Principal directions, Lines of curvature, Mainardi-Codazzi equations, Gauss Characteristic equation, Hyperplanes, Hyperspheres, Hyperquadratics, Joachimsthal's theorem, Lie-derivative of scalars, vectors and tensors, Killing equation, Lie derivative of Christoffel symbols.

Note: The question paper will consist of two sections A & B. Section A will consist of short answer type questions each carrying 4 marks and section B of long answer type questions each carrying 8 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Unit 1- Orthonormal Basis, Ricci's Coefficient of Rotation and the reason for their name, Congruence: geodesic, normal, irrotational and canonical, Gaussian and Riccian curvature.

Unit 2- Sub-manifolds and hypersurfaces of a Riemannian manifold, Tangent space, Tensor differentiation, Gauss Formulae, Normal curvatures and torsion, Weingarten formulae.

Unit 3- Totally geodesic subspaces, Asymptotic direction, Meunier's theorem, Principal curvatures and Principal directions, Lines of curvature, Mainardi-Codazzi equations, Gauss Characteristic equation.

Unit 4- Hyperplanes, Hyperspheres, Hyperquadratics, Sub-spaces and hypersurfaces, Joachimsthal's theorem.

Unit 5- Infinitesimal point transformation, Lie-derivative of scalars, vectors and tensors, Killing equation, Lie derivative of Christoffel symbols, Motion, Translation, Affine Motion and Conformal motion.

Recommended Books:

[1] R.S. Mishra, A course in Tensors with Applications to Riemannian Geometry, Pothishala Pvt. Ltd., Allahabad,1965.

[2] B.B.Sinha, Differential Geometry-An Introduction, Shyam Prakashan Mandir, Allahabad, 1978.

Reference Books:

[1] C.E.Weatherburn, An Introduction to Tensor Calculus and Riemannian Geometry, Cambridge University Press, London, 1942 and Radha Publishing House Calcutta, Indian Edition, 1995.

[2] K.Yano, The Theory of Lie Derivatives and its Applications, North Holland Publishing Co. Amsterdam, 1957.

Course Learning Outcomes: After studying this course the student will be able to:

CO1: Understand Orthonormal Basis, Ricci's Coefficient of Rotation, Congruences.

CO2: Understand Submanifolds and hypersurfaces of a Riemannian manifold, Tangent space, Tensor differentiation.

CO3: Abletoprove Gauss Formulae, Weingarten formulae, Meunier's theorem, Mainardi-Codazzi equations, Gauss Characteristic equation, Joachimsthal's theorem, Killing equation.

CO4: Understand Hyperplanes, Hyperspheres, Hyperquadratics, Sub-spaces and hypersurfaces.

CO5: Understand Infinitesimal point transformation, Lie-derivative, Killing equation, Motion, Affine Motion and Conformal motion.

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SEMESTER-IV

Discipline Centric Elective (Any one of the following)								
S. No.	**Course Code**	**Title of the Course**	**Credit**	**Maximum Marks**		**Total**	**Minimum Pass Marks**	
				Theory	**Cont. Evln.**		**Theory**	**Cont. Evln.**
4.	MAT-DCE404	Integral Transforms-II	4	60	40	100	21	14
5.	MAT-DCE405	Differential Geometry of Manifolds-II	4	60	40	100	21	14
6.	MAT-DCE406	General Theory of Relativity and Cosmology –II	4	60	40	100	21	14
Total Discipline Centric Elective Credits			**4**	**60**	**40**	**100**	**-**	**-**
Generic Elective (Any one of the following)								
7.	MAT-GE407	Operations Research-II	4	60	40	100	21	14
8.	MAT-GE408	Advanced Discrete Mathematics-II	4	60	40	100	21	14
9.	MAT-GE409	Cryptography	4	60	40	100	21	14
Total Generic Elective Credit			**4**	**60**	**40**	**100**	**-**	**-**
10.	MAT-C410	Comprehensive Viva-Voce	4	-	-	100	35	-
	Total (Core+ Discipline Centric Elective+ Generic Elective + Comprehensive Viva)		**12+4+4+4 = 24**	**300**	**200**	**500+100 =600**	**-**	**-**
	Total Semester (I+II+III+IV)		**96**	**1200**	**800**	**2400**		

M.Sc. MATHEMATICS (Under CBCS)

Credit: 4	Max. Marks	Min. Pass Marks
Theory	60	21
Cont. Evln.	40	14

SEMESTER-IV

Course Code: MAT-C404 Integral Transforms-II

Course Objectives: The objective of this course is to enable students to apply Laplace transform to boundary value problems, electric circuits and to beams. It is also intended to study the complex Fourier transform, Fourier cosine and sine transform, properties of Fourier transforms, convolution and Parseval's identity, Fourier transform of the derivatives.

Note: The question paper will consist of two sections A & B. Section A will consist of short answer type questions each carrying 4 marks and section B of long answer type questions each carrying 8 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Unit 1-

Application of Laplace Transform to Boundary Value Problems.

Unit 2-

Electric Circuits, Application to Beams.

Unit 3-

The Complex Fourier Transform, Inversion formula, Fourier cosine and sine transform.

Unit 4-

Properties of Fourier transforms, Convolution and Parseval's identity.

Unit 5-

Fourier transform of the derivatives, Finite Fourier sine and cosine transform, Inversion, Operational and combined properties Fourier transform.

Recommended Books:

[1] J.K. Goyal and K.P. Gupta, Integral Transforms, Pragati Prakashan.

[2] L. Debnath and D. Batta, Integral Transforms and Their Applications, 2nd ed., Chapman & Hall/CRC, 2007

Course Learning Outcomes: After studying this course the student will be able to:

CO1: Understand application of Laplace transform to boundary value problems.

CO2: Understand Electric Circuits and their application to Beams.

CO3: Able to define the Complex Fourier Transform, Inversion formula, Fourier cosine and sine transform.

CO4: Understand Properties of Fourier transforms, Convolution and Parseval's identity.

CO5: Able to handle inversion, operational and combined properties of Fourier transform.

M.Sc. MATHEMATICS
SEMESTER-IV
Paper Code: MAT-DCE405 Differential Geometry of Manifolds-II

Credit: 4	Max. Marks	Min. Pass Marks
Theory	60	21
Cont. Evln.	40	14

Course Objectives: The objective of this paper is to study Associated fibre bundle, Vector bundle, Induced bundle, Bundle homomorphisms, Riemannian manifolds, Riemannian connection, Curvature tensors, Geodesics in a Riemannian manifold, Submanifolds and Hypersurfaces, Almost complex manifolds, Contravariant and covariant almost analytic vector fields, F-connection.

Note: The question paper will consist of two sections A & B. Section A will consist of short answer type questions each carrying 6 marks and section B of long answer type questions each carrying 10 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Unit 1-

Associated fibre bundle, Vector bundle, Induced bundle, Bundle homomorphisms.

Unit 2-

Riemannian manifolds, Riemannian connection, Curvature tensors, Sectional curvature, Schur's theorem.

Unit 3-

Geodesics in a Riemannian manifold, Projective curvature tensor, Conformal curvature tensor.

Unit 4-

Submanifolds and Hypersurfaces, Normals, Gauss' formulae, Weingarten equations, Lines of curvature, Generalized Gauss and Mainardi-Codazzi equations.

Unit 5-

Almost complex manifolds, Nijenhuis tensor, Contravariant and covariant almost analytic vector fields, F-connection.

Recommended Books:

[1] B.B.Sinha, An Introduction to Modern Differential Geometry, Kalyani Pub., New Delhi, 1982.
[2] K.Yano and M.Kon, Structures on Manifolds, World Scientific Publishing Co.Pvt.Ltd., 1984.

Reference Books:

[1] R.S.Mishra, A Course in Tensors with Applications to Riemannian Geometry, Pothishala Pvt. Ltd., 1965.
[2] R.S. Mishra, Structures on Differentiable Manifolds and their Applications, Chandrama Prakashan Allahabad, 1984.

Course Learning Outcomes: After studying this course the student will be able to:

CO1: Understand demonstrate Associated fibre bundle, Vector bundle, Induced bundle, Bundle homomorphisms.

CO2: Understand Riemannian manifolds, Riemannian connection, Curvature tensors, Sectional curvature and to prove Schur's theorem.

CO3: Understand Geodesics in a Riemannian manifold, Projective curvature tensor, Conformal curvature tensor.

CO4: Understand Submanifolds and Hypersurfaces, Gauss' formulae, Weingarten equations, Generalized Gauss and Mainardi-Codazzi equations.

CO5: Understand Almost complex manifolds, Nijenhuis tensor, Contravariant and covariant almost analytic vector fields, F-connection.

Credit: 4	Max. Marks	Min. Pass Marks
Theory	60	21
Cont. Evln.	40	14

M.Sc. MATHEMATICS
SEMESTER-IV
Paper Code: MAT-DCE406 General Theory of Relativity and Cosmology-II

Course Objectives: The objective of this course is to study Schwarzschild exterior solution and its isotropic form, Singularities in Schwarzschild line element, Advance of perihelion of a planet, Bending of light rays in a gravitational field, Radar echo delay, Energy-momentum tensor of a perfect fluid, Schwarzschild internal solution, Derivation of Einstein-field equation from variational principle, Static cosmological models, Einstein universe, de-Sitter universe, Difference between Einstein and de-Sitter universe, Non-static cosmological models, Derivation of Robertson-Walker metric.

Note: The question paper will consist of two sections A & B. Section A will consist of short answer type questions each carrying 6 marks and section B of long answer type questions each carrying 10 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Unit 1-Schwarzschild exterior solution and its isotropic form, Singularities in Schwarzschild line element, Canonical form of metric, Planetary orbits and analogues of Kepler's law in general relativity.

Unit 2- Advance of perihelion of a planet, Bending of light rays in a gravitational field, The gravitational red shift of spectral lines, Radar echo delay.

Unit 3- Energy-momentum tensor of a perfect fluid, Schwarzschild internal solution, Boundary conditions, Action Principle, Derivation of Einstein field equations from variational principle.

Unit 4- Cosmology: Static cosmological models, Einstein universe, Geometrical and Physical properties of Einstein universe.

Unit 5- de-Sitter universe, their derivation, Geometrical and Physical properties of de-Sitter universe, Difference between Einstein and de-Sitter universe. Non-static cosmological models, Derivation of Robertson-Walker metric.

Recommended Books:

[1] S.R.Roy and Raj Bali: Theory of relativity, Jaipur Publishing House, Jaipur, 1987.
[2] S.K. Shrivastava: General Theory and Cosmology, P.H.I., New Delhi.
[3] J.V.Narlikar: General Relativity and Cosmology, Macmillan Comp. of India Ltd.1978.

References:

[1]C.E.Weatherburn, An Introduction to Riemannian Geometry and the Tensor Calculus, Cambridge University Press, 1950.
[2] H. Stephani,General Relativity: An Introduction to the theory of the gravitational field, Cambridge University Press, 1982.
[3] A.S. Eddington, The Mathematical theory of Relativity, Cambridge University Press, 1965.

Course Learning Outcomes: After studying this course the student will be able to:

CO1: Able to derive Schwarzschild exterior solution and its isotropic form, Singularities in Schwarzschild line element.

CO2: Understand Bending of light rays in a gravitational field, Radar echo delay.

CO3: Illustrate Energy-momentum tensor of a perfect fluid, Schwarzschild internal solution, Boundary conditions.

CO4: Understand and work on Static cosmological models, Einstein universe.

CO5: Understand de-Sitter universe, Difference between Einstein and de-Sitter universe, Derivation of Robertson-Walker metric.

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SEMESTER-IV

Generic Elective (Any one of the following)								
S. No.	**Course Code**	**Title of the Course**	**Credit**	**Maximum Marks**		**Total**	**Minimum Pass Marks**	
				Theory	**Cont. Evln.**		**Theory**	**Cont. Evln.**
7.	MAT-GE407	Operations Research-II	4	60	40	100	21	14
8.	MAT-GE408	Advanced Discrete Mathematics-II	4	60	40	100	21	14
9.	MAT-GE409	Cryptography	4	60	40	100	21	14
Total Generic Elective Credit			**4**	**60**	**40**	**100**	**-**	**-**
10.	MAT-C410	Comprehensive Viva-Voce	4	-	-	100	35	-
	Total (Core+ Discipline Centric Elective+ Generic Elective + Comprehensive Viva)		**12+4+4+4 = 24**	**300**	**200**	**500+100 =600**	**-**	**-**
	Total Semester (I+II+III+IV)		**96**	**1200**	**800**	**2400**		

M.Sc. MATHEMATICS (Under CBCS)
SEMESTER-IV
Course Code: MAT-GE407 Operations Research-II

Credit: 4	Max. Marks	Min. Pass Marks
Theory	60	21
Cont. Evln.	40	14

Course Objectives: The objective of this course is to introduce concepts of transportation and assignment problems and their solutions by various techniques, Network analysis, inventory theory and game theory.

Note: The question paper will consist of two sections A & B. Section A will consist of short answer type questions each carrying 4 marks and section B of long answer type questions each carrying 8 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Unit 1-Transportation problems: North-West Corner Method, Least-Cost Method, Vogel's Approximation method, MODI method.

Unit 2- Exceptional case and problem of degeneracy, Assignment problems.

Unit 3- Network Analysis, Constraints in Network, Construction of network, Critical Path Method (CPM) PERT, PERT Calculation, Resource Leveling by Network Techniques and advances of network (PERT/CPM). Simulation: Monte-Carlo Simulation.

Unit 4- Inventory theory: Inventory models on economic lot size system with uniform and non-uniform demand, Economic lot size with finite rate of replacement, A simple order level system with constant rate of demand with shortage, Generalized economic lot size model, Multi items deterministic models, Probabilistic model, Instantaneous demand, No setup cost model.

Unit 5- Game Theory- Two persons, Zero-sum games, Maximax-Minimax principle, Games without saddle points, Mixed Strategies, Graphical solution of 2 x m and m x 2 games, Solution by Linear programming, Non-linear programming techniques, Kuhn-Tucker Conditions, Non-negative constraints.

Recommended Books:

[1] Kanti Swarup, P.K.Gupta and Manmohan, Operations Research, Sultan Chand & Sons, New Delhi.

Reference Books:

[1] S. D. Sharma, Operations Research, Kedar Nath Ram Nath & Co., 1996.
[2] F.S. Hiller and G.J.Lieberman, Industrial Engineering Series,1995.
[3] G. Hadley, Linear Programming, Narosa Publishing House,1995.
[4] G. Hadley, Linear and Dynamic Programming, Addison-Wesley Reading Mass.
[5] H.A. Taha, Operations Research-An Introduction, Macmillan Publishing Co.Inc. New York.
[6] Prem Kumar Gupta and D.S.Hira, Operations Research-An Introduction, S.Chand & Sons Company Ltd.,New Delhi.
[7] N.S.Kambo, Mathematical Programming Technique, Affilated East West Pvt.Ltd.

Course Learning Outcomes: After studying this course the student will be able to:

CO1: Able to find optimal solution of transportation problem and assignment problem.

CO2: Able to distinguish transportation problem and assignment problem.

CO3: Understand the constructions of networks of a project and optimal scheduling using CPM and PERT.

CO4: Understand Inventory models on economic lot size system with uniform and non-uniform demand.

CO5: Able to formulate and solve linear programming model of two-person zero sum games.

M.Sc. MATHEMATICS
SEMESTER-IV
Paper Code: MAT-GE408 Advanced Discrete Mathematics– II

Credit: 4	Max. Marks	Min. Pass Marks
Theory	60	21
Cont. Evln.	40	14

Course Objectives: The objective of this course is to study directed graphs, Dijkstra's algorithm, Warshall's algorithm, Directed trees, Finite State Machines and their transition table diagrams, Finite Automata, Non-deterministic fine automata, Turing Machine and Partial recursive functions, Language generated by a grammar, Kleenes theorem, Polish Notations.

Note: The question paper will consist of two sections A & B. Section A will consist of short answer type questions each carrying 6 marks and section B of long answer type questions each carrying 10 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Unit 1- Directed graphs, Indegree and outdegree of a vertex, Weighted undirected graphs, Dijkstra's algorithm, Strong connectivity, Warshall's algorithm, Directed trees, Search trees, Tree Traversals.

Unit 2- Introductory computability theorem-Finite State Machines and their transition table diagrams, Equivalence of finite State Machines, Reduced machines, homomorphism, Finite Automata, Acceptors.

Unit 3- Non-deterministic fine automata and equivalence of its power to that of deterministics, Finite automata, Moore and Mealy Machines.

Unit 4- Turing Machine and Partial recursive functions. Grammars and Languages- Phrase-structure grammars, Rewriting rules, Derivations.

Unit 5- Sentential forms, Language generated by a grammar, Regular, Context-free and Context sensitive grammars and Languages, regular sets, Regular expression and the Pumping lemma, Kleenes theorem. Notions of syntax analysis, Polish Notations, Conversion of infix expressions to Polish notation, The reverse Polish notation.

Recommended Books:

[1] J.P.Trambly and R. Manohar, Discrete Mathematical Structures with Application to Computer Science, McGraw-Hill book Co., 1997.

[2] N. Deo, Graph Theory with Application to Engineering and Computer Sci., Prentice Hall of India.

Reference Books:

[1] J.L. Gersting, Mathematical Structure for Computer Science (3rd Edition), Computer Science Press, New York.

[2] Seymour Lepschutz, Finite Mathematics (International Edition, 1983), McGraw Hill Co., New York.

[3] S.Wiitala, Discrete Mathematics-A Unified Approach, McGraw Hill Book Co.

[4] J.E. Hopcroft and J.D. Ullman, Introduction to Automata Theory Languages and Compulation, Narosa Publishing House.

[5] C.L. Liu, Elements of Discrete Mathematics, McGraw Hill Book Co.

Course Learning Outcomes: After studying this course the student will be able to:

CO1: Understand Directed graphs, weighted undirected graphs, Dijkstra's algorithm, Warshall's algorithm.

CO2: Able to work on Finite State Machines and their transition table diagrams.

CO3: Understand Non-deterministic fine automata, Finite automata, Moore and Mealy Machines.

CO4: Understand Turing Machine and Partial recursive functions, Grammars and Languages.

CO5: Understand Polish Notations, The reverse Polish notation.

Credit: 4	Max. Marks	Min. Pass Marks
Theory	60	21
Cont. Evln.	40	14

M.Sc. MATHEMATICS
SEMESTER-IV
Paper Code: MAT-GE409
Cryptography

Course Objectives: This course will provide students with a theoretical knowledge of cryptography and network security. By the end of the course, students should be able to:

- Understand the fundamental principles of access control models and techniques, authentication and secure system design.
- Have a strong understanding of different cryptographic protocols and techniques and be able to use them.
- Apply methods for authentication, access control, intrusion detection and prevention.
- Indentify and mitigate software security vulnerabilities in existing systems.

Note: The question paper will consist of two sections A & B. Section A will consist of short answer type questions each carrying 6 marks and section B of long answer type questions each carrying 10 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Unit 1-

Introduction to Cryptography, Security Threats, Vulnerability, Active and Passive attacks, Security services and mechanism, Conventional Encryption Model, CIA model.

Unit 2-

Modular Arithmetic, Euclidean and Extended Euclidean algorithm, Prime numbers, Fermat and Euler's Theorem.

Unit 3-

Classical Cryptography : Dimensions of Cryptography, Classical Cryptographic Techniques, Block Ciphers (DES, AES) : Feistal Cipher Structure, Simplifies DES, DES, Double and Triple DES, Block Cipher design Principles, AES, Modes of Operations.

Unit 4-

Public-Key Cryptography : Principles of Public-Key Cryptography, RSA Algorithm, Key Management, Diffie-Hellman Key Exchange, Elgamal Algorithm, Elliptic Curve Cryptography.

Unit 5-

Security in Networks : Threats in networks, Network Security Controls – Architecture, Encryption, Content Integrity, Strong Authentication, Access Controls, Wireless Security, Honeypots, Traffic flow security, Firewalls – Design and Types of Firewalls, Personal Firewalls, IDS, Email Security – PGP, S/MIME.

Recommended Books:

[1] William Stallings, Cryptography And Network Security Principles And Practice Fourth Edition , Pearson Education.
[2] Wenbo Mao, Modern Cryptography: Theory and Practice, Prentice Hall PTR.
[3] William Stallings, Network Security Essentials: Applications and Standards, Prentice Hall.
[4] Douglas R. Stinson, Cryptography: Theory and Practice, CRC press.

Course Learning Outcome: At the end of the course the students will be able to do:

CO1: Understand cryptography and network security concepts and application.

CO2: Apply security principles to system design.

CO3: Identify and investigate network security threat.

CO4: Analyze and design network security protocols.

CO5: Conduct research in network security.

AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

Ph. D. COURSE WORK STRUCTURE

Mathematics

2018-19

AWADHESH PRATAP SINGH UNIVERSITY, REWA

STRUCTURE OF SYLLABUS FOR Ph.D. COURSE WORK (MATHEMATICS) 2018-19 ONWARDS
(AS PER ORDINANCE NO. 11 DOCTOR OF PHILOSOPHY)

Paper Code	Name of Theory Papers	Credits	Maximum Marks (Theory+ Internal Assessment)	Minimum Passing Marks
Ph.D. 101	RESEARCH METHODOLOGY	4	100 (80+20)	55
Ph.D. 102	REVIEW OF PUBLISHED RESEARCH IN THE RELEVANT FIELD	3	100	55
Ph.D. 103	COMPUTER APPLICATIONS	3	100 (80+20)	55
Ph.D. 104	SPECIALIZATION SUBJECTS (ANY ONE OF THE FOLLOWING): MP 104 (I) : RIEMANNIAN GEOMETRY AND COSMOLOGY MP 104 (II): GENERATING FUNCTIONS	3	100 (80+20)	55
Ph.D. 105	COMPREHENSIVE VIVA-VOCE	3	100	55
	TOTAL CREDITS	**16**		

Ph.D. MATHEMATICS

Ph. D. 101 : RESEARCH METHODOLOGY

Time: 03 Hours **Theory Paper : Max. Marks-80**

Internal Assessment : Max. Marks-20

Minimum Pass Marks-55

The paper setter is required to set in all **Eight questions**, out of which only **four** questions are to be attempted by the students. All questions will be of equal marks. Two questions are to be set from each unit. The students are required to attempt at least one question from each unit.

Unit-I: Introduction to research methodology: Meaning, Objectives and Types of research, Motivation in research, Research approaches, Research methods verses methodology, Significance of research, Criteria of good research, Research design.

Unit-II: Tensors and their transformation laws. Symmetric and skew-symmetric tensors. Contraction, Metric tensor. Definition and examples of differentiable manifolds. Vector fields, Lie bracket, Connections, Covariant derivative, Curvature tensor, Bianchi's identities.

Unit-III: Definition and examples of fixed point and common fixed point, Contraction mapping, Contractive mapping, Non-Expansive mapping, Lipschitz mapping, Relation between these mappings and continuous mapping, Banach contraction principle and its generalizations, Fixed point theorem of Brouwer and Schaunder, Fixed point theorem for multi-functions.

Unit-IV: Hypergeometric Function: Function F(a, b; c; z), Evaluation of F(a, b; c; 1), Contigous function relations, Elementary Series Manipulations, Generalized hypergeometric functions, Definition and elementary properties of the H-function of one and two variables.

Text Books:

1. C.R. Kothari, Research Methodology, New Age International publishers (2004).
2. Catherine Dawson, Practice Research Methods, UBS Publishers Distributors, New Delhi (2002).
3. Ranjit Kumar, Research Methodology – A step by step Guide for Beginners (2nd Ed.), Singapore Pearson Education (2005).
4. B.B.Sinha, An Introduction to Differential Geometry, Kalyani Publishers, New Delhi, 1982.
5. R.S. Mishra, A Course in Tensors with Applications to Riemannian Geometry, Pothishala Pvt. Ltd., Allahabad India, 1985.
6. U.C. De and A.A.Shaikh, Differential Geometry of Manifolds, Narosa Publishing House Pvt. Ltd., 2007.
7. E.D.Rainville, Special Functions, Chelsea Publ. Co., Bronx, New York (1971).
8. H.M.Shrivastava, K.C.Gupta and S.P.Goyal, The H-function of One and Two Variables with Applications, South Asian Publishers, New Delhi.
9. Sankatha Singh, Bruce Watson and Pramila Shrivastava, Fixed point theory and best approximation, The KKM-Map Principle, Kluwer Academic Publishers, Londan.

Ph.D. MATHEMATICS

Ph.D. 103 : COMPUTER APPLICATIONS

Time: 03 Hours **Theory Paper : Max. Marks-80**
Internal Assessment : Max. Marks-20
Minimum Pass Marks-55

The paper setter is required to set in all **Eight questions**, out of which only **four** questions are to be attempted by the students. All questions will be of equal marks. Two questions are to be set from each unit. The students are required to attempt at least one question from each unit.

Unit-I: Typesetting Mathematical Text with LATEX: Sample Document, Type style, Environments, Lists, Centering, Tables, Verbatim, Vertical and Horizontal Spacing, Equation Environments, Fonts, Hats and Underlining, Braces, Arrays and Matrices, Customized Commands, Theorem–like Environments, Math Styles.

Unit-II: Document classes and the overall structure, Titles for Documents, Sectioning Commands, Packages, Inputting Files, Inputting Pictures, Making a Bibliography, Making an Index, Slides.

Unit-III: MATLAB: Basics of MATLAB, MATLAB Window, Input-Output, File types, Working with arrays of numbers, Creating and Printing Simple Plots, Creating, Saving and Executing a Script file, Creating and Executing a function file, Matrices and Vectors: Input, Indexing, Matrix manipulation, Creating Vectors, Matrix and Array operations, Saving and Loading Data, Plotting Simple Graphs.

Unit- IV: Introduction to Internet- Internet evaluation and concept, Internet vs Intranet, Internet service provider (ISP) and its functions, Connectivity- Dialup, Leased line, VSAT, URLs, Portals, Internet Services, Applications. Email- Basics of sending and receiving, Internet chatting- Voice chat, Text chat, World Wide Web (www)- Web browsers and its functions, Searching the web, HTTP, URLs, Web services, Web Protocols, Network layers and TCP/IP protocols. Advantages and disadvantages of Internet and world wide web.

Text Books:

1. David F. Griffiths, Desmond J. Higham, Learning LATEX. Society for Industrial and Applied Mathematics, Philadelphia (1997).
2. Laslie Lamtort, LATEX, Addison Wesley publication company (1994).
3. Amos Gilat, MATLAB-An Introduction with Applications, John Wiley & Sons, Inc. 2010.
4. Rudra Pratap, Getting Started with MATLAB, Oxford University Press, 2002.
5. V.K.Jain, Internet and Web Page Designing, B.P.B. Publications.

Ph.D. MATHEMATICS

Ph. D. 104 (I) : RIEMANNIAN GEOMETRY AND COSMOLOGY

Time: 03 Hours **Theory Paper : Max. Marks-80**
Internal Assessment : Max. Marks-20
Minimum Pass Marks-55

The paper setter is required to set in all **Eight questions**, out of which only **four** questions are to be attempted by the students. All questions will be of equal marks. Two questions are to be set from each unit. The students are required to attempt at least one question from each unit.

Unit-I Lie Derivative in Riemannian Space: Motion, Killing Vector Field, Properties of Killing Vector Field, Lie Derivative of Christoffel Symbols, Affine Motion, Lie Derivative of Scalar, Covariant Vector and Contravariant Vector, Commutation Formula, Conformal Motion, Collineation, Conformal Collineation.

Unit-II Almost complex manifolds, Nijenhuis tensor, Contravariant and covariant almost analytic vectors, Almost Hermite manifold, Almost analytic vector fields, Curvature tensor, Kahler manifolds, Holomorphic sectional curvature.

Unit-III Principle of equivalence and Principle of general covariance, Energy-momentum tensor, Energy-momentum tensor for perfect fluid, Newtonian approximation of equations motion, Derivation of Einstein's field equations, Poisson equation as approximation of field equations.

Unit-IV Static cosmological models, Einstein Universe, deSetter universe, Their physical and geometrical properties.

Books Recommended:

[1] B.B.Sinha, An Introduction to Differential Geometry, Kalyani Publishers, New Delhi, 1982.

[2] R.S. Mishra, A Course in Tensors with Applications to Riemannian Geometry, Pothishala Pvt. Ltd., Allahabad India, 1985.

[3] U.C. De and A.A.Shaikh, Differential Geometry of Manifolds, Narosa Publishing House Pvt. Ltd., 2007.

[4] S.R. Roy and Raj Bali, Theory of Relativity, Jaipurindia Publishing House.

[5] J.V. Narlikar, Lectures on General Relativity and Cosmology, Mac Millan Co.India.

Ph.D. MATHEMATICS

Ph. D. 104 (II): GENERATING FUNCTIONS

Time: 03 Hours **Theory Paper : Max. Marks-80**
Internal Assessment : Max. Marks-20
Minimum Pass Marks-55

The paper setter is required to set in all **Eight questions**, out of which only **four** questions are to be attempted by the students. All questions will be of equal marks. Two questions are to be set from each unit. The students are required to attempt at least one question from each unit.

UNIT-I

Series Rearrangement Technique:

Some useful Lemmas, Description of the series rearrangement technique, Applications to Jacobi Polynomials (Linear Generating Functions, Extended linear generating functions).

UNIT-II

Decomposition Technique:

Bilinear Generating functions, Trilinear Generating functions, Bilateral Generating functions, Generating functions for Gegenbauer (or Ultraspherical) polynomials, Generating functions for Jacobi Polynomials, Generating functions for Laguerre Polynomials.

UNIT-III

Operational Techniques:

Preliminaries on the Laplace and Inverse Laplace Transforms, Linear, Bilinear and Bilateral Generating functions, Use of Differential operators.

UNIT-IV

Fractional Derivative Technique:

Brief Historical Survey, Application to Hypergeometric functions, Linear Generating functions, Bilinear Generating Functions.

Book Recommended:

1. **A Treatise on Generating Functions**, H. M. Srivastava and H. L. Manocha, Ellis Horwood Ltd. Publishers, 1984.

BACHELOR OF ARTS (B.A.)PHILOSOPHY

PROGRAMME STRUCTURE
(As per NEP 2020 & CBCS Ordinance 14 A)

1st Year

SEMESTER – I					
Course Code & Name	**Course Type**	**Theory Paper**	**Internal Assessment**	**Maximum Marks**	**Credthis**
101 Indian Philosophy-I	Major Core	60	40	100	6
102 Ancient Indian History, Culture and Archaeology	Minor Core	60	40	100	6
103 Philosophy of Shri Ramcharitamanas*	GE	60	40	100	4
104 Hindi Bhasha	AE (FC)	60	40	100	4
SEMESTER TOTAL				**400**	**20**
CUMULATIVE TOTAL				**400**	**20**

SEMESTER – II					
Course Code & Name	**Course Type**	**Theory Paper**	**Internal Assessment**	**Maximum Marks**	**Credthis**
201 Indian Philosophy-II	Major Core	60	40	100	6
202 Indian Culture	Minor Core	60	40	100	6
203Philosophy of Gita*	GE	60	40	100	4
204Environmental Studies	AE (FC)	60	40	100	4
SEMESTER TOTAL				**400**	**20**
CUMULATIVE TOTAL				**800**	**40**

GE: Generic Elective **AE: Ability Enhancement** **FC: Foundation Course**

*Students may choose this course as a **Generic Elective** or may choose a Generic Elective Course offered in other UTD's at the same level or may choose a Course offered by MOOC's through SWAYAM.

The student will be awarded Certificate in Philosophy on successful completion of first year.

Credit Distribution as per the Ordinance 14 A

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		Main Faculty (as per prerequisite)			Any Faculty	Skill Enhancement Course (SEC)	Ability Enhancement Course (AEC)	Field Projects/ internship/ apprenticeship /community engagement & service	Credthis	Qualification Title (Credthis Requirements)
		Subject I		Subject II	Subject III					
Level	Sem	Major		Minor	Generic Elective Course	Vocational Course		#Inter/Intra Faculty		
		Core	DSE							
Level 5	1	6		6	4	-	4	-	6+6+4+4 =20	(40) Undergraduate Certificate in Main Faculty
	2	6		6	4	-	4	-	6+6+4+4 =20	
Level 6	3	6		6	4	4	-	-	6+6+4+4 =20	(80) Undergraduate Diploma in Main Faculty
	4	6		6	4	4	-	-	6+6+4+4 =20	
Level 7	5	6	4	-	-	4	-	6	6+4+4+6 =20	(120) Bachelor Degree in Main Faculty
	6	6	4+4	-	-	-	-	6	6+4+4+6 =20	
Level 8	7	6	4	4 Research Methodology	-	-	-	6	4+4+4+6 =20	(160) Bachelor Degree (Honours/Research) in Main Faculty
	8	6	-	4	-	-	-	10	6+4+10 = 20	
Total		48	16	32	16	12	8	28	160 Credthis	

DEPARTMENT OF PHILOSOPHY

PROGRAMME OUTCOMES B.A. PHILOSOPHY

PO #	PROGRAMME OUTCOMES
PO 1	**Critical Thinking**: Take informed actions after identifying the assumptions that frame our thinking and actions, check out the degree to which these assumptions are accurate and valid, and look at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.
PO 2	**Effective Communication**: Speak, read, write and listen clearly in person and through electronic media in English, Hindi and in other regional language, and make meaning of the world by connecting people, ideas, books, media and technology and also speak and write effectively in the discourse of the discipline.
PO 3	**Social Interaction:** Understanding the relationships between theories, observations, and conclusions. Elicit views of others, mediate disagreements and help Reach conclusions in group settings.
PO 4	**Effective Citizenship**: Synthesize natural science and social science aspects of Philosophy. Demonstrate empathetic social concern and equity-centered national development
PO 5	**Ethics**: Understand the ethical practice of scientific inquiry. recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.
PO 6	**Environment and Sustainability :** Develop integrity, sensitivity and an appreciation for the diversity of the human experience. Work effectively with others and on teams.
PO 7	**Life-long Learning**: Acquire the ability to engage in Independent and life-long learning in the broadest context of socio- technological changes and be encouraged to keep abreast of current trends in the field of Philosophy.

DEPARTMENT OF PHILOSOPHY

PROGRAMME SPECIFIC OUTCOMES (B.A. PHILOSOPHY)

PSO #	PROGRAMME SPECIFIC OUTCOMES
PSO 1	To gain a functional knowledge of theoretical concepts Aspects of Indian Philosophy and their applications in the day-to-day life.
PSO 2	To integrate the gained knowledge with various contemporary and evolving areas in Philosophy like Indian Philosophy, Western Philosophy, Social Philosophy-I, Advaita Vedanta Philosophy *etc.*
PSO 3	To understand, analyze, plan and implement qualitative as well as quantitative and analytical related to Ethics & Logic Philosophy.
PSO 4	Develop insight to excel; Adjust in academics, research or Industry skill enhancement and real word situation based courses like Logic, Philosophy of Religion , Vedanta Darshan, Yoga Darshan *etc*.

बी.ए. पाठ्यक्रम (दर्शनशास्त्र)/B.A. Programme (Philosophy)

सेमेस्टर–I/Semester - I

मुख्य विषय / Major Core -101

भारतीय दर्शन–I

Indian Philosophy-I

Credits- 06
Max. Marks - 60
Min. Marks -

उद्देश्य	इस पाठ्यक्रम का उद्देश्य विद्यार्थियों को दर्शन का स्वरूप, वैदिक एवं अवैदिक दर्शनों यथा, उपनिषद्, चार्वाक, जैन और बौद्ध दर्शनों के तत्त्वमीमांसीय एवं ज्ञानमीमांसीय अवधारणाओं के साथ–साथ उनके आधारभूत सिद्धान्तों से परिचित कराना है।	
Objective	The objective of this course is to teach and train the students the nature of philosophy,the metaphysical and epistemological concepts of Indian Philosophy, and the concepts that belong to the Classical and Heterodox systems of Indian Philosophy, delving deep into the basics and fundamentals of Upanishads, Charvaka, Jaina and Buddhist Philosophy.	
इकाई	**विषय**	**व्याख्यान की संख्या**
इकाई-I	**दर्शन** 1. दर्शन का स्वरूप 2. दर्शन एवं फिलॉसफी में भेद 3. भारतीय दर्शन का वर्गीकरण 4. भारतीय दर्शन की विशेषताएँ	18घण्टे
Unit-I	**Philosophy** 1. Nature of Philosophy 2. Distinction between Darśana and Philosophy 3. Classification of Indian Philosophy 4. Characteristics of Indian Philosophy	18 Hours
इकाई-II	**उपनिषद् एवं गीता** 1. उपनिषद् में ब्रह्म और आत्मा का स्वरूप 2. भगवद्गीता में ज्ञानयोग 3. भगवद्गीता में कर्मयोग 4. भगवद्गीता में भक्तियोग	18घण्टे
Unit-II	**Upanishads & Gita** 1. Nature of Brahman and Ātman in Upanishads 2. Jñānayoga in Bhagavadgītā 3. Karmayoga in Bhagavadgītā 4. Bhaktiyoga in Bhagavadgītā	18 Hours
इकाई-III	**लोकायत** 1. परिचय 2. तत्त्वमीमांसा 3. ज्ञानमीमांसा 4. नीतिमीमांसा	18घण्टे
Unit-III	**Lokāyata** 1. Introduction 2. Metaphysics 3. Epistemology 4. Ethics	18 Hours

इकाई-IV	**जैन दर्शन** 1. परिचय 2. अनेकान्तवाद 3. स्याद्वाद 4. कैवल्य	18घण्टे
Unit-IV	**Jainism** 1. Introduction 2. Anekāntavāda 3. Syādavāda 4. Kaivalya	18 Hours
इकाई-V	**बौद्ध दर्शन** 1. परिचय 2. चार आर्य सत्य 3. अनात्मवाद 4. क्षणिकवाद	18घण्टे
Unit-V	**Buddhism** 1. Introduction 2. Four Noble Truths 3. Anātmavāda (No-soul theory) 4. Theory of Momentariness	18 Hours
Suggested Readings :	1. डॉ. चन्द्रधर शर्मा, भारतीय दर्शन अलोचन और अनुशीलन, मोतीलाल बनारसीदास, दिल्ली 1995 2. डॉ. बी.एन. सिंह एवं डॉ. आशा सिंह, भारतीय दर्शन, स्टूडेण्ट्स फ्रेण्ड्स एण्ड कम्पनी, काशी हिन्दू विश्वविद्यालय मार्ग लंका, वाराणसी–5, 1996 3. प्रो. हरेन्द्र प्रसाद सिन्हा, भारतीय दर्शन की रूपरेखा, मोतीलाल बनारसीदास, दिल्ली, 1963 4. बलदेव उपाध्याय, भारतीय दर्शन, शारदा मन्दिर प्रकाशन, वाराणसी, 1997 5. नन्द किशोर देवराज, भारतीय दर्शन, उत्तर प्रदेश हिन्दी संस्थान, लखनऊ, 1976 6. Dutta & Chatterjee, An Introduction to Indian Philosophy, University of Calcutta, 1968. 7. M. Hiriyanna, Outlines of Indian Philosophy, George Allen and Unwin, Lodon-1932.	
परिलब्धि	विद्यार्थी पाठ्यक्रम के अध्ययनोपरान्त भारतीय दार्शनिक सम्प्रदायों के प्रति विश्लेषणात्मक एवं तुलनात्मक दृष्टि से परिपूर्ण होंगे। विद्यार्थी हमारे प्राचीन ऋषियों के ज्ञान और संस्कृति से परिचित होंगे तथा उनके चिन्तन का क्षेत्र विस्तृत होगा।	
Outcomes	This Course will help the students to evaluate each system of Indian Philosophy in critical and comparative light. Through this course, students will come to know philosophical and rich cultural wisdom of our ancient thinkers.	
	Course Learning Outcome (COs) CO1- Understanding of Indian Philosophy and Classification, Characteristics of Indian Philosophy. CO2 -Understanding of Upanishad, Brahman, Atman, Kosha And Moksha. CO3- To understand the basic Concept of Charvaka Philosophy. CO4 - To Understand the basic Concept of Jain philosophy. CO5- To understand the basic Concept of Buddhist philosophy.	

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सेमेस्टर–Semester - I

गौण विषय / Miner Core -102

प्राचीन भारतीय इतिहास, संस्कृति एवं पुरातत्त्व

Ancient Indian History, Culture and Archaeology

Credits- 06
Max. Marks - 60
Min. Marks -

उद्देश्य	इस पाठ्यक्रम का उद्देश्य विद्यार्थियों को प्राचीन भारतीय इतिहास, संस्कृति एवं पुरातत्त्व की अवधारणा से परिचित कराते हुये उसके स्रोत, वर्गीकरण एवं कला से परिचित कराना है।	
Objective	The objective of this course is to teach the students thefundamental concepts of the Ancient Indian History, Culture and Archaeology. It will deal with the sources and classifications of these concepts and touch upon their artful aspects.	
इकाई	**विषय**	**व्याख्यान की संख्या**
इकाई-I	**प्राचीन भारतीय इतिहास, संस्कृति एवं पुरातत्त्व** 1. प्राचीन भारतीय इतिहास–स्वरूप 2. संस्कृति–स्वरूप 3. पुरातत्त्व–स्वरूप	18घण्टे
Unit-I	**Ancient Indian History, Culture and Archaeology** 1. Nature of Ancient Indian History 2. Nature of Culture 3. Nature of Archaeology	18 Hours
इकाई-II	**प्राचीन भारतीय इतिहास के स्रोत** 1. पुरातात्त्विक 2. साहित्यिक 3. विदेशी यात्रियों के विवरण (मेगस्थनीज, फाह्यान, ह्वेनसांग, इत्सिंग, अलबरुनी)	18घण्टे
Unit-II	**Sources of Ancient Indian History** 1. Archaeological 2. Literary 3. Description of foreign travelers (Megasthenes, Fahien, Huansang, Thising, Alberuni)	18 Hours
इकाई-III	**प्राचीन इतिहास का वर्गीकरण** 1. प्रागैतिहासिक काल 2. आद्यैतिहासिक काल 3. ऐतिहासिक काल	18 घण्टे
Unit-III	**Classification of Ancient Indian History** 1. Pre Historic 2. Proto Historic 3. Historical	18 Hours
इकाई-IV	**प्राचीन भारतीय कला** 1. स्थापत्य कला (सैन्धव नगर योजना, स्तूप, मन्दिर–नागर शैली) 2. मूर्तिकला (दशावतार, शिव की सौम्य मूर्तियाँ) 3. चित्रकला (अजन्ता एवं एलोरा)	18घण्टे
Unit-IV	**Ancient Indian Art** 1. Architecture (Indus town planning, Stoop, Temple-Nagara Art) 2. Sculpture (Dashavatar, Soumya Murties of Lord Shiva) 3. Painting (Ajanta and Alora)	18 Hours

इकाई-V	**प्राचीन भारत में शिक्षा** 1. शिक्षा के प्रमुख उद्देश्य 2. शिक्षा पद्धति 3. प्रसिद्ध विश्वविद्यालय (तक्षशिला, नालंदा, वलभी एवं विक्रमशिला)	18घण्टे
Unit-V	**Education in Ancient India** 1. Main objectives of Education 2. Education System 3. Famous Universities (Takshashila, Nalanda, Valabhi and Vikramshila)	18 Hours
Suggested Readings :	1. जयनारायण पाण्डेय, पुरातत्त्व विमर्श, प्राच्य विद्या संस्थान, प्रयागराज, 2020 2. बी.के. जैन, भारत का प्रागैतिहास और आद्य–इतिहास, प्रिन्ट वर्ल्ड, प्राइवेट लि., 2008 3. विमलचन्द्र पाण्डेय, प्राचीन भारत का इतिहास, सेन्ट्रल पब्लिशिंग हाउस, इलाहाबाद, 2016 4. जयशंकर मिश्र, प्राचीन भारत का सामाजिक इतिहास, बिहार हिन्दी ग्रन्थ अकादमी, 1974 5. के.सी. श्रीवास्तव, प्राचीन भारतीय इतिहास एवं संस्कृति, यूनाइटेड बुक डिपो, 2000 6. प्रो. महेश चन्द्र श्रीवास्तव, प्राचीन भारत का इतिहास (पूर्व–ऐतिहासिक काल से 320 ई. तक) शिवांक प्रकाशन, नई दिल्ली, 2020 7. Prof. Mahesh Chandra Shrivastava - Ancient History of Indian, Manisha Publication, Delhi, 2018	
परिलब्धि	विद्यार्थी पाठ्यक्रम के अध्ययनोपरान्त प्राचीन भारतीय इतिहास, संस्कृति एवं पुरातत्त्व की अवधारणाओं से परिचित होकर सम्बन्धित विषय में उच्च शिक्षा प्राप्त करने योग्य हो सकेंगे।	
Outcomes	It is necessary for students to be acquainted with their culture. This Course will encourage the students for Higher education in Ancient Indian History, Culture & Archaeology.	
	Course Learning Outcome (COs) CO1- Understanding of Ancient Indian History, Culture and Archaeology. CO2 - Understanding to Sources of Ancient Indian History. CO3- To understand the basic Classification of Ancient Indian History. CO4 - To Understand the basic Concept of Ancient Indian Art. CO5- To understand the basic Concept of Education in Ancient India.	

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सेमेस्टर–I / Semester - I

वैकल्पिक विषय / Generic Elective(G.E.)-103

श्री रामचरितमानस–दर्शन

Philosophy of Shri Ramcharitamanas

Credits- 04
Max. Marks - 60
Min. Marks -

उद्देश्य	विद्यार्थियों को श्रीरामचरितमानस में वर्णित नैतिक व आध्यात्मिक मूल्यों से परिचित कराकर उनके अनुरूप जीवन शैली विकसित करना पाठ्यक्रम का प्रमुख उद्देश्य है।	
Objective	This course aims at inculcating in the students the values and ethos mentioned in the ShriRamcharitmanas.	
इकाई	**विषय**	**व्याख्यान की संख्या**
इकाई-I	**परिचय** 1. श्रीरामचरितमानस 2. गोस्वामी तुलसीदास 3. रामायण	12घण्टे
Unit-I	**Introduction** 1. Shri Ramcharitamanas 2. Goswami Tulsidas 3. Ramayana	12 Hours
इकाई-II	**गीता** 1. लक्ष्मण–गीता (अयोध्या काण्ड 91–93.2) 2. राम–गीता (अरण्य काण्ड 13.5–16) 3. विभीषण–गीता (लंका काण्ड 79–80)	12 घण्टे
Unit-II	**Gita** 1. Laxaman-Gita (Ayodhya Kanda 91-93.2) 2. Ram-Gita (Aranya Kanda 13.5-16) 3. Vibhishana-Gita (Lanka Kanda 79-80)	12 Hours
इकाई-III	**मानस की सामाजिकता** 1. सामाजिक समरसता 2. अस्पृश्यता की निःसारता 3. परोपकार का महत्व	12 घण्टे
Unit-III	**Sociality of Manas** 1. Social Harmony 2. Vanity of Untouchability 3. Importance of charity	12 Hours
इकाई-IV	**मानस में पर्यावरण** 1. पेड़–पौधों का सम्मान 2. पशु–पक्षी का सम्मान 3. नदी–पर्वत का सम्मान	12 घण्टे
Unit-IV	**Environment in Manas** 1. Respect of Trees and Plants 2. Respect of Animals and birds 3. Respect of Rivers and Mountains	12 Hours
इकाई-V	**श्रीराम / भरत / महावीर हनुमान** 1. मानव जीवन के आदर्श–मर्यादा पुरुषोत्तम श्रीराम 2. भरत चरित की विशेषताएँ 3. भक्ति की पराकाष्ठा– महावीर हनुमान	12घण्टे

Unit-V	**Shri Ram/Bharat/Mahavir Hanuman** 1. Ideal of Human Life-Maryada Purushottam ShriRam 2. Characteristics of Bharat's Life 3. Extreme of Devotion- Mahavir Hanuman	12 Hours
Suggested Readings :	1. डॉ. श्रीकान्त मिश्र,भारतीय नीतिशास्त्र, आशा पब्लिशिंग कम्पनी, आगरा, 2018 2. श्री रामचरितमानस सरल टीका, गीताप्रेस गोरखपुर, 2012 3. डॉ. नारेन्द्र कुमार मेहता, श्रीमद्बाल्मीकीय रामायण, प्रश्नोत्तरी मंजुषा, श्री रीना पब्लिकेशन, 2018 4. श्री भागवत पुराण, गीताप्रेस, गोरखपुर, 2000 5. हनुमान प्रसाद पोद्दार, कल्याण कुंज, गीताप्रेस, गोरखपुर, 1990 6. स्वामी रामसुखदास, जीवन का सत्य, गीताप्रेस, गोरखपुर, 1994 7. डॉ. पूजा व्यास, मानवीय सद्गुणों का विकास, मानस एवं गीता के विशेष सन्दर्भ में, सत्यम् प्रकाशन, दिल्ली, 2018 8. हनुमान प्रसाद पोद्दार, श्री राम चरित मानस, कोड 82, टीकाकार, गीताप्रेस गोरखपुर, 2018 9. डॉ. उदय प्रताप सिंह, तीर्थराज प्रयाग और रामभक्ति का अमृत कलश–प्रयाग कुम्भ, 2013 10. वैष्णव मताब्ज भास्कर, आचार्य जयकान्त शर्मा, जगद्गुरु रामानन्दाचार्य स्मारक सेवा न्यास, श्रीमठ काशी 11. प्रो. एस.पी. गौतम, श्री रामचरित मानस में अध्यात्म एवं विज्ञान, मध्यप्रदेश हिन्दी ग्रन्थ अकादमी, भोपाल (म.प्र.) 12. Goswami Tulsidas, Shri Ramcharitmanas, Gita Press, Gorakhpur, 2019 13. Tulsidas Goswami, Tulsi Ramanayana the Hindu Bible, Only Rama Only, 2017	
परिलब्धि	इस पाठ्यक्रम के माध्यम से विद्यार्थी के जीवन में नैतिक व आध्यात्मिक मूल्यों का समावेश होगा, जिससे विद्यार्थी सामाजिक समरसता स्थापित करने में सहायक हो सकेंगे।	
Outcomes	On the basis of this course the students will get acquainted with the moral and spiritual values, on account of this the students will become successful in leading a social and harmonious life.	
	Course Learning Outcome (COs) CO1- Understanding of Shri Ramcharitamanas. CO2 -Understanding of Ram-Gita, Laxaman-Gita and Vibhishana-Gita. CO3- To understand the basic Concept of Sociality of Manas. CO4 -To Understand the basic Concept of Environment in Manas. CO5- Understand of Ideal of Human Life.	

बी.ए. पाठ्यक्रम (दर्शनशास्त्र) /B.A. Programme (Philosophy)

सेमेस्टर –I/Semester - I
एबिलिटी एन्हांसमेंट / Ability Enhancement- (A.E.)-104
हिन्दी भाषा
Hindi Language

Credits- 04
Max. Marks - 60
Min. Marks -

उद्देश्य	प्रस्तुत प्रश्न–पत्र का उद्देश्य विद्यार्थियों में हिन्दी व्याकरण तथा भाषा का ज्ञान कराते हुए प्रतियोगी परीक्षाओं हेतु तैयार करना है।	
इकाई	**विषय**	**व्याख्यान की संख्या**
इकाई-I	**भाषा एवं व्याकरण** 1. भाषा का स्वरूप 2. व्याकरण का अर्थ 3. वर्ण एवं शब्द 4. सार्थक शब्दों के भेद	12घण्टे
इकाई-II	**व्याकरणिक कोटियाँ** 1. संज्ञा 2. लिंग 3. वचन 4. कारक	12घण्टे
इकाई-III	**व्याकरणिक कोटियाँ** 1. सर्वनाम 2. विशेषण 3. क्रिया 4. काल एवं वाच्य	12घण्टे
इकाई-IV	**व्याकरणिक कोटियाँ** 1. संधि 2. समास 3. उपसर्ग 4. प्रत्यय	12घण्टे
इकाई-V	**लेखन** 1. पत्र लेखन 2. पल्लवन 3. संक्षेपण 4. लोकोक्ति–मुहावरे	12घण्टे
संदर्भ पुस्तक	1. हिन्दी व्याकरण एवं रचना, मध्यप्रदेश हिन्दी ग्रन्थ अकदमी, भोपाल, 2013 2. डॉ. शिवमूर्ति शर्मा, सामान्य हिन्दी, शारदा पुस्तक भवन, इलाहाबाद, संस्करण 2005 3. भाषा विज्ञान हिन्दी भाषा और लिपि, रामकिशोर शर्मा, लोकभारती प्रकाशन, इलाहाबाद, 2007 4. डॉ. प्रभा व्यौहार, डॉ. मधु जैन, डॉ. रघुवीर प्रसाद गोस्वामी, डॉ. नाथूराम राठौर, हिन्दी व्याकरण एवं रचना, मध्यप्रदेश हिन्दी ग्रन्थ अकादमी, भोपाल, 2013	
परिलब्धि	राष्ट्र भाषा हिन्दी का ज्ञान विद्यार्थियों में सांस्कृतिक चेतना और राष्ट्रीय भावना का विकास करेगा।	
	कोर्स लर्निंग आउटकम (COs) CO1- विद्यार्थियों में भाषा एवं व्याकरण की समझ विकसित होगी। CO2 -विद्यार्थियों में व्याकरणिक कोटियाँ, संज्ञा, लिंग, वचन और कारक की समझ विकसित होगी। CO3- सर्वनाम, विशेषण, क्रिया, काल एवं वाच्य को समझ सकेगे। CO4 -विद्यार्थियों में संधि, समाज, उपसर्ग एवं प्रत्यय को समझेंगे। CO5- पत्र लेखन, पल्लवन एवं संक्षेपण की कला विकसित होगी।	

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सेमेस्टर–II/Semester - II

मुख्य विषय / Major Core -201

भारतीय दर्शन–II

Indian Philosophy-II

Credits- 06
Max. Marks - 60
Min. Marks -

उद्देश्य	भारतीय दर्शन के आस्तिक सम्प्रदाय की अवधारणाओं एवं सिद्धान्तों के सम्बन्ध में विद्यार्थियों को शिक्षित करना पाठ्यक्रम का मुख्य उद्देश्य है।	
Objective	The objective of this course is to teach the students the concepts and ideas of Orthodox systems of Indian Philosophy.	
इकाई	**विषय**	**व्याख्यान की संख्या**
इकाई-I	**सांख्य दर्शन** 1. सत्कार्यवाद 2. पुरुष 3. प्रकृति 4. विकासवाद के सिद्धान्त 5. कैवल्य	18घण्टे
Unit-I	**Sāńkhya Philosophy** 1. Satkāryavāda 2. Puruşa 3. Prakriti 4. Theory of Evolution 5. Kaivalya.	18 Hours
इकाई-II	**न्याय दर्शन** 1. प्रत्यक्ष 2. अनुमान 3. शब्द 4. उपमान 5. ईश्वर की सत्ता सिद्धि हेतु तर्क	18घण्टे
Unit-II	**Nyāya Philosophy** 1. Pratyaksha 2. Anuman 3. Shabda 4. Upamana 5. Proofs for the Existence of God	18 Hours
इकाई-III	**वैशेषिक एवं मीमांसा दर्शन** 1. पदार्थ (वैशेषिक) 2. परमाणुवाद (वैशेषिक) 3. धर्म (मीमांसा) 4. अपूर्व (मीमांसा) 5. स्वतः प्रामाण्यवाद (मीमांसा)	18घण्टे
Unit-III	**Vaiśeshika and Mīmāmsā Philosophy** 1. Padārthas (Vaiheshika) 2. Atomism (Vaiheshika) 3. Dharma (Mimamsa) 4. Apūrva (Mimamsa) 5. Swatah Pramanyavada (Mimamsa)	18 Hours

इकाई-IV	**अद्वैतवेदान्त** 1. ब्रह्म 2. माया 3. जीव 4. ईश्वर 5. मुक्ति	18 घण्टे
Unit-IV	**Advaita Vedānta** 1. Brahman 2. Māyā 3. Jiva 4. Ishwar 5. Mukti	18 Hours
इकाई-V	**विशिष्टाद्वैत** 1. ब्रह्म 2. चित् 3. अचित् 4. मुक्ति 5. सत्ख्यातिवाद्	18घण्टे
Unit-V	**Viśiṣṭādvaita** 1. Brahman 2. Chit 3. Achit 4. Mukti 5. Satkhyativada	18 Hours
Suggested Readings :	1. डॉ. चन्द्रधर शर्मा, भारतीय दर्शन अलोचन और अनुशीलन, मोतीलाल बनारसीदास, दिल्ली 1995 2. डॉ. बी.एन. सिंह एवं डॉ. आशा सिंह, भारतीय दर्शन, स्टूडेण्ट्स फ्रेण्ड्स एण्ड कम्पनी, काशी हिन्दू विश्वविद्यालय मार्ग लंका, वाराणसी–5, 1996 3. प्रो. हरेन्द्र प्रसाद सिन्हा, भारतीय दर्शन की रूपरेखा, मोतीलाल बनारसीदास, दिल्ली, 1963 4. बलदेव उपाध्याय, भारतीय दर्शन, शारदा मन्दिर वाराणसी, 1997 5. नन्द किशोर देवराज, भारतीय दर्शन, उत्तर प्रदेश हिन्दी संस्थान, लखनऊ, 1976 6. Dutta & Chatterjee, An Introduction to Indian Philosophy, University of Calcutta, 1968 7. M. Hiriyanna, Outlines of Indian Philosophy, George Allen and Unwin, Lodon-1932	
परिलब्धि	विद्यार्थी अस्तिक दर्शनों के सिद्धान्तों से परिचित होकर जीवन जीने की अनेक विधियों व शैलियों से परिचित होंगे, जिससे उनके व्यक्तित्व का समग्र विकास हो सकेगा।	
Outcomes	Through this course the students will be introducedto the differents concepts and styles of Orthodox systems. They will be able to have personality development.	
	Course Learning Outcome (COs) CO1- Students will be familiar with the Satkaryavad and Evolutionism of Samkhya philosophy. CO2 - To understand the basic Concept of Nyaya Philosophy. CO3- from this unit students will learn about Vaisheshika Philosophy - Seven Padarthas, Atomism, Nature of Moksha, Mimamsa Philosophy - Dharma, Theory of Karma. CO4 - To Understand the basic Concept of Advaita Vedānta philosophy. CO5- To understand the basic Concept of Viśiṣṭādvaita philosophy.	

बी.ए. पाठ्यक्रम (दर्शनशास्त्र)/B.A. Programme (Philosophy)

सेमेस्टर–II /Semester - II

Credits- 06
Max. Marks - 60
Min. Marks -

गौण विषय / Miner Core-202

भारतीय संस्कृति

Indian Culture

उद्देश्य	विद्यार्थियों को भारतीय संस्कृति के विषय में शिक्षित करना इस पाठ्यक्रम का प्रमुख उद्देश्य है। वर्णव्यवस्था, संस्कार आदि अवधारणाएँ भारतीय संस्कृति के स्तम्भ हैं। इस पाठ्यक्रम के माध्यम से विद्यार्थी इन सांस्कृतिक अवधारणाओं को समझेंगे।	
Objective	Varnavyavastha, Purushartha, Sanskar etc. are considerto be the pillars of Indian Culture.The objective of this course is to teach the students the values and ethos of Indian culture.	
इकाई	**विषय**	**व्याख्यान की संख्या**
इकाई-I	**संस्कृति** 1. संस्कृति की अवधारणा 2. भारतीय संस्कृति की विशेषताएँ 3. वसुधैव कुटुम्बकम् की अवधारणा 4. धर्म का अर्थ	18घण्टे
Unit-I	**Culture** 1. Concept of culture 2. Characteristics of Indian Culture 3. Concept of Vasudhaiva Kutumbakam 4. Meaning of Dharma	18 Hours
इकाई-II	**वर्णव्यवस्था** 1. ब्राह्मण 2. क्षत्रिय 3. वैश्य 4. शूद्र	18घण्टे
Unit-II	**Varnavyavastha** 1. Brahman 2. Kshatriya 3. Vaishya 4. Shudra	18 Hours
इकाई-III	**आश्रम व्यवस्था** 1. ब्रह्मचर्य 2. गृहस्थ 3. वानप्रस्थ 4. संन्यास	18घण्टे
Unit-III	**Ashramvyavastha** 1. Brahmacharya 2. Grihastha 3. Vanaprastha 4. Sannyas	18 Hours
इकाई-IV	**पुरुषार्थ व्यवस्था** 1. धर्म 2. अर्थ 3. काम 4. मोक्ष	18घण्टे

Unit-IV	**Purushartha Vyavastha** 1. Dharma 2. Artha 3. Kama 4. Moksha	18 Hours
इकाई-V	**विवाह** 1. अर्थ 2. उद्देश्य 3. प्रकार 4. सामाजिक महत्व	18घण्टे
Unit-V	**Marriage** 1. Meaning 2. Objectives 3. Kinds 4. Social Importance	18 Hours
Suggested Readings :	1. डॉ. श्रीकान्त मिश्र,भारतीय नीतिशास्त्र, आशा पब्लिशिंग कम्पनी, आगरा, 2018 2. जयशंकर मिश्र, प्राचीन भारत का सामाजिक इतिहास, बिहार हिन्दी ग्रन्थ अकादमी, 1974 3. के.सी. श्रीवास्तव, प्राचीन भारतीय इतिहास एवं संस्कृति, यूनाइटेड बुक डिपो, 2000 4. विमला देवी राय, वेद कालीन समाज एवं संस्कृति, कला प्रकाशन, वाराणसी, 2001 5. बी.एन. लूनिया, भारतीय सभ्यता तथा संस्कृति का विकास, लक्ष्मीनारायण अग्रवाल, आगरा, 2001 6. डॉ. हृदय नारायण मिश्र, समाज दर्शन सैद्धान्तिक एवं समस्यात्मक विवेचन, शेखर प्रकाशन, इलाहाबाद, 2003	
परिलब्धि	इस पाठ्यक्रम के माध्यम से विद्यार्थी प्राचीन भारतीय संस्कृति, समाज, परिवार आदि के सम्बन्ध में गहन एवं विस्तृत ज्ञान से युक्त होंगे।	
Outcomes	This course will help the students to have wide and deep knowledge of ancient Indian society, Indian family, Indian marriage systems and so on and so forth.	
	Course Learning Outcome (COs) CO1- Understanding of Concept of Vasudhaiva Kutumbakam. CO2 - Understanding to Sources of Varnavyavastha. CO3- To understand of Purushartha Vyavastha. CO4 - To Understand the basic Concept of Ancient Indian Art. CO5- To understand the basic Concept of Marriage, Meaning, Objectives, Kinds, Social Importance.	

बी.ए. पाठ्यक्रम (दर्शनशास्त्र)/B.A. Programme (Philosophy)
सेमेस्टर–II / Semester - II
वैकल्पिक विषय/Generic Elective(G.E.)- 203
गीता दर्शन
Philosophy of Gita

Credits- 04
Max. Marks - 60
Min. Marks -

उद्देश्य	प्रस्तुत पाठ्यक्रम का उद्देश्य विद्यार्थियों को श्रीमद्भगवद्गीता के प्रमुख लोकोपकारक सिद्धान्तों से परिचित कराना है, जिससे विद्यार्थी अपने तथा समाज के अन्य लोगों के जीवन में उत्पन्न द्वन्द्वों के समाधान में सहायक हो सकें।	
Objective -	This course aims at getting students acquainted with beneficent principles of the Shrimad Bhagvadgita, so that the students may be able to solve the problems of their life and their society.	
इकाई	**विषय**	**व्याख्यान की संख्या**
इकाई-I	**परिचय** 1. श्रीमद्भगवद्गीता 2. योगेश्वर श्रीकृष्ण 3. अर्जुन	12घण्टे
Unit-I	**Introduction** 1. Shrimadbhagvadgita 2. Yogeshwar Shrikrishna 3. Arjun	12 Hours
इकाई-II	**अर्जुन विषाद् एवं मानव का द्वंद्व** 1. अर्जुन विषाद् का कारण 2. मानव जीवन के द्वंद्व 3. मानव के लिए गीता की सार्थकता	12घण्टे
Unit-II	**Arjun's Sorrow and Dialectic of Human** 1. Cause of Arjun's Sorrow 2. Dialectic of Human's Life 3. Relevance of Gita for Human	12 Hours
इकाई-III	**योग** 1. कर्मयोग 2. ज्ञानयोग 3. भक्तियोग	12घण्टे
Unit-III	**Yoga** 1. Karmayoga 2. Jnanayoga 3. Bhaktiyoga	12 Hours
इकाई-IV	**स्थितप्रज्ञ** 1. लक्षण 2. व्यवहार 3. मानव का उच्चत्तम आदर्श	12घण्टे
Unit-IV	**Sthitaprajna** 1. Symbol 2. Behaviour 3. Highest Ideal of Human	12 Hours
इकाई-V	**गुण** 1. सत्त्वगुण का प्रभाव 2. रजोगुण का प्रभाव 3. तमोगुण का प्रभाव	12घण्टे

Unit-V	**Guna** 1. Impact of Sattvaguna 2. Impact of Rajoguna 3. Impact of Tamoguna	12 Hours
Suggested Readings :	1. श्रीमद्भवगद्गीता, गीताप्रेस गोरखपुर, सं. 2073 2. गीता रहस्य, कर्मयोगशास्त्र, अर्चना पब्लिकेशन, दिल्ली, 2006 3. भक्तिवेदान्त प्रभुपाद, भगवद्गीता : यथारूप, भक्ति वेदान्त बुक ट्रस्ट 4. डॉ. सागरमल जैन, जैन, बौद्ध एवं गीता का साधना मार्ग, राजस्थान, प्रा.भा.स. जयपुर, 1998 5. डॉ. सागरमल जैन, जैन, बौद्ध एवं गीता के आचार दर्शनों का तुलनात्मक अध्ययन, राजस्थान, प्रा.भा.स. जयपुर, 1998 6. डॉ. सत्यप्रकाश अग्रवाल, मानस एवं गीता.....लोकमंगल गुजिता, मोतीलाल बनारसीदास, दिल्ली, 1998 7. अरुण, अनासक्त योगी श्रीकृष्ण, विश्वभारती पब्लिकेशन्स, नई दिल्ली 2006 8. R.R. Verma, The Bhagwat Gita,	
परिलब्धि	श्रीमद्भगवद्गीता के उपदेशों से युक्त विद्यार्थी स्वयं के जीवन तथा समाज में उत्पन्न समस्याओं का यथोचित समाधान प्रस्तुत करने में सक्षम हो सकेंगे।	
Outcomes -	On the basis of this course the students will be able to handle different kinds of situations of life and their society.	
	Course Learning Outcome (COs) CO1- Students will be familiar with the Introduction of Shrimadbhagvadgita. CO2 - To understand Arjun's Sorrow and Dialectic of Human. CO3- From this unit students will learn about Karmayoga, Jnanayoga & Bhaktiyoga. CO4 - To Understand the basic Concept of Symbol, Behaviour, Highest Ideal of Human. .CO5- To Understand Impact of Sattvaguna, Rajoguna and Tamoguna.	

बी.ए. पाठ्यक्रम (दर्शनशास्त्र)/B.A. Programme (Philosophy)
सेमेस्टर–II/Semester - II
एबिलिटी एन्हान्समेन्ट / Ability Enhancement-(A.E.) -204
पर्यावरण अध्ययन
(Environmental Studies)

Credits- 04
Max. Marks - 60
Min. Marks -

उद्देश्य	प्रस्तुत पाठ्यक्रम का उद्देश्य विद्यार्थियों को पर्यावरण की अवधारणा, स्वरूप, क्षेत्र के साथ–साथ पर्यावरण से सम्बन्धित विषयों से परिचित कराना है।	
Objective -	This course aims at getting the students acquainted with the concept of environment, this nature, scope and different kinds of issues related environment.	
इकाई	**विषय**	**व्याख्यान की संख्या**
इकाई-I	**पर्यावरण** 1. स्वरूप 2. क्षेत्र 3. महत्व 4. भारतीय संस्कृति में पर्यावरणीय चिन्तन	12घण्टे
Unit-I	**Environment** 1. Nature 2. Scope 3. Importance 4. Environmentalthoughts in Indian Culture	12 Hours
इकाई-II	**पर्यावरण के घटक** 1. वायुमण्डल 2. जलमण्डल 3. स्थलमण्डल 4. जैव मण्डल	12घण्टे
Unit-II	**Components of Environment** 1. Atmosphere 2. Hydrosphere 3. Lithosphere 4. Biosphere	12 Hours
इकाई-III	**पारिस्थितिक तन्त्र एवं जैवविविधता** 1. पारिस्थितिक तंत्र –संरचना, कार्य एवं प्रकार 2. पारिस्थितिक तंत्र–संरक्षण एवं पुर्नस्थापन 3. जैवविविधता एवं उसका संरक्षण 4. मुख्य बायोम	12घण्टे
Unit-III	**Eco-System and Biodiversity** 1. Eco-System- Structure, Functions and Types 2. Eco-System- Preservation and Restoration 3. Biodiversityand It's Conservation 4. Major Biomes	12 Hours
इकाई-IV	**प्राकृतिक संसाधन एवं सम्बन्धित समस्याएँ** 1. भू–संसाधन 2. जल–संसाधन 3. ऊर्जा–संसाधन 4. समस्या एवं निवारण	12घण्टे

Unit-IV	**Natural Resources and Associated Problems** 1. Land 2. Water 3. Energy 4. Problems and Solution	12 Hours
इकाई-V	**पर्यावरण प्रदूषण एवं प्रबन्धन** 1. प्रदूषण के प्रकार 2. नियंत्रण के उपाय 3. प्रबन्ध एवं उससे जुड़ी समस्याएँ 4. पर्यावरण सुरक्षा हेतु जनजागरूकता	12घण्टे
Unit-V	**Environmental Pollution and Management** 1. Types of Pollution 2. Ways to Control 3. Management and Associated Problems 4. Public Awareness for Environmental safety	12 Hours
Suggested Readings :	1. डॉ. वीरेन्द्र सिंह यादव, भारतीय संस्कृति में पर्यावरण चिन्तन के विविध आयाम, ओमेगा पब्लिकेशन्स, नई दिल्ली, 2010 2. डॉ. दया शंकर त्रिपाठी, पर्यावरण अध्ययन, मोतीलाल बनारसीदास, दिल्ली, 2005 3. डी.एस. त्रिपाठी, पर्यावरण चेतना (सम्पादित), 1997 4. P.D. Sharma- Elements of Ecology, 1988	
परिलब्धि	इस पाठ्यक्रम के अध्ययन के उपरांत विद्यार्थी पर्यावरण से सम्बन्धित विभिन्न समस्याओं के समाधान में सहायक हो सकेंगे।	
Outcomes	This course will enable students to tackle different kinds of environment issues.	
	Course Learning Outcome (COs) CO1- Students will be familiar with the Environmental thoughts in Indian Culture. CO2 - To understand Components of Environment. CO3- From this unit students will learn about Eco-System and Biodiversity. CO4 - To Understand the basic Concept of Natural Resources and Associated Problems. .CO5- To Understand Environmental Pollution and Management.	

BACHELOR OF ARTS (B.A.) PHILOSOPHY

PROGRAMME STRUCTURE
(As per NEP 2020 & CBCS Ordinance 14 A)

2nd Year

SEMESTER – III					
Course Code & Name	**Course Type**	**Theory Paper**	**Internal Assessment**	**Maximum Marks**	**Credthis**
301 Western Philosophy -I	Major Core	60	40	100	6
302 Political History of Ancient North India	Minor Core	60	40	100	6
303 Gandhian Philosophy*	GE	60	40	100	4
304 Basic of Computer and Information Technology	SE (FC)	60	40	100	4
SEMESTER TOTAL				**400**	**20**
CUMULATIVE TOTAL				**400**	**20**

SEMESTER – IV					
Course Code & Name	**Course Type**	**Theory Paper**	**Internal Assessment**	**Maximum Marks**	**Credthis**
401 Western Philosophy-II	Major Core	60	40	100	6
402 Political History of Ancient South India	Minor Core	60	40	100	6
403 Philosophy of Education *	GE	60	40	100	4
404 Life Values and Personality Development	SE (FC)	60	40	100	4
SEMESTER TOTAL				**400**	**20**
CUMULATIVE TOTAL				**800**	**40**

GE: Generic Elective **SE: Skill Enhancement** **FC: Foundation Course**

*Students may choose this course as a **Generic Elective** or may choose a Generic Elective Course offered in other UTD's at the same level or may choose a Course offered by MOOC's through SWAYAM.

The student will be awarded Diploma in Philosophy on successful completion of second year.

Credit Distribution as per the Ordinance 14 A

		Main Faculty (as per prerequisite)			Any Faculty	Skill Enhancement Course (SEC)	Ability Enhancement Course (AEC)	Field Projects/ internship/ apprenticeship /community engagement & service	Credthis	Qualification Title (Credthis Requirements)
		Subject I		Subject II	Subject III					
Level	Sem	Major		Minor	Generic Elective Course	Vocational Course		#Inter/Intra Faculty		
		Core	DSE							
Level 5	1	6		6	4	-	4	-	6+6+4+4 =20	(40) Undergraduate Certificate in Main Faculty
	2	6		6	4	-	4	-	6+6+4+4 =20	
Level 6	3	6		6	4	4	-	-	6+6+4+4 =20	(80) Undergraduate Diploma in Main Faculty
	4	6		6	4	4	-	-	6+6+4+4 =20	
Level 7	5	6	4	-	-	4	-	6	6+4+4+6 =20	(120) Bachelor Degree in Main Faculty
	6	6	4+4	-	-	-	-	6	6+4+4+6 =20	
Level 8	7	6	4	4 Research Methodology	-	-	-	6	4+4+4+6 =20	(160) Bachelor Degree (Honours/Research) in Main Faculty
	8	6	-	4	-	-	-	10	6+4+10 = 20	
Total		48	16	32	16	12	8	28	160 Credthis	

बी.ए. पाठ्यक्रम (दर्शनशास्त्र) / B.A. Programme (Philosophy)

सेमेस्टर–III/ Semester - III

मुख्य विषय / Major Core -301

पाश्चात्य दर्शन–I

Western Philosophy-I

Credits- 06
Max. Marks - 60
Min. Marks -

उद्देश्य	इस पाठ्यक्रम का उद्देश्य विद्यार्थियों को ग्रीक दर्शन के महत्वपूर्ण दार्शनिकों के सिद्धान्तों से परिचित कराना है।	
Objective	The objective of teaching of this course would be able to familiarize the students with the philosophical theories and tenets of very important Greek Thinkers.	
इकाई	विषय	व्याख्यान की संख्या
इकाई-I	**पाश्चात्य दर्शन** 1. पाश्चात्य दर्शन का स्वरूप 2. ग्रीक दर्शन का स्वरूप 3. मध्यकालीन दर्शन का स्वरूप 4. आधुनिक का के दर्शन का स्वरूप	18 घण्टे
Unit-I	Western Philosophy 1. Nature of Western Philosophy 2. Nature of Greek Philosophy 3. Nature of Medieval Philosophy 4. Nature of Modern Philosophy	18 Hours
इकाई-II	**ग्रीक दर्शन** 1. आयोनिक सम्प्रदाय (थेलीज, एनेक्जिमेण्डर एवं एनेक्जिमेनीज) 2. पाइथागोरस 3. इलियाई सम्प्रदाय (जेनोफेनीज, पार्मेनाइडीज, जेनो एवं मेलिसस), हेरेक्लाइटस एवं एम्पेडोक्लीज 4. ल्यूसिपस और डिमॉक्रिटस, एनेक्जोगोरस एवं प्रोटागोरस	18 घण्टे
Unit-II	**Greek Philosophy** 1. Ionic School- (Thales, Anaximander and Anaximanies) 2. Pythagoras 3. Eleatic School (Zenophanes, Parmemides, Zeno and Melisus), Hereclitus and Empedocles 4. Leusipus and Democritus, Anaxagoras and Protagoras	18 Hours
इकाई-III	**सुकरात और प्लेटो** 1. सुकरात की पद्धति एवं नीति मीमांसा 2. प्लेटो–ज्ञान मीमांसा 3. प्लेटो–विज्ञानवाद, विज्ञान की विशेषताएँ, विज्ञान और वस्तु में सम्बन्ध 4. प्लेटो–परम शुभ का विज्ञान	18 घण्टे
Unit-III	**Socrates and Plato** 1. Socratic Methods and Ethics 2. Plato-Epistemology 3. Plato- Idealism, Characteristics of Ideas, Relation in Ideas and Objects 4. Plato-Idia of the Good	18 Hours

इकाई-IV	**अरस्तू** 1. विज्ञानवाद की अलोचना 2. कारणता सिद्धान्त, द्रव्य एवं आकार 3. नैतिक सद्गुण–स्वरूप एवं विशेषताएँ 4. मध्यममार्ग का सिद्धान्त एवं विशेषताएँ	18 घण्टे
Unit-IV	**Athistotle** 1. Criticism of Idealism 2. Theory of Causality, Matter and Form 3. Moral Virtues-Nature and Characteristic 4. Doctrine of Middle-path and Characteristic	18 Hours
इकाई-V	**मध्ययुगीन दर्शन** 1. मध्ययुगीन दर्शन की विशेषताएँ 2. संत ऑगस्टाइन– ज्ञान सिद्धान्त एवं अशुभ की समस्या 3. संत एन्सेल्म– ईश्वर अस्तित्व के लिए प्रमाण 4. थॉमस एक्वीनस– ईश्वर विचार, आस्था एवं तर्क में भेद	18 घण्टे
Unit-V	**Medieval Philosophy** 1. Characteristics of Medieval Philosophy 2. Saint Augustine - Theory of Knowledge and Problem of Evil 3. Saint Anselm- Argument for Existence of God 4. Thomas Aquinas- Thought of God, Difference in Faith and Reason	18 Hours
Suggested Readings :	1. चन्द्रधर शर्मा, पाश्चात्य दर्शन, मोतीलाल बनारसीदास, दिल्ली, 1997 2. डॉ. बी.एन. सिंह, पाश्चात्य दर्शन, स्टूण्डेट्स फ्रेण्ड्स एण्ड कम्पनी, वाराणसी, 1973 3. याकूब मसीह, पाश्चात्य दर्शन का समीक्षात्मक इतिहास, मोतीलाल बनारसीदास, नई दिल्ली, 2005 4. जगदीश सहाय श्रीवास्तव, आधुनिक पाश्चात्य दर्शन का वैज्ञानिक इतिहास, पुस्तक स्थान, गोरखपुर, 1973 5. Frank Thilly, History of Western Philosophy, Central Book Depot, Allahabad, 1975 6. Stace, W.T.: A Critical History of Greek Philosophy Macmillan, New Delhi, 1985 7. Masih, Y. - A Critical History of Western Philosophy, Motilal Banarasidas, Delhi, 1994	
परिलब्धि	यह पाठ्यक्रम विद्यार्थियों को ग्रीक दर्शन के सभी सिद्धान्तों को समझने में सहायक होगा।	
Outcomes	This course will help the students to understand all kinds of theories of Greek Philosophy.	
	Course Learning Outcome (COs) CO1- Students will be familiar with the introduction to Western Philosophy. CO2 - To understand Greek Philosophy- Ionic School, Pythagoras, Eleatic School, Leusipus and Democritus CO3- From this unit students will learn about Socrates and Plato. CO4 - To Understand the basic Concept of Aristotle Philosophy. CO5- To Understand Medieval Philosophy.	

बी.ए. पाठ्यक्रम (दर्शनशास्त्र) /B.A. Programme (Philosophy)

सेमेस्टर–III Semester - III

गौण विषय / Miner Core -302

प्राचीन उत्तर भारत का राजनैतिक इतिहास
Political History of Ancient North India

Credits- 06
Max. Marks - 60
Min. Marks -

उद्देश्य	इस पाठ्यक्रम का उद्देश्य विद्यार्थियों को प्राचीन उत्तर भारत के राजनैतिक इतिहास से परिचित कराना है।	
Objective	The objective of this course is to teach the students the political history of Ancient North India.	
इकाई	**विषय**	**व्याख्यान की संख्या**
इकाई-I	**षोडष महाजनपद एवं मगध साम्राज्य काल** 1. षोडष महाजनपद 2. प्रमुख गणराज्य 3. मगध साम्राज्य – हर्यक वंश (बिम्बिसार, अजातशत्रु, उदायिन), शिशुनाग वंश (कालाशोक), नन्द वंश (महापद्मनन्द, धनान्द) 4. सिकन्दर का आक्रमण तथा उसका प्रभाव, झेलम का युद्ध	18 घण्टे
Unit-I	**Period of Shodash Mahajanapada and Magadh Empire** 1. Shodasha Mahajanapada 2. Major Republics 3. Magadh Empire - Haryak Dynasty (Bimbisara, Ajatashatru, Udayina), Shishunaga Dynasty (Kalashoka), Nanda Dynasty (Mahapadmananda, Dhanananda) 4. Alexender's Invasion and Effect, Battle of Jhelum	18 Hours
इकाई-II	**मौर्य काल** 1. चन्द्रगुप्त मौर्य – जीवन परिचय, उपलब्धियाँ 2. अशोक – जीवन परिचय, कलिंग का युद्ध एवं परिणाम, धम्म नीति 3. कौटिल्य अर्थशास्त्र – एक संक्षिप्त परिचय, राज्य का सप्तांग सिद्धान्त 4. मौर्यकाल – शासन व्यवस्था	18 घण्टे
Unit-II	**Mourya Period** 1. Chandragupta Mourya - Life Sketch, Achievements 2. Ashoka - Life Sketch, Kalinga's War-result, Dhamma Policy 3. Kautilya's Arthashastra - A Brief Introduction, Saptanga Theory of State 4. Mourya Period - Administration	18 Hours
इकाई-III	**मौर्योत्तर काल** 1. शुंग वंश – पुष्यमित्र शुंग 2. शुंग वंश – संस्कृति, कला एवं स्थापत्य 3. कुषाण राजवंश – कनिष्क का शासन प्रबन्ध 4. गुप्त काल के उदय के पूर्व भारत की राजनैतिक दशा	18 घण्टे
Unit-III	**Post Mourya Period** 1. Shunga Dynasty - Pushyamitra Shunga 2. Shunga Dynasty - Culture, Art and Architecture 3. Kushana Dynasty - Administration of Kanishka 4. India before the rise of the Gupta Period	18 Hours

इकाई-IV	**गुप्त काल** 1. चन्द्रगुप्त प्रथम – राजनैतिक उपलब्धियाँ 2. समुद्रगुप्त – राजनैतिक उपलब्धियाँ 3. चन्द्रगुप्त द्वितीय 'विक्रमादित्य' एवं कुमारगुप्त प्रथम 4. गुप्त साम्राज्य के पतन के कारण	18 घण्टे
Unit-IV	**Gupta Period** 1. Chndragupta I - Political Achievements 2. Samudragupta - Political Achievements 3. Chandragupta II 'Vikramaditya' and Kumargupta I 4. Causes of Downfall of Guptas	18 Hours
इकाई-V	**हर्ष एवं राजपूत राजवंश** 1. वर्धन वंश की उत्पत्ति एवं विकास 2. गुर्जर–प्रतिहार, नागभट्ट एवं मिहिरभोज 3. शाकम्भरी का चहमान वंश – विग्रहराज चतुर्थ, पृथ्वीराज तृतीय 4. कल्चुरी राजवंश – शंकरगण, गांगेयदेव एवं लक्ष्मीकर्ण	18 घण्टे
Unit-V	**Harsha and Rajputa Dynasty** 1. Origin and Development of Vardhana Dynasty 2. Gurjar-Pratihara, Nagbhatta and Mihirbhoj 3. Chahman Dynesty of Shakambhari – Vigraharaj IV, Prithviraj II 4. Kalchri Dynasty - Shankargana, Gangeyadeo and Laxmikarna	18 Hours
Suggested Readings :	1. विमलचन्द्र पाण्डेय, प्राचीन भारत का इतिहास, सेन्ट्रल पब्लिशिंग हाउस, इलाहाबाद, 2016 2. जयशंकर मिश्र, प्राचीन भारत का सामाजिक इतिहास, बिहार हिन्दी ग्रन्थ अकादमी, 1974 3. के.सी. श्रीवास्तव, प्राचीन भारतीय इतिहास एवं संस्कृति, यूनाइटेड बुक डिपो, 2000 4. प्रो. महेश चन्द्र श्रीवास्तव, प्राचीन भारत का इतिहास (पूर्व–ऐतिहासिक काल से 320 ई. तक) शिवांक प्रकाशन, नई दिल्ली, 2020 5. रोमिला थापर, भारत का इतिहास, राजकमल प्रकाशन, नई दिल्ली, 2000 6. Prof. Mahesh Chandra Shrivastava - Ancient History of Indian, Manisha Publication, Delhi, 2018	
परिलब्धि	विद्यार्थी पाठ्यक्रम के अध्ययनोपरान्त प्राचीन उत्तर भारत के राजनैतिक इतिहास से परिचित होकर वर्तमान राजनैतिक व्यवस्था का तुलनात्मक अध्ययन कर सकेंगे।	
Outcomes	This Course will encourage the students for comparative study in political history of Ancient North India and Modern Political system.	
	Course Learning Outcome (COs) CO1- To understand. Period of Shodash Mahajanapada and Magadh Empire. CO2 - Students will be familiar with the introductaion to Mourya Period. CO3- From this unit students will learn about Post Mourya Period. CO4 - To Understand the basic Concept of Gupta Period. CO5- To Understand Harsha and Rajputa Dynasty.	

बी.ए. पाठ्यक्रम (दर्शनशास्त्र) / B.A. Programme (Philosophy)

सेमेस्टर – III / Semester - III

Credits- 04
Max. Marks - 60
Min. Marks -

वैकल्पिक विषय / Generic Elective (G.E.) - 303

गाँधी दर्शन

Gandhian Philosophy

उद्देश्य	यह पाठ्यक्रम गांधी के जीवन और विचारों पर केंद्रित है। यह जीवन के सभी महत्वपूर्ण मुद्दों के बारे में उनके विचारों को स्पर्श करता है। इसमें शामिल विषय गांधीवाद की दार्शनिक पृष्ठभूमि, गांधीवाद की धार्मिक पृष्ठभूमि, गांधी के दार्शनिक विचार, गांधी के आर्थिक विचार आदि हैं।	
Objective	This course focuses on the life and thoughts of Gandhi. It touches upon his ideas regarding all important issues of life. The topics that it covers are Philosophical background of Gandhism, Religious background of Gandhism, Philosophical thoughts of Gandhi, economic thoughts of Gandhi, and so on.	
इकाई	**विषय**	**व्याख्यान की संख्या**
इकाई-I	**गाँधी जी** 1. जीवन परिचय 2. विभिन्न धर्मों / मतो का प्रभाव 3. गाँधीवाद का प्रयोजन 4. गाँधीवाद की प्रासंगिकता	12 घण्टे
Unit-I	**Gandhi ji** 1. Life sketch of Gandhi ji, 2. Influence of Different Religions/Thoughts 3. Purpose of Gandhism 4. Relevance of Gandhism	12 Hours
इकाई-II	**सामाजिक चिन्तन** 1. रामराज्य 2. वर्णव्यवस्था 3. स्वदेशी 4. सर्वोदय	12 घण्टे
Unit-II	**Social Thoghts** 1. Ramrajya 2. Varna-vyavastha 3. Swadeshi 4. Sarvodaya.	12 Hours
इकाई-III	**राजनैतिक चिन्तन** 1. विकेन्द्रीकरण 2. ग्रामीण स्वराज 3. राज्य विहीन प्रजातन्त्र 4. सत्याग्रह	12 घण्टे
Unit-III	Political Thoughts 1. Decentralization 2. Village Swaraj 3. Stateless Democracy 4. Satyagrah	12 Hours
इकाई-IV	**आर्थिक चिन्तन** 1. मशीनी युग का विरोध 2. ग्रामीण कुटीर उद्योग 3. न्यास का सिद्धान्त 4. आर्थिक समाजवाद	12 घण्टे

Unit-IV	**Economic Thoughts** 1. Resist Machine Era 2. Rural Cottage Industries 3. Doctrine of Trusteeship 4. Economic Socialism	12 Hours
इकाई-V	धार्मिक एवं दार्शनिक चिन्तन 1. सर्वधर्म समभाव 2. साधन और साध्य 3. सत्य एवं ईश्वर 4. एकादशव्रत	12 घण्टे
Unit-V	Religious and Philosophical Thoughts 1. Sarvadharmasamabhava 2. Means and Ends 3. Truth and God 4. Ekadashvrata	12 Hours
Suggested Readings :	1. बसन्त कुमार लाल, समकालीन भारतीय दर्शन, मोतीलाल बनारसीदास, दिल्ली, 1993 2. लक्ष्मी सक्सेना, समकालीन भारतीय दर्शन, उत्तर प्रदेश हिन्दी संस्थान, लखनऊ, 2002 3. डॉ. ए अवस्थी एवं डॉ. आर के अवस्थी, भारतीय राजनीतिक चिन्तन, रिसर्च पब्लिकेशन्स, जयपुर, 2001 4. N. K. Bose, Studies in Gandhism, Second Edition, Indian Association Publishing Co. Calcutta, 1947 5. D. M. Dutta, The Philosophy of Mahatma Gandhi, University of Calcutta, 1968 6. M. K. Gandhi, An Autobiography or the Story of my Experiments with Truth, Navajivan Pub. House, Ahmedabad, 1948	
परिलब्धि	यह छात्रों को गांधीवाद को संक्षेप में जानने में मदद करेगा और उन्हें इस क्षेत्र में आगे के अध्ययन के लिए प्रेरित करेगा।	
Outcomes	It will help students know Gandhism in a nutshell an induce them for further study in this field.	
	Course Learning Outcome (COs) CO1- Students will be familiar with the introductaion to Gandhian Philosophy. CO2 - Students will be familiar with the introductaion to Social Thoghts**.** CO3- From this unit students will learn about Gandhian Philosophy in Political Thoughts. CO4 - To Understand the basic Concept of Economic Thoughts. CO5- To Understand Religious and Philosophical Thoughts, Sarvadharmasamabhava, Means and End, Truth and God and Ekadashvrata.	

बी.ए. पाठ्यक्रम (दर्शनशास्त्र) /B.A. Programme (Philosophy)
सेमेस्टर – III/ Semester - III
स्किल एन्हांसमेंट / Skill Enhancement - S.E. (FC) -304
कम्प्यूटर एवं सूचना तकनीकी का आधार
Basic of Computer and Information Technology

Credits- 04
Max. Marks - 60
Min. Marks -

उद्देश्य	इस पाठ्यक्रम का उद्देष्य विद्यार्थियों को कम्प्यूटर तथा सूचना तकनीकी से परिचित कराना है।	
Objective	The objective of this course is to teach the students the basic knowledge of Computer and Information Technology.	
इकाई	**विषय**	**व्याख्यान की संख्या**
इकाई-I	**कम्प्यूटर** 1. इतिहास, कम्प्यूटर की पीढ़ियाँ, विशेषताएँ, क्षमता और सीमाएँ 2. कम्प्यूटर का वर्गीकरण, डिजिडल कम्प्यूटर के प्रकार, हार्डवेयर, सॉफ्टवेयर, सॉफ्टवेयर के प्रकार 3. कम्प्यूटर भाषाओं की पीढ़ियाँ, उच्चस्तरीय एवं निम्नस्तरीय भाषाएँ 4. ट्रान्सलेटर के प्रकार, कम्प्यूटर सिस्टम के घटक	12 घण्टे
Unit-I	**Computer** 1. History, Generation of Computers, Characteristics, Capabilities and Limitations, 2. Classification of Computers, types of Digital computers, Hardware, Software, Types of software. 3. Generations of Computer, High and low level languages 4. Types of Translators, Components of Computer System	12 Hours
इकाई-II	**डिवाइस का परिचय** 1. विभिन्न इनपुट / आउटपुट डिवाइस का परिचय 2. की–बोर्ड, माऊस, एम.आई.सी.आई., ओ.सी.आर., ओ.एम.आर., बारकोड, स्कैनर 3. वी.डी.यू.प्लॉटर, इम्पैक्ट और नॉन–इम्पैक्ट प्रिन्टर, 4. स्टोरेज इकाई – बिट्स एवं वाइट्स, प्रायमरी एवं सेकेण्डरी मेमोरिज	12 घण्टे
Unit-II	**Introduction of devices** 1. Introduction of various input/output devices 2. Keyboard, mouse, MICR, OCR, OMR, Bar Code, Scanner 3. VDU, Plotter, Impact and Nonimpact printers 4. storage unthis : Bthis and Bytes; Primary and Secondary Memories.	12 Hours
इकाई-III	**विन्डोज** 1. परिचय, विंडोज डेक्सटॉप 2. स्टार्ट बटन, टास्कबार, प्रोग्राम तथा विंडोज के बीच स्विच करना, फाइल मैनेज करना, फोल्डर्स एवं आइजैक्स, 3. विंडोज एक्सप्लोरर, शॉर्ट–कट बनाना, कन्ट्रोल पैनल, विन्डोज एसेसरीज : पेन्ट, ब्रश, बर्ड पैड 4. विंडोज को कस्टमाइज करना, इन्टरनेट एक्सप्लोरर।	12 घण्टे
Unit-III	**Windows** 1. Windows : Introduction, windows desktop 2. start button, taskbar, switching between programs and windows, managing files, folders and objects 3. windows explorer, creating shortcuts, control panel;	12 Hours

	windows accessories :– paint brush, word pad, 4. windows customizing windows, Internet Explorer.	
इकाई-IV	**एम.एस.वर्ड.** 1. हैडर–फुटर, एन्डनोट्स, फुटनोट्स, टैब्स, टेबल्स 2. सॉर्टिंग के साथ कार्य करना, ग्राफिक्स के साथ कार्य करना – ग्राफिक्स इम्पोर्टिंग 3. ड्रॉईंग ऑब्जेक्ट्स, टेक्स्ट ड्रॉईंग (वर्ड आर्ट), ड्राइंग आब्जेक्ट का प्रयोग करके पिक्चर रोटेटिंग एवं ऑब्जेक्ट फ्लीपींग, 4. स्पेलिंग और ग्रामर चेकर, ऑटो करेक्ट, ऑटो टेक्स्ट, क्रिएटिंग टेबल्स, मेल मर्ज।	12 घण्टे
Unit-IV	**MS WORD** 1. Working with Headers, Footers, Endnotes, Footnotes, tabs, tables 2. sorting, Working with graphics: Importing graphics 3. Drawing objects, Text in Drawings (Word Art), Pictures using Drawing objects, Rotating and Flipping Objects 4. Spelling and Grammar Checker, Auto Correct, Auto Text, Creating Tables, Mail Merge.	12 Hours
इकाई-V	**एम.एस. पॉवर प्वाइंट** 1. प्रेजेन्टेशन बनाना, ऑटो कॅटेन्ट विजार्ड, एडिटिंग स्लाइट्स, 2. पॉवर प्वाइंट में टेक्स्ट के साथ काम करना, फॉरमेटिंग एवं एलाइनिंग टेक्स्ट, पॉवर प्वाइंट में ग्राफिक्स के साथ कार्य करना, 3. इमेज इम्पोर्ट करना एवं पॉवर प्वाइंट में ड्रॉइंग, ऑर्गनाइजेशनल चार्ट तैयार करना 4. पॉवर प्वाइंट प्रेजेनटेशन में क्लिप आर्ट एवं पिक्चर, फोटोज़ इन्सर्ट करना, पॉवर प्वाइंट में एक्सल चार्ट्स, वर्ड से टेबल इन्सर्ट करना।	12 घण्टे
Unit-V	**MS POWERPOINT** 1. Creating presentations, Auto content wizard, editing slides 2. Working with Text in Power Point, Formatting and Aligning Text; Working with graphics in Power Point; 3. Importing images from the outside and drawing in power point, creating organizational charts, 4. Inserting clip arts & picture/photos in Power Point Presentation, Excel Charts in Power Point, Inserting Table from Word.	12 Hours
Suggested Readings :	1. Sinha, P.K.: Computer Fundamentals, BPB Publ. 2. Rapidex Computer Courses 3. Jain, Sathish: Introduction to Computer Science, BPB Publ. 4. Mansfield R.: The Compact guide to MS-OFFICE, BPB	
परिलब्धि	**इस पाठ्यक्रम के अध्ययनोपरांत विद्यार्थी कम्प्यूटर पर कार्य करने में सक्षम हो सकेंगे।**	
Outcomes	The students, after their study, will be able to work on Computer.	
	Course Learning Outcome (COs) CO1- Students will be familiar with the introductaion to Computer. CO2 - Students will be familiar with the introductaion of devices. CO3- From this unit students will learn about Windows. CO4 - Students will be familiar with the introductaion MS WORD. CO5- To Understand MS POWERPOINT.	

बी.ए. पाठ्यक्रम (दर्शनशास्त्र) / B.A. Programme (Philosophy)

सेमेस्टर–IV/Semester - IV
मुख्य विषय / Major Core -401
पाश्चात्य दर्शन–II
Western Philosophy-II

Credits- 06
Max. Marks - 60
Min. Marks -

उद्देश्य	इस पाठ्यक्रम का उद्देश्य विद्यार्थियों को आधुनिक पाश्चात्य दार्शनिकों यथा, डेकार्ट, स्पिनोजा, लाइब्नीत्ज, लॉक, बर्कले, ह्यूम, काण्ट और हेगल के विचारों से परिचित कराना है।	
Objective	The objective of this course is to teach the students the principles of modern western thinkers that are Descartes, Spinoza, Leibnitz, Locke, Berkeley and Hume.	
इकाई	**विषय**	**व्याख्यान की संख्या**
इकाई-I	**आधुनिक युग** 1. मध्ययुग की समीक्षा एवं आधुनिक युग की विशेषताएँ 2. पुनर्जागरण 3. धार्मिक आन्दोलन एवं मानवतावाद 4. आधुनिक दर्शन की धाराएँ – बुद्धिवाद एवं अनुभववाद	18 घण्टे
Unit-I	**Modern Era** 1. Criticism of Medieval Era and characteristics of modern Era 2. Renaissance 3. Religions Movement and Humanism 4. Thought of Modern Era Rationalism and Empiricism	18 Hours
इकाई-II	**बुद्धिवाद** 1. देकार्त (द्रव्य की अवधारणा, सन्देह पद्धति, मैं सोचना हूँ, इसलिए मैं हूँ, मन–शरीर की समस्या) 2. स्पिनोजा (देकार्त के द्रव्य की अवधारणा का खण्डन, द्रव्य की अवधारणा, गुण और पर्याय) 3. स्पिनोजा (सर्वेश्वरवाद, समनांतरवाद) 4. लाइब्नीत्ज (चिद्णुवाद, पूर्वस्थापित सामंजस्य का सिद्धान्त)	18 घण्टे
Unit-II	**Rationalism** 1. Descartes - Concept of Substances, Method of Doubt, I think, therefore I am (Cogeto Ergo Sum), Problem of Mind and Body 2. Spinoza - Refutation of Concept of Substance, Attributs and Modes 3. Spinoza - Pantheism, Parallelism 4. Leibnitz - Monadology, Theory of Pre-Established Harmony	18 Hours
इकाई-III	**अनुभववाद** 1. जॉन लॉक (जन्मजात प्रत्ययों का खण्डन, द्रव्य, मूलगुण एवं उपगुण) 2. जॉर्ज बर्कले – जड़ द्रव्य का खण्डन, सत्ता अनुभवमूलक है, आत्मनिष्ठ प्रत्ययवाद 3. डेविड ह्यूम – अनुभववाद की पराकाष्ठा, तात्त्विक सत्ताओं एवं कारणता का खण्डन 4. डेविड ह्यूम – संदेहवाद	18 घण्टे

Unit-III	**Empiricism** 1. John Locke - Refutation of Innate Ideas, Substance, Primary and Secondary Qualities. 2. George Berkeley - Refutation of Materialism, Esse Est Percipi and Subjective Idealism 3. David Hume - Extreme of Empiricism, Refutation of Metaphysical existence and Causality 4. David Hume -Skepticism.	18 Hours
इकाई-IV	**समीक्षावाद** 1. इमान्युएल कान्ट – समीक्षावाद 2. देश और काल 3. संश्लेषणात्मक प्रागनुभविक निर्णय 4. अज्ञेयवाद	18 घण्टे
Unit-IV	**Criticism** 1. Immanual Kant - Criticism 2. Space and Time 3. Apriori synthetic Judgment 4. Agnosticism	18 Hours
इकाई-V	**जार्ज विल्हम फ्रेडरिक हेगल का दर्शन** 1. निरपेक्ष प्रत्ययवाद 2. कारण और तर्क 3. द्वन्द्व न्याय 4. आत्मा का प्रत्यय	18 घण्टे
Unit-V	**Philosophy of George Wilhelm Friedrich Hegel** 1. Absolute Idealism 2. Cause and Reason 3. Dialectics 4. Idea of Mind	18 Hours
Suggested Readings :	1. चन्द्रधर शर्मा, पाश्चात्य दर्शन, मोतीलाल बनारसीदास, दिल्ली, 1997 2. डॉ. बी.एन. सिंह, पाश्चात्य दर्शन, स्टूण्डेट्स फ्रेण्ड्स एण्ड कम्पनी, वाराणसी, 1973 3. याकूब मसीह, पाश्चात्य दर्शन का समीक्षात्मक इतिहास, मोतीलाल बनारसीदास, नई दिल्ली, 2005 4. जगदीश सहाय श्रीवास्तव, आधुनिक पाश्चात्य दर्शन का वैज्ञानिक इतिहास, पुस्तक स्थान, गोरखपुर, 1973 5. Frank Thilly, History of Western Philosophy, Central Book Depot, Allahabad, 1975 6. Stace, W.T.: A Critical History of Greek Philosophy Macmillan, New Delhi, 1985 7. Masih, Y. - A Critical History of Western Philosophy, Motilal Banarasidas, Delhi, 1994	
परिलब्धि	यह पाठ्यक्रम आधुनिक पाश्चात्य दार्शनिक सिद्धान्तों को समझने में सहायक होगा।	
Outcomes	This course will help to students understanding the principles of Modern western Philosophers.	
	Course Learning Outcome (COs) CO1- Students will be familiar with the introduction to western philosophy of Modern Era. CO2 - Students will be familiar with the introduction of Rationalism Philosophy, Descartes, Spinoza and Leibnitz. CO3- From this unit students will learn about Empiricism**,** John Locke, George Berkeley and David Hume. CO4 - Students will be familiar with the introductaion to Criticism philosophy in Immanual Kant. CO5- To Understand Philosophy of George Wilhelm Friedrich Hegel.	

बी.ए. पाठ्यक्रम (दर्शनशास्त्र) /B.A. Programme (Philosophy)

सेमेस्टर–IV Semester - IV

Credits- 06
Max. Marks - 60
Min. Marks -

गौण विषय / Miner Core -402

प्राचीन दक्षिण भारत का राजनैतिक इतिहास

Political History of Ancient South India

उद्देश्य	इस पाठ्यक्रम का उद्देश्य विद्यार्थियों को प्राचीन दक्षिण भारत के राजनैतिक इतिहास से परिचित कराना है।	
Objective	The objective of this course is to teach the students the political history of Ancient South India.	
इकाई	**विषय**	**व्याख्यान की संख्या**
इकाई-I	**संगम युग** 1. संगम साहित्य 2. चोल, चेर, पाण्ड्य राजवंश 3. संगमयुग – संस्कृति एवं सामाजिक दशा 4. संगम युग – राजनैतिक एवं शासन व्यवस्था	18 घण्टे
Unit-I	**Sangam Period** 1. Sangam Literature 2. Chol, Cher, Pandy Dynasty 3. Sangam Period - Culture and Social Condition 4. Sangam Period - Polytical and Administrative System	18 Hours
इकाई-II	**चालुक्य राजवंश** 1. वातापी का चालुक्य राजवंश 2. कल्याणी का चालुक्य राजवंश 3. वेंगी का चालुक्य राजवंश 4. चालुक्यकालीन राजनैतिक एवं शासन व्यवस्था	18 घण्टे
Unit-II	**Chalukya Dynasty** 1. Chalukya Dynasty of Vatapi 2. Chalukya Dynasty of Kalyani 3. Chalukya Dynasty of Vengi 4. Chalukya Period - Political and Administrative System	18 Hours
इकाई-III	**राष्ट्रकूट राजवंश** 1. साधन, उत्पत्ति एवं मूल स्थान 2. विभिन्न राष्ट्रकूट शाखाएँ 3. मान्यखेट का राष्ट्रकूट राजवंश 4. राष्ट्रकूटकालीन राजनैतिक एवं शासन व्यवस्था	18 घण्टे
Unit-III	**Rashtrakuta Dynasty** 1. Source, Origin and Place 2. Various Branches of Rashtrakuta 3. Rashtrakuta Dynasty of Manyakheta 4. Rashtrakuta Period - Political and Administrative System	18 Hours
इकाई-IV	**पल्लव राजवंश** 1. साधन, उत्पत्ति एवं मूल स्थान 2. कांची के पल्लव शासक 3. पल्लव काल – संस्कृति, कला एवं स्थापत्य 4. पल्लव काल – राजनैतिक एवं शासन व्यवस्था	18 घण्टे
Unit-IV	**Pallava Period** 1. Source, Origin and Place 2. Pallava Ruler of Kanchi 3. Pallava Period - Culture, Art and Architecture 4. Pallava Period - Political and Administrative System	18 Hours

इकाई-V	**चोल राजवंश** 1. साधन एवं प्रारम्भिक इतिहास 2. चोल राज्य का स्वरूप 3. चोल काल – संस्कृति, कला एवं स्थापत्य 4. चोल काल – राजनैतिक व्यवस्था एवं ग्राम प्रशासन	18 घण्टे
Unit-V	**Chola Dynasty** 1. Source and Early History 2. Nature of Chola State 3. Chola Period - Culture, Art and Architecture 4. Chola Period - Political and Village Administration System	18 Hours
Suggested Readings :	1. विमलचन्द्र पाण्डेय, प्राचीन भारत का इतिहास, सेन्ट्रल पब्लिशिंग हाउस, इलाहाबाद, 2016 2. जयशंकर मिश्र, प्राचीन भारत का सामाजिक इतिहास, बिहार हिन्दी ग्रन्थ अकादमी, 1974 3. के.सी. श्रीवास्तव, प्राचीन भारतीय इतिहास एवं संस्कृति, यूनाइटेड बुक डिपो, 2000 4. प्रो. महेश चन्द्र श्रीवास्तव, प्राचीन भारत का इतिहास (पूर्व–ऐतिहासिक काल से 320 ई. तक) शिवांक प्रकाशन, नई दिल्ली, 2020 5. रोमिला थापर, भारत का इतिहास, राजकमल प्रकाशन, नई दिल्ली, 2000 6. Prof. Mahesh Chandra Shrivastava - Ancient History of Indian, Manisha Publication, Delhi, 2018	
परिलब्धि	विद्यार्थी पाठ्यक्रम के अध्ययनोपरान्त प्राचीन दक्षिण भारत के राजनैतिक इतिहास से परिचित होकर वर्तमान राजनैतिक व्यवस्था का तुलनात्मक अध्ययन कर सकेंगे।	
Outcomes	This Course will encourage the students for comparative study in political history of Ancient South India and Modern Political system.	
	Course Learning Outcome (COs) CO1- Students will be familiar with the introduction to Sangam Period. CO2 - Students will be familiar with the introduction to Chalukya Dynasty. CO3- From this unit students will learn about Rashtrakuta Dynasty. CO4 - Students will be familiar with the introduction to Pallava Period. CO5- To Understand Chola Dynasty.	

बी.ए. पाठ्यक्रम (दर्शनशास्त्र) / B.A. Programme (Philosophy)

सेमेस्टर–IV / Semester - IV

वैकल्पिक विषय/ Generic Elective (G.E.) - 403

शिक्षा दर्शन

Philosophy of Education

Credits- 04
Max. Marks - 60
Min. Marks -

उद्देश्य	इस पाठ्यक्रम का उद्देश्य शिक्षा और मूल्य के माध्यम से विद्यार्थियों का व्यक्तित्व विकास करना है जिससे वे समाज के लिए हितकारी हो सकें।	
Objective -	The objective of this course is to teach the students the Education and Values for their personality development and betterment of society.	
इकाई	**विषय**	**व्याख्यान की संख्या**
इकाई-I	**शिक्षा दर्शन** 1. शिक्षा दर्शन – स्वरूप, क्षेत्र एवं कार्य 2. शिक्षा का स्वरूप 3. शिक्षा के प्रकार 4. दर्शन का स्वरूप, दर्शन एवं फिलॉसफी में अन्तर	12 घण्टे
Unit-I	**Philosophy of Education** 1. Philosophy of Education - Nature, Scope and Function 2. Nature of Education 3. Types of Education 4. Nature of Philosophy, Difference between Darshan and Philosophy	12 Hours
इकाई-II	**उपनिषद् दर्शन एवं शिक्षा** 1. उपनिषद् दर्शन – सामान्य परिचय 2. उपनिषद् दर्शन के मूल सिद्धान्त 3. उपनिषद् दर्शन और शिक्षा 4. शिक्षा दर्शन के रूप में उपनिषद् दर्शन का मूल्यांकन	12 घण्टे
Unit-II	**Upnishad Darshan and Education** 1. Upnishad Darshan - General Introduction 2. Fundamentals of Upnishad Darshan 3. Upnishad Darshan and Education 4. Evaluation of Upanishad Darshan as a Philosophy of Education	12 Hours
इकाई-III	**मूल्य शिक्षा** 1. मूल्य का स्वरूप 2. मूल्यों का वर्गीकरण 3. मूल्यों का उद्देश्य एवं विशेषताएँ 4. परिवार एवं मूल्य शिक्षा	12 घण्टे
Unit-III	**Value Education** 1. Nature of value 2. Classification of values 3. Aims and Characteristics of values 4. Family and value Education	12 Hours

इकाई-IV	**विद्यालय और शिक्षा** 1. विद्यालय – अर्थ, आवश्यकता एवं महत्व 2. विद्यालयों के उत्तरदायित्व एवं कार्य 3. विद्यालय एवं परिवार में सहयोग 4. विद्यालय एवं समुदाय में सहयोग	12 घण्टे
Unit-IV	**School and Education** 1. School - Meaning, need and Importance 2. Responsibilities and Functions of Schools 3. Support in School and Family 4. Support in School and Community	12 Hours
इकाई-V	**भारतीय चिन्तकों का शिक्षा दर्शन** 1. स्वामी दयानन्द का शिक्षा दर्शन 2. स्वामी विवेकानन्द का शिक्षा दर्शन 3. श्री अरविन्द का शिक्षा दर्शन 4. महात्मा गाँधी का शिक्षा दर्शन	12 घण्टे
Unit-V	**Education Philosophy of Indian Thinkers** 1. Education Philosophy of Swami Dayanand 2. Education Philosophy of Swami Vivekananda 3. Education Philosophy of Sri Aurobindo 4. Education Philosophy of Mahatma Gandhi	12 Hours
Suggested Readings :	1. डॉ. योगेश कुमार सिंह, शिक्षा–दर्शन, यूनिवर्सिटी पब्लिकेशन्स, नई दिल्ली, 2007 2. डॉ. सुरेन्द्र कुमार शर्मा, शिक्षा–दर्शन, डिस्कवरी पब्लिशिंग हाउस, नई दिल्ली, 2006 3. डॉ. अशोक कुमार सिंह, भारतीय शिक्षा–दर्शन, दर्शना पब्लिकेशन, भागलपुर, बिहार, 2018 4. डॉ. एस.के.पाल, प्रो. एल.एन. गुप्त एवं प्रो. मदन मोहन, शिक्षा के दार्शनिक एवं समाजशास्त्री आधार, कैलाश प्रकाशन, इलाहाबाद, 2000 5. रमन बिहारी लाल, शिक्षा के दार्शनिक एवं समाजशास्त्रीय सिद्धान्त, रस्तोगी पब्लिकेशन्स, मेरठ, 2000	
परिलब्धि	शिक्षा दर्शन के चिन्तन से युक्त विद्यार्थी स्वयं के जीवन तथा समाज में उत्पन्न समस्याओं का यथोचित समाधान प्रस्तुत करने में सक्षम हो सकेंगे।	
Outcomes -	On the basis of this course the students will be able to handle different kinds of situations of life and their society.	
	Course Learning Outcome (COs) CO1- Students will be familiar with the introduction to Philosophy of Education. CO2 - Students will be familiar with the introduction to Upnishad Darshan and Education. CO3- From this unit students will learn about Value Education. CO4 - To Understand the basic Concept of School and Education. CO5- To Understand Education Philosophy of Indian Thinkers.	

बी.ए. पाठ्यक्रम (दर्शनशास्त्र) / B.A. Programme (Philosophy)

सेमेस्टर–II /Semester - IV

Credits- 04
Max. Marks - 60
Min. Marks -

एबिलिटी एन्हांसमेंट / Ability Enhancement- (A.E.) -404

जीवन मूल्य एवं व्यक्तित्व विकास

Life values and Personality Development

उद्देश्य	इस पाठ्यक्रम का उद्देश्य विद्यार्थियों को नैतिक जीवन मूल्यों के ज्ञान से व्यक्तित्व विकास करना है।	
Objective -	The objective of this course is to teach the students the moral life values for their personality development.	
इकाई	**विषय**	**व्याख्यान की संख्या**
इकाई-I	**मूल्य** 1. मूल्य का अर्थ 2. मूल्यों का वर्गीकरण 3. जीवन मूल्य की अवधारणा 4. जीवन मूल्यों का महत्व	12 घण्टे
Unit-I	**Values** 1. Meaning of values 2. Classification of values 3. concept of life values 4. Importance of life values	12 Hours
इकाई-II	**चरित्र–निर्माण** 1. चरित्र का अर्थ और परिभाषा 2. उत्तम चरित्र के निर्माण का साधन 3. उत्तम चरित्र के लक्षण 4. चरित्र निर्माण में शिक्षा की भूमिका	12 घण्टे
Unit-II	**Character building** 1. Meaning and definition of character 2. Means of Good character building 3. Trathis of Good character 4. Role of Education in character Building	12 Hours
इकाई-III	**सद्गुण** 1. यम 2. नियम 3. कर्मयोग 4. विश्व बन्धुत्व की भावना (वसुधैव कुटुम्बकम)	12 घण्टे
Unit-III	**Virtues** 1. Yama 2. Niyama 3. Karmayoga 4. Vasudhaiva Kutumbakam	12 Hours
इकाई-IV	**आदतें** **1.** अनुशासन **2.** समय–प्रबंधन **3.** नियमित दिनचर्या **4.** सकारात्मक चिन्तन	12 घण्टे

Unit-IV	**Habthis** 1. Discipline 2. Time Management 3. Regular routine 4. Positive thinking	12 Hours
इकाई-V	**व्यक्तित्व विकास** 1. व्यक्तित्व विकास की अवधारणा 2. व्यक्तित्व विकास का अर्थ 3. व्यक्तित्व विकास एवं चरित्र 4. व्यक्तित्व विकास में जीवन मूल्यों की भूमिका	12 घण्टे
Unit-V	**Personality Development** 1. Concept of Personality 2. Meaning of Personality Development 3. Personality Development and Character 4. Role of life values in Personality Development	12 Hours
Suggested Readings :	1. स्वामी विवेकानन्द, व्यक्तित्व का सम्पूर्ण विकास, प्रकाशक रामकृष्ण मठ, नागपुर, 2006 2. डॉ.एम.ए. बेग, व्यक्तित्व विकास एवं निखार, मध्य प्रदेश हिन्दी ग्रन्थ अकादमी, भोपाल, 1997 3. बैजनाथ सिंह, व्यक्तिगत और सामुदायिक विकास, ब्रिटिश बुक डिपो, हजरतगंज लखनऊ, 1961 4. अरुण सागर, शिष्टाचार एवं व्यक्तित्व विकास, आनन्द, वी एण्ड एस पब्लिशर्स, नई दिल्ली, 2017 5. डॉ. सुरेषचन्द्र शर्मा, व्यक्तित्व विकास और भगवद्गीता, मंजुल पब्लिशिंग हाउस, भोपाल, 2016 6. प्रो. समानी ऋजुप्रज्ञा, व्यक्तित्व विकास और योग, जैन विश्व भारती बुक स्टोर, राजस्थान, 2015 7. अजित नारायण त्रिपाठी, नैतिक और मानवीय मूल्य, प्रतिश्रुति प्रकाशन, कलकत्ता, 2017 8. Barun K. Mitra, Personality Development and soft skills, Oxford University Press, 2016	
परिलब्धि	इस पाठ्यक्रम के अध्ययन के उपरांत विद्यार्थी सद्गुणों से युक्त होकर समाज के बेहतरी के लिए कार्य कर सकेंगे।	
Outcomes	On the basis of this course the students will be able to handle different kinds of situations of life and their society.	
	Course Learning Outcome (COs) CO1- Students will be familiar with the introduction to concept of life values. CO2 - Students will be familiar with the introduction to Means of Good character building. CO3- From this unit students will learn about Vasudhaiva Kutumbakam. CO4 - To Understand the basic Concept of School and Education. CO5- To Understand Role of life values in Personality Development.	

DEPARTMENT OF PHILOSOPHY

SYLLABUS
CHOICE BASED CREDIT SYSTEM
(CBCS)

M. A. PHILOSOPHY

AWADHESH PRATAP SINGH
UNIVERSITY REWA (M.P.)

M.A. PHILOSOPHY
EXAMINATION SCHEME
(CBCS)

Semester	Paper No	Nomenclature	Type of Course	Theory/ External Assessment		Internal Assessment		Total Marks	Credit Point
				Max	Min	Max	Min		
Semester I	101	Indian Metaphysics	C.C.	60	21	40	14	100	04
	102	Western Metaphysics	C.C.	60	21	40	14	100	04
	103	Social Philosophy - I	C.C.	60	21	40	14	100	04
	104	Advaita Vedanta*	G.E.	60	21	40	14	100	04
	105	Comprehensive Viva-voce	C.C	Minimum Passing Marks - 35				100	04
Semester II	201	Indian Epistemology	C.C.	60	21	40	14	100	04
	202	Western Epistemology	C.C.	60	21	40	14	100	04
	203	Social Philosophy - II	C.C.	60	21	40	14	100	04
	204	Patanjal Yogsutra*	G.E.	60	21	40	14	100	04
	205	Comprehensive Viva-voce	C.C	Minimum Passing Marks - 35				100	04
Semester III	301	Philosophy of Religion - I	C.C.	60	21	40	14	100	04
	302	Logic - I	C.C.	60	21	40	14	100	04
	303	(A) ** Gandhian Philosophy Or (B) Western Ethics	D.C.E.	60	21	40	14	100	04
	304	Indian Ethics*	G.E.	60	21	40	14	100	04
	305	Comprehensive Viva-voce	C.C	Minimum Passing Marks - 35				100	04
Semester IV	401	Philosophy of Religion - II	C.C.	60	21	40	14	100	04
	402	Logic - II	C.C.	60	21	40	14	100	04
	403	(A)** Contemporary Indian Philosophy Or (B) Contemporary Western Philosophy	D.C.E.	60	21	40	14	100	04
	404	Vedanta Darshan*	G.E.	60	21	40	14	100	04
	405	Comprehensive Viva-voce	C.C	Minimum Passing Marks - 35				100	04

CC - Core Course, **GE** - Generic Elective, **DCE** - Discipline Centric Elective.

***** Students may choose this course as a Generic Elective or may choose a Course Offered in other UTDs or may choose a Course offered by MOOCs through SWAYAM. This Course can be Chosen by the students of other UTDs also.

****** Students may choose any one course as Discipline Centric Electives from the two choice based specialization offered A or B.

Overall Objective of Courses of M. A. in Philosophy

Philosophy is the heart of all known branches of academic discipline and it centrally regulates the activities and functions of our body, mind and intellect. Likewise Philosophy is the 'gem' of all human wit and wisdom. This is the reason that the Ph. D. degree holder in Physics, Chemistry, Maths, Botany obtains the degree of "Doctor of Philosophy in Computer Science" or "Doctor of Philosophy in Geology" and so on and so forth.

There are four pillars of Philosophy - Theoretical Philosophy (Metaphysics and Epistemology), Practical Philosophy (Ethics, Social and Political Philosophy, Aesthetics), Logic and History of Philosophy. It was kept in mind that all these components may remain included in our courses of study with balanced focus on Indian and Western Philosophy.

This programme with all its credits may help one become a good human being. Philosophy tells the difference between what man does and what he should do. It also helps one to know the goal of life. Most of the times, in life, man gets into dilemma and does not find himself able to get at the right direction and take the right decision. Such situations of life are handled in a better way by the knowledge of different schools of philosophy, Indian and Western.

The participants of this programme will be simultaneously prepared for Civil Services and other competitive exams. The moral values learned would be extremely beneficial for their professional success. Some of the participants with bright career can join the noble profession of teaching in higher education. Corporate would in full of stress now-a-days and there is a demand for their stress management, mental health and behavioural integrity. The participants of this programme can choose a career to become life coach to such target groups for their spiritual enlightment.

DEPARTMENT OF PHILOSOPHY
PROGRAMME OUTCOMES M.A. PHILOSOPHY

PO #	PROGRAMME OUTCOMES
PO 1	**Critical Thinking**: Take informed actions after identifying the assumptions that frame our thinking and actions, check out the degree to which these assumptions are accurate and valid, and look at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.
PO 2	**Effective Communication**: Speak, read, write and listen clearly in person and through electronic media in English, Hindi and in other regional language, and make meaning of the world by connecting people, ideas, books, media and technology and also speak and write effectively in the discourse of the discipline.
PO 3	**Social Interaction:** Understanding the relationships between theories, observations, and conclusions. Elicit views of others, mediate disagreements and help Reach conclusions in group settings.
PO 4	**Effective Citizenship**: Synthesize natural science and social science aspects of Philosophy. Demonstrate empathetic social concern and equity-centered national development
PO 5	**Ethics**: Understand the ethical practice of scientific inquiry. recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.
PO 6	**Environment and Sustainability :** Develop integrity, sensitivity and an appreciation for the diversity of the human experience. Work effectively with others and on teams.
PO 7	**Life-long Learning**: Acquire the ability to engage in Independent and life-long learning in the broadest context of socio- technological changes and be encouraged to keep abreast of current trends in the field of Philosophy.

DEPARTMENT OF PHILOSOPHY

PROGRAMME SPECIFIC OUTCOMES (MA PHILOSOPHY)

PSO #	PROGRAMME SPECIFIC OUTCOMES
PSO 1	To gain a functional knowledge of theoretical concepts Aspects of Indian Philosophy and their applications in the day-to-day life.
PSO 2	To integrate the gained knowledge with various contemporary and evolving areas in Philosophy like Indian Metaphysics, Western Metaphysics, Social Philosophy-I, Advaita Vedanta-I etc.
PSO 3	To understand, analyze, plan and implement qualitative as well as quantitative and analytical related to Ethics & Logic Philosophy.
PSO 4	Develop insight to excel; Adjust in academics, research or Industry skill enhancement and real word situation based courses like Indian Logic, Western Logic, Philosophy of Religion - II, Vedanta Darshan-II.

दर्शनशास्त्र **Philosophy**

एम. ए. प्रथम सेमेस्टर **M.A. I Semester**

Course	-	**Indian Metaphysics (भारतीय तत्त्वमीमांसा)**
Type of Course	-	**Core Course (C.C.)**
Paper	-	**101**
Marks	-	**60 (Theory) + 40 (Internal Assessment) = 100**

Objective - The objective of this course is to teach and train the students about all the metaphysical concepts and ideas of Classical Indian Metaphysics delving deep into the basics and fundamentals of Upanishads, Charvaka, Jaina, Buddhist, Sankhya and other Schools of Indian Philosophy. This will help the students to evaluate each system in critical and comparative light.

इकाई – 1 Unit - I

उपनिषद् – ब्रह्म का स्वरूप, निर्गुण ब्रह्म, सगुण ब्रह्म, आत्म तत्त्व, आत्मचेतना की चार अवस्थायें, आत्मा के कोश, मोक्ष का स्वरूप, मोक्ष के प्रकार। Upanishad - Nature of Brahman, Nirguna Brahman, Saguna Brahman, Atman (Self), Four stages of the self Consciousness, Kosha of Self, Nature of Liberation (Moksha), Kinds of Moksha.

इकाई – 2 Unit - II

चार्वाक दर्शन – तत्त्वमीमांसा, जैन दर्शन – जीव द्रव्य, अजीव द्रव्य, अनेकान्तवाद, स्याद्वाद, मोक्ष का स्वरूप। Charvaka Philosophy - Metaphysics, Jaina Philosophy - Jiva Dravya, Ajiva Dravya, Anekantavada, Syadvada, Nature of Moksha.

इकाई – 3 Unit - III

बौद्ध दर्शन – क्षणिकवाद, अनात्मवाद, सांख्य दर्शन – सत्कार्यवाद, पुरुष का स्वरूप, प्रकृति का स्वरूप, विकासवाद, मोक्ष का स्वरूप। Buddhist Philosophy - Momentarialism, Anatmavada, Sankhya Philosophy - Satkaryavada, Nature of Purusha, Nature of Prakriti, Evolutionism, Nature of Moksha.

इकाई – 4 Unit - IV

योग दर्शन – अभ्यास–वैराग्य, कियायोग, अष्टांग योग, ईश्वर का स्वरूप, न्याय दर्शन – आत्मा का स्वरूप, ईश्वर का स्वरूप। Yoga Philosophy - Abhyasa-Vairagya, Kriyayoga, Ashtanga Yoga, Nature of God, Nyaya Philosophy - Nature of Atman, Nature of God.

इकाई – 5 Unit - V

वैशेषिक दर्शन – सप्तपदार्थ, परमाणुवाद, मोक्ष का स्वरूप, मीमांसा दर्शन – धर्म, कर्म सिद्धान्त। Vaisheshika Philosophy - Seven Padarthas, Atomism, Nature of Moksha, Mimamsa Philosophy - Dharma, Theory of Karma.

उपयोगी ग्रंथ – **Suggested Readings :**

1. डॉ. चन्द्रधर शर्मा, भारतीय दर्शन अलोचन और अनुशीलन, मोतीलाल बनारसीदास, दिल्ली 1995
2. डॉ. बी.एन. सिंह एवं डॉ. आशा सिंह, भारतीय दर्शन, स्टूडेण्ट्स फ्रेण्ड्स एण्ड कम्पनी, वाराणसी, 1996
3. प्रो. हरेन्द्र प्रसाद सिन्हा, भारतीय दर्शन की रूपरेखा, मोतीलाल बनारसीदास, दिल्ली, 1963
4. बलदेव उपाध्याय, भारतीय दर्शन, शारदा मन्दिर, वाराणसी, 1997
5. नन्द किशोर देवराज, भारतीय दर्शन, उत्तर प्रदेश हिन्दी ग्रन्थ अकादमी, लखनऊ, 1975
6. Dutta & Chatterjee, An Introduction to Indian Philosophy, University of Calcutta, 1968.
7. M. Hiriyanna, Outlines of Indian Philosophy, George Allen and Unwin, Lodon, 1932.

Outcomes - Through this course students will come face to face with philosophical and rich cultural wisdom of our ancient thinkers. We also hope that students horizon of knowledge will be widened considerably.

Course Learning Outcome (COs)

CO1-Understanding of Upanishad, Brahman, Atman, Kosha And Moksha.
CO2 - To understand the basic Concept of Charvaka and Jain philosophy in Indian metaphysics.
CO3- Students will be familiar with the Momentarialism of Buddhist philosophy, Satkaryavad and Evolutionism of Samkhya philosophy.
CO4 - Concept of Yoga Philosophy & Nyaya Philosophy.
CO5- from tis unit students will learn about Vaisheshika Philosophy - Seven Padarthas, Atomism, Nature of Moksha, Mimamsa Philosophy - Dharma, Theory of Karma.

दर्शनशास्त्र **Philosophy**

एम. ए. प्रथम सेमेस्टर **M.A. I Semester**

Course	-	**Western Metaphysics (पाश्चात्य तत्त्वमीमांसा)**
Types of Course	-	**Core Course (C.C.)**
Paper	-	**102**
Marks	-	**60 (Theory) + 40 (Internal Assessment) = 100**

Objective - The objectives of teaching this course would be to familiarize the students with the philosophical theories and tenets of very important Western thinkers starting from Socrates, Plato, Aristotle and passing through the Medieval thinkers St. Augustine, St. Anselm and St. Thomas Aquinas and ultimately including at Descartes, Spinoza and Leibnitz.

इकाई – 1 Unit - I

दर्शन का स्वरूप, दर्शन एवं तत्त्वमीमांसा, दर्शन एवं धर्म, पाश्चात्य दर्शन एवं भारतीय दर्शन में अंतर, सुकरात की पद्धति। Nature of Philosophy, Philosophy and Metaphysics, Philosophy and Religion, Difference between Western Philosophy and Indian Philosophy, Socratic Method.

इकाई – 2 Unit - II

प्लेटो – विज्ञानवाद, विज्ञान की विशेषताएँ, विज्ञान और वस्तु में सम्बन्ध, परम शुभ का विज्ञान, ईश्वर–विचार, आत्मा। Plato - Idealism, Characteristics of Ideas, Relation between Ideas and Objects, Idea of the Good, Demi-urge, Human Soul.

इकाई – 3 Unit - III

अरस्तू – तत्त्वमीमांसा, कारणता, द्रव्य और स्वरूप, ईश्वर। Aristotle - Metaphysics, Causation, Matter and Form, God.

इकाई – 4 Unit - IV

मध्ययुग की विशेषताएँ, संत ऑगस्टाइन – ईश्वर का स्वरूप, संत एन्सेल्म – ईश्वर अस्तित्व के प्रमाण, संत थॉमस एक्वीनस – ईश्वर सिद्धि के लिए प्रमाण। Characteristics of Medieval Age, St. Augustine - Nature of God, St. Anselm - Proof for the existence of God, St. Thomas Aquinas - Proof for the existence of God.

इकाई – 5 Unit - V

देकार्त – द्वैतवाद, स्पिनोजा – सर्वेश्वरवाद, समानान्तरवाद, लाइब्नीत्ज – चिदणुवाद, पूर्व स्थापित सामंजस्य का सिद्धान्त। Descartes - Dualism, Spinoza - Pantheism, Parallelism, Leibnitz - Monadology, Theory of Pre-established harmony.

उपयोगी ग्रंथ – **Suggested Readings :**

1. चन्द्रधर शर्मा, पाश्चात्य दर्शन, मोतीलाल बनारसीदास, दिल्ली, 1997
2. डॉ. बी.एन. सिंह, पाश्चात्य दर्शन, स्टूण्डेट्स फ्रेण्ड्स एण्ड कम्पनी, वाराणसी, 1973
3. याकूब मसीह, पाश्चात्य दर्शन का समीक्षात्मक इतिहास, मोतीलाल बनारसीदास, दिल्ली, 2005
4. जगदीश सहाय श्रीवास्तव, आधुनिक पाश्चात्य दर्शन का वैज्ञानिक इतिहास, पुस्तक स्थान, गोरखपुर, 1973
5. Will Durant, A story of Philosophy, Simon & Schuster, 1926 & Pocket Books, New York, 2006
6. Bertand Russell, A History of Western Philosophy, Union paper Backs, London, 1987
7. Frank Thilly, History of Western Philosophy, Central Book Depot, Allahabad, 1975
8. W.T Stace, A Critical History of Greek Philosophy Macmillan, New Delhi, 1985
9. Y. Masih, A Critical History of Western Philosophy, Motilal Banarasidas, Delhi, 1994.

Outcomes - Students will learn the well-connected history of human wisdom from Greek period to the Modern period beginning with Rene Descartes.

Course Learning Outcome (COs)

CO1- The importance and usefulness of studying Philosophy and Metaphysics Western Philosophy and Socratic Method.
CO2- Undrestanding of Plato Philosophy.
CO3- Understanding Aristotle Metaphysics.
CO4- Understanding of Medieval Age, St. Augustine, St. Anselm and St. Thomas Aquinas.
CO5- Understanding of Descartes, Spinoza and Leibnitz Philosophy.

दर्शनशास्त्र **Philosophy**

एम. ए. प्रथम सेमेस्टर **M.A. I Semester**

Course	-	**Social Philosophy - I (समाज दर्शन - I)**
Types of Course	-	**Core Course (C.C.)**
Paper	-	**103**
Marks	-	**60 (Theory) + 40 (Internal Assessment) = 100**

Objective - The objective of this course is to make students conversant with Social Philosophy and its relation to Sociology, Political Science and Ethics. This course will also help in understanding family, marriages, state and justice in all ramifications. It is mainly concerned with the study of the values of various social phenomena.

इकाई – 1 Unit - I

समाज दर्शन – स्वरूप एवं विशेषताएँ, समाज दर्शन एवं समाजशास्त्र, समाज दर्शन एवं राजनीतिशास्त्र, समाज दर्शन एवं नीतिशास्त्र। Social Philosophy - Nature and Characteristics, Social Philosophy and Sociology, Social Philosophy and Political Science, Social Philosophy and Ethics.

इकाई – 2 Unit - II

परिवार – स्वरूप एवं विशेषताएँ, परिवार की उत्पत्ति के सिद्धान्त – पितृसत्तात्मक, मातृसत्तात्मक, एक विवाही, लिंग साम्यवादी, विकासात्मक सिद्धान्त, परिवार के कार्य, परिवार की दुर्बलताएँ। Family - Nature and Characteristics, Theory of Origin of Family - Patriarchal, Matriarchal, Monogamous, Sex Communism, Evolutionary Theory, Function of Family, Weakness of Family.

इकाई – 3 Unit - III

समाज – स्वरूप एवं मूल तत्त्व, समाज की उत्पत्ति के सिद्धान्त – सामाजिक अनुबन्ध, दैवी उत्पत्ति, पैतृक, मातृक, विकासवादी सिद्धान्त। Society - Nature and Fundamental Elements, Theory of Origin of Society - Social Contract, Divine Origin, Patriarchal, Matriarchal, Evolutionary Theory.

इकाई – 4 Unit - IV

राज्य – स्वरूप एवं मूल तत्त्व, राज्य की उत्पत्ति के सिद्धान्त – दैवी उत्पत्ति, शक्ति सिद्धान्त, पैतृक–मातृक, सामाजिक अनुबंध, विकासवादी सिद्धान्त। State - Nature and Fundamental Elements, Theory of Origin of State - Divine Origin, Theory of Force, Patriarchal-Matriarchal, Social Contract, Evolutionary Theory.

इकाई – 5 Unit - V

न्याय की अवधारणा, पुरस्कार और दण्ड, दण्ड के सिद्धान्त – प्रतिफलात्मक, निवर्तक, सुधारात्मक, आदर्शवादी सिद्धान्त। Concept of Justice, Reward and Punishment, Theory of Punishment - Retributive, Deterrent, Reformative, Idealistic Theory.

उपयोगी ग्रंथ – **Suggested Readings**

1. डॉ. ए. अवस्थी एवं डॉ. आर.के. अवस्थी, भारतीय राजनीतिक चिन्तन, रिसर्च पब्लिकेशन्स, जयपुर,
2. डॉ. जगदीशसहाय श्रीवास्तव, समाज–दर्शन की भूमिका, विश्वविद्यालय प्रकाशन, वाराणसी, 1999
3. डॉ. हृदय नारायण मिश्र, समाज दर्शन सैद्धांतिक एवं समस्यात्मक विवेचन, शेखर प्रकाशन, इलाहाबाद, 2003
4. बी.एन. सिंह, समाज दर्शन एवं राजनीति दर्शन, आशा प्रकाशन, वाराणसी, 1990
6. Krishna Saya, Social Philosophy: Past and Future, Indian Institute of Advanced Studies, 1978

Outcomes - A deep and wider knowledge of society, family, state and justice will help to understand the structure and complications of our society and various theories.

Course Learning Outcome (COs)

CO1- Concept of Social Philosophy and its reliation with other fields.
CO2- Understanding Family : Origin and Function.
CO3- Understanding of Society Fundamental Elements and Origin.
CO4 - Concept of State Origin.
CO5- Understanding of Justice, Reward and Punishment.

दर्शनशास्त्र **Philosophy**

एम. ए. प्रथम सेमेस्टर **M.A. I Semester**

Course	-	**Advaita Vedanta (अद्वैत वेदान्त)**
Types of Course	-	**Generic Elective (G.E.)**
Paper	-	**104**
Marks	-	**60 (Theory) + 40 (Internal Assessment) = 100**

Objective - This course aims at providing students with deep and sound knowledge of Advaita Philosophy. It will introduce concepts such as Maya, Brahman, Jivanmukti, Videhmukti and so on and so forth.

इकाई – 1 Unit - I

अद्वैत वेदान्त का अर्थ, गौडपादाचार्य – माण्डूक्य कारिका का सामान्य परिचय, अजातिवाद, आत्मतत्त्ववाद, अस्पर्शयोग। Meaning of Advaita Vedanta, Gaudapadacharya - A General Introduction of Mandukyakarika, Ajativada, Atmatattvavada, Asparshayoga.

इकाई – 2 Unit - II

शंकराचार्य – जीवन परिचय, साधन–चतुष्टय – विवेक, वैराग्य, षट्क सम्पत्ति, मुमुक्षुत्व, परिणामवाद और विवर्तवाद। Shankaracharya - Life Sketch, Sadhan Chatushtaya - Viveka, Vairagya, Shatka Sampatti, Mumukshutva, Parinamavada and Vivartavada.

इकाई – 3 Unit - III

सत्–असत्–सदसत् विचार, त्रिविध सत्ता – प्रातिभासिक, व्यावहारिक, पारमार्थिक, जगत् का स्वरूप, अनिर्वचनीयख्यातिवाद। Sat-Asat-Sadasat, Trividh Satta - Pratibhasika, Vyavharika, Parmarthika, Nature of the World, Anirvachaniyakhyativada.

इकाई – 4 Unit - IV

माया का स्वरूप, ब्रह्म का स्वरूप, जीव का स्वरूप, साक्षी, ईश्वर का स्वरूप। Nature of Maya, Nature of Brahman, Nature of Jiva, Sakshi, Nature of God.

इकाई – 5 Unit - V

मोक्ष का स्वरूप, जीवन्मुक्ति एवं विदेहमुक्ति, तत्त्वमसि का अर्थ, ज्ञान और कर्म, प्रकृति परिणामवाद का खण्डन। Nature of Moksha, Jivanmukti and Videhmukti, Meaning of Tattvamasi, Jnana and Karma, Refutation of Prakriti Parinamavada.

उपयोगी ग्रंथ – **Suggested Readings :**

1. डॉ. चन्द्रधर शर्मा, भारतीय दर्शन अलोचन और अनुशीलन, मोतीलाल बनारसीदास, दिल्ली, 1995
2. डॉ. बी.एन. सिंह एवं डॉ. आशा सिंह, भारतीय दर्शन, स्टूडेण्ट्स फ्रेण्ड्स एण्ड कम्पनी, वाराणसी, 1996
3. प्रो. हरेन्द्र प्रसाद सिन्हा, भारतीय दर्शन की रूपरेखा, मोतीलाल बनारसीदास, दिल्ली, 1963
4. बलदेव उपाध्याय, भारतीय दर्शन, शारदा मन्दिर, वाराणसी, 1997
5. नन्द किशोर देवराज, भारतीय दर्शन, उत्तर प्रदेश हिन्दी ग्रन्थ अकादमी, लखनऊ, 1975
6. Dutta & Chatterjee, An Introduction to Indian Philosophy, University of Calcutta, 1968.
7. M. Hiriyanna, Outlines of Indian Philosophy, George Allen and Unwin, Lodon, 1932.

Outcomes - It will motivate students to delve into this field of knowledge and take up this subject in the pursuit of their further study.

Course Learning Outcome (COs)

CO1- Concept of Advaita Vedanta Philosophy.
CO2- Understanding of Shankaracharya - Life Sketch and Philosophy.
CO3- Concept of Sat-Asat-Sadasat and Trividhsatta.
CO4- Concept of Maya, Brahman, Jiva and God.
CO5- Understanding of Moksha, Tattvamasi and Prakriti Parinamavada.

दर्शनशास्त्र **Philosophy**

एम. ए. प्रथम सेमेस्टर **M.A. I Semester**

Course	-	**Comprehensive Viva-voce**
Types of Course	-	**Core Course (C.C.)**
Paper	-	**105**
Marks	-	**100 (Minimum Passing Marks = 35)**

Objective - Students will be able to learn communication skills through viva-voce.

Comprehensive Viva-voce will be based on entire course of M. A. First Semester, Philosophy.

विशद् मौखिकी परीक्षा एम. ए. प्रथम सेमेस्टर दर्शनशास्त्र के सम्पूर्ण पाठ्यक्रमों पर आधारित होगी।

Outcomes - Students will find themselves prepared for interviews.

दर्शनशास्त्र **Philosophy**

एम. ए. द्वितीय सेमेस्टर **M.A. II Semester**

Course	-	**Indian Epistemology (भारतीय ज्ञानमीमांसा)**
Types of Course	-	**Core Course (C.C.)**
Paper	-	**201**
Marks	-	**60 (Theory) + 40 (Internal Assessment) = 100**

Objective - Epistemology is the most important branch of any school of Philosophical Thought. The objective of this course is to provide different theories of knowledge, its nature, its variety within the philosophical schools of Charvaka, Buddhist and Nyaya schools.

इकाई – 1 Unit - I

ज्ञानमीमांसा का अर्थ, प्रमा का अर्थ एवं स्वरूप, अप्रमा, चार्वाक दर्शन की ज्ञानमीमांसा, चार्वाक द्वारा अनुमान प्रमाण का खण्डन। Meaning of Epistemology, Meaning and Nature of Prama, Aprama, Epistemology of Charvaka Philosophy, Refutation of Anumana Pramana by Charvaka.

इकाई – 2 Unit - II

स्वतः प्रामाण्यवाद, परतः प्रामाण्यवाद, ख्यातिवाद – अन्यथाख्यातिवाद, विपरीतख्यातिवाद, अख्यातिवाद, सत्ख्यातिवाद। Swatah Pramanyavada, Paratah Pramanyavada, Khyativada - Anyathakhyativada, Viparitakhyativada, Akhyativada, Satkhyativada.

इकाई – 3 Unit - III

बौद्ध दर्शन – प्रत्यक्ष एवं अनुमान प्रमाण का स्वरूप, प्रमाण–सम्प्लव और प्रमाण–व्यवस्था, सांख्य–योग – प्रत्यक्ष, अनुमान और शब्द प्रमाण। Buddhist Philosophy - Nature of Pratyaksha and Anumana Pramana, Pramana Samplava and Pramana Vyavastha, Sankhya-Yoga - Pratyaksha, Anumana, Shabda Pramana.

इकाई – 4 Unit - IV

न्याय दर्शन – प्रत्यक्ष प्रमाण, प्रत्यक्ष के भेद – लौकिक प्रत्यक्ष, अलौकिक प्रत्यक्ष – सामान्य लक्षण प्रत्यासत्ति, ज्ञानलक्षण प्रत्यासत्ति एवं योगज, शब्द प्रमाण, उपमान प्रमाण। Nyaya Philosophy - Pratyaksha Pramana, Kinds of Pratykasha - Laukik Pratyaksha, Alaukik Pratyaksha - Samanya Lakshan Pratyasatti, Jnana Lakshana Pratyasatti and Yogaj, Shabda Pramana, Upmana Pramana.

इकाई – 5 Unit - V

न्याय दर्शन – अनुमान प्रमाण, अनुमान के भेद, व्याप्ति, पंचावयव, हेत्वाभास – सव्यभिचार, विरुद्ध, साध्यसम, कालातीत हेत्वाभास। Nyaya Philosophy - Anumana Pramana, Kinds of Anumana, Vyapti, Panchavayava, Hetvabhasa - Savyabhichar, Viruddh, Sadhyasama, Kalatita Hetvabhasa.

उपयोगी ग्रंथ – **Suggested Readings :**

1. डॉ. चन्द्रधर शर्मा, भारतीय दर्शन अलोचन और अनुशीलन, मोतीलाल बनारसीदास, दिल्ली 1995
2. डॉ. बी.एन. सिंह एवं डॉ. आशा सिंह, भारतीय दर्शन, स्टूडेण्ट्स फ्रेण्ड्स एण्ड कम्पनी, वाराणसी, 1996
3. प्रो. हरेन्द्र प्रसाद सिन्हा, भारतीय दर्शन की रूपरेखा, मोतीलाल बनारसीदास, दिल्ली, 1963
4. बलदेव उपाध्याय, भारतीय दर्शन, शारदा मन्दिर वाराणसी, 1997
5. नन्द किशोर देवराज, भारतीय दर्शन, उत्तर प्रदेश हिन्दी ग्रन्थ अकादमी, लखनऊ, 1975
6. Dutta & Chatterjee, An Introduction to Indian Philosophy, University of Calcutta, 1968.
7. M. Hiriyanna, Outlines of Indian Philosophy, George Allen and Unwin, London, 1958.

Outcomes - This study will make students critical and analytical about the topic.

Course Learning Outcome (COs)

CO1-Concept of Indian Epistemology, Prama, Aprama.
CO2- Understanding Swatah Pramanyavada, Paratah Pramanyavada, Khyativada.
CO3- Understanding Buddhist, Sankhya and Yoga Epistemology.
CO4- Concept of Pratyaksha in Nyaya Philosophy.
CO5- Unerstanding Anumana Pramana, Vyapti, Hetvabhasa.

दर्शनशास्त्र **Philosophy**

एम. ए. द्वितीय सेमेस्टर **M.A. II Semester**

Course	-	**Western Epistemology (पाश्चात्य ज्ञानमीमांसा)**
Types of Course	-	**Core Course (C.C.)**
Paper	-	**202**
Marks	-	**60 (Theory) + 40 (Internal Assessment) = 100**

Objective - Epistemology is a important branch of Philosophy. It investigates the origin, nature, methods and limits of human knowledge. It is theory of knowledge of the critical study of its validity, methods and scope. Epistemology asks question 'How and what we know with what degree of certainty?' It is an enquiry about the status, nature and method of knowledge. Its study is necessary for a student of Philosophy to be conversant with western perspective. The objective of this course is to make the students inquisitive about origin, limit and certainty of knowledge.

इकाई – 1 Unit - I

जेनो का तर्क, प्लेटो – ज्ञानमीमांसा, 'ज्ञान प्रत्यक्ष है' का खण्डन, 'ज्ञान धारणा है' का खण्डन, विज्ञानवाद, अरस्तू – तर्कशास्त्र। Logic of Zeno, Plato- Epistemology, Refutation of 'knowledge is perception', Refutation of 'knowledge is opinion,' Idealism, Aristotle - Logic.

इकाई – 2 Unit - II

बुद्धिवाद का स्वरूप, देकार्त – दार्शनिक प्रणाली, संदेहवाद, 'मैं सोचता हूँ, इसलिए मैं हूँ', स्पिनोजा – ज्ञान–सिद्धान्त, लाइब्नीत्ज – निरन्तरता का नियम, व्यक्तित्व का नियम, सामंजस्य का नियम, पर्याप्त कारणता का नियम। Nature of Rationalism, Descartes - Philosophical Method, Scepticism, 'I think, therefore I am', Spinoza - Theory of knowledge, Leibnitz - Law of Continuity, Law of Individuality, Law of Harmony, Law of Sufficient Cause.

इकाई – 3 Unit - III

अनुभववाद का स्वरूप, जॉन लॉक – ज्ञान सिद्धान्त, जन्मजात प्रत्ययों का खण्डन, प्रत्यय, गुण, ज्ञान के स्तर – आन्तर प्रत्यक्ष ज्ञान, बाह्य प्रत्यक्ष ज्ञान, परोक्ष ज्ञान। Nature of Empiricism, John Locke - Theory of Knowledge, Refutation of Innate Ideas, Ideas, Quality, Degrees of Knowledge - Intuitive Knowledge, Sensitive Knowledge, Demonstrative Knowledge.

इकाई – 4 Unit - IV

बर्कले – अमूर्त प्रत्ययों का खण्डन, जड़ तत्त्व का खण्डन, 'सत्ता अनुभवमूलक है', विज्ञानवाद, विज्ञानवाद की समीक्षा। Berkeley - Refutation of Abstract Ideas, Refutation of Matter, 'Esse Est Percipii, Idealism, Criticism of Idealism.

इकाई – 5 Unit - V

ह्यूम – अनुभववाद, विज्ञानों का पारस्परिक सम्बन्ध, मानव ज्ञान, कार्यकारण सिद्धान्त, संदेहवाद, कान्ट – समीक्षावाद। Hume - Empiricism, Association of Ideas, Human Knowledge, Causation Theory, Scepticism, Kant - Criticism.

उपयोगी ग्रंथ – **Suggested Readings:**

1. चन्द्रधर शर्मा, पाश्चात्य दर्शन, मोतीलाल बनारसीदास, दिल्ली, 1997
2. डॉ. बी.एन. सिंह, पाश्चात्य दर्शन, स्टूण्डेट्स फ्रेण्ड्स एण्ड कम्पनी, वाराणसी, 1973
3. याकूब मसीह, पाश्चात्य दर्शन का समीक्षात्मक इतिहास, मोतीलाल बनारसीदास, दिल्ली, 2005
4. जगदीश सहाय श्रीवास्तव, आधुनिक पाश्चात्य दर्शन का वैज्ञानिक इतिहास, पुस्तक स्थान, गोरखपुर, 1973
5. Will Durant, A story of Philosophy, Simon & Schuster, 1926 & Pocket Books, New York, 2006
6. Bertand Russell, A History of Western Philosophy, Union paper Backs, London, 1987
7. Frank Thilly, History of Western Philosophy, Central Book Depot, Allahabad, 1975
8. W.T Stace, A Critical History of Greek Philosophy Macmillan, New Delhi, 1985

Outcomes - A student well-versed in this branch can analyze the contents of knowledge in a right perspective. He will learn this branch of knowledge from Greek period to the time of Hume. A perfect study of epistemology of Zeno, Socrates, Plato, Aristotle and three European Rationalists and three European Empiricists, i.e. from Zeno to Hume will make student a good researcher for further higher studies.

Course Learning Outcome (COs)

CO1-Understanding Logic of Zeno, Plato- Epistemology, Idealism and Logic of Aristotle.
CO2-Understanding of Rationalism, Descartes Philosophical Method, Spinoza and Leibnitz (Lows).
CO3-Understanding of Empiricism, John Locke Theory and Degrees of Knowledge.
CO4-Understanding Refutation of Abstract Ideas, Matter and of Idealism.
CO5-Understanding Hume Empiricism, Human Knowledge, Causation Theory.

दर्शनशास्त्र **Philosophy**

एम. ए. द्वितीय सेमेस्टर **M.A. II Semester**

Course	-	**Social Philosophy - II (समाज दर्शन - II)**
Types of Course	-	**Core Course (C.C.)**
Paper	-	**203**
Marks	-	**60 (Theory) + 40 (Internal Assessment) = 100**

Objective - The objective of teaching this course is to make the students conversant with topic such as Democracy, Totalitarianism, Socialism, Communism, Gandhism, Sarvodaya, Satyagraha, Anarchism, Constitutionalism, Terrorism, Capitalism etc. and their main features and related problems.

इकाई – 1 Unit - I

प्रजातन्त्र – स्वरूप, विशेषताएँ, आलोचना, सर्वाधिकारवाद – स्वरूप, विशेषताएँ, आलोचना। Democracy - Nature, Characteristics, Criticism, Totalitarianism - Nature, Characteristics, Criticism.

इकाई – 2 Unit - II

समाजवाद – स्वरूप, विशेषताएँ, आलोचना, साम्यवाद – स्वरूप, विशेषताएँ, आलोचना। Socialism - Nature, Characteristics, Criticism, Communism - Nature, Characteristics, Criticism.

इकाई – 3 Unit - III

गाँधीवाद – सर्वोदय, सत्याग्रह, न्यास का सिद्धान्त, अराजकतावाद – स्वरूप, विशेषताएँ, आलोचना। Gandhism - Sarvodaya, Satyagrah, Doctrine of Trusteeship, Anarchism - Nature, Characteristics, Criticism.

इकाई – 4 Unit - IV

संविधानवाद – स्वरूप, विशेषताएँ, समस्यायें, संविधान और संविधानवाद, क्रान्ति – स्वरूप, विशेषताएँ, आलोचना। Constitutionalism - Nature, Characteristics, Problems, Constitution and Constitutionalism, Revolution - Nature, Characteristics, Criticism.

इकाई – 5 Unit - V

आतंकवाद – स्वरूप, आतंकवाद के उद्‌भव के कारण, आलोचना, पूँजीवाद – स्वरूप, विशेषताएँ, आलोचना। Terrorism - Nature, The Causes of the Emergence of Terrorism, Criticism, Capitalism - Nature, Characteristics, Criticism.

उपयोगी ग्रंथ – **Suggested Readings:**

1. बसन्त कुमार लाल, समकालीन भारतीय दर्शन, मोतीलाल बनारसीदास, दिल्ली, 1963
2. डॉ. ए. अवस्थी एवं डॉ. आर.के. अवस्थी, भारतीय राजनीतिक चिन्तन, रिसर्च पब्लिकेशन्स, जयपुर,
3. डॉ. जगदीशसहाय श्रीवास्तव, समाज–दर्शन की भूमिका, विश्वविद्यालय प्रकाशन, वाराणसी, 1999
4. डॉ. हृदय नारायण मिश्र, समाज दर्शन सैद्धांतिक एवं समस्यात्मक विवेचन, शेखर प्रकाशन, इलाहाबाद, 2003
5. बी.एन. सिंह, समाज दर्शन एवं राजनीति दर्शन, आशा प्रकाशन, वाराणसी, 1990
6. Krishna Saya, Social Philosophy: Past and Future, Indian Institute of Advanced Studies, 1978

Outcomes - This course will help students to understand all kinds of theories that are in the vogue present day society.

Course Learning Outcome (COs)

CO1-Concept of Democracy, and Totalitarianism.

CO2- Concept of Socialism and communism.

CO3- Understanding of Gandhism and Anarchism.

CO4-Concept of constitutionalism and Revolution.

CO5-Undestemding of Terrorism and Capitalism.

दर्शनशास्त्र **Philosophy**

एम. ए. द्वितीय सेमेस्टर **M.A. II Semester**

Course	-	**Patanjal Yogsutra (पातंजल योगसूत्र)**
Types of Course	-	**Generic Elective (G.E.)**
Paper	-	**204**
Marks	-	**60 (Theory) + 40 (Internal Assessment) = 100**

Objective - This course contains textual as well as practical knowledge of the topic which will help the students to do something very substantial and beneficial for society at large. The problem of health and mental stress and strain will also be taken care of.

इकाई – 1 Unit - I

महर्षि पतंजलि का व्यक्तित्व एवं कृतित्व, पातंजल योगसूत्र का सामान्य परिचय – समाधि पाद, साधनपाद, विभूतिपाद, कैवल्यपाद, पातंजल योग दर्शन का महत्व। Personality and Artistry of Maharshi Patanjali, A General Introduction of Patanjal Yogasutra - Samadhipada, Sadhanapada, Vibhutipada, Kaivlyapada, Importance of Patanjal Yoga Philosophy.

इकाई – 2 Unit - II

योग की परिभाषा, चित्त का स्वरूप, चित्तभूमियाँ, चित्तवृत्तियाँ – प्रकार एवं वृत्ति निरोध के उपाय। Definition of Yoga, Nature of Chitta, Chittabhumies, Chittavritties - Types and Techniques of Vrittinirodh.

इकाई – 3 Unit - III

अष्टांग योग – यम – लक्षण, प्रकार एवं सिद्धि, नियम – लक्षण, प्रकार एवं सिद्धि, आसन – लक्षण एवं सिद्धि, प्राणायाम – लक्षण, प्रकार एवं सिद्धि। Ashtanga Yoga - Yama - Characteristics, Types and Result, Niyama - Characteristics, Types and Result, Asana - Characteristics and result, Pranayama - Characteristics, Types and Result.

इकाई – 4 Unit - IV

प्रत्याहार – लक्षण एवं सिद्धि, धारणा – लक्षण एवं सिद्धि, ध्यान – लक्षण एवं सिद्धि, समाधि – लक्षण, प्रकार एवं सिद्धि, बहिरंग साधन एवं अन्तरंग साधन। Pratyahara - Characteristics and Result, Dharna - Characteristics and Result, Dhyana - Characteristics and Result, Samadhi - Characteristics, Types and Result, Bahiranga Sadhana and Antaranga Sadhana.

इकाई – 5 Unit - V

अभ्यास–वैराग्य, क्रियायोग, क्लेश का स्वरूप – अविद्या, अस्मिता, राग, द्वेष एवं अभिनिवेश। Abhyasa-Vairagya, Kriyayoga, Nature of Klesha - Avidya, Asmita, Raga, Dvesha and Abhinivesha.

उपयोगी ग्रंथ – **Suggested Readings:**

1. डॉ. न. कि. देवराज (सम्पादक), भारतीय दर्शन, उत्तर प्रदेश हिन्दी संस्थान, लखनऊ, तृतीय संस्करण, 2003
2. बी. कामेश्वर राव, सांख्य प्रज्ञा, ग्रन्थ भारती, जयपुर, 1991
3. डॉ. सम्पूर्णानन्द, योगदर्शन, हिन्दी समिति, सूचना विभाग, उ. प्र. 1965
4. स्वामी विवेकानंद, राजयोग, पं. सूर्यकान्त त्रिपाठी निराला (अनुवादक), रामकृष्ण मठ, धन्तोली, नागपुर, 2017
5. ई.सी.पी. सक्सेना, योग एवं अध्यात्म दर्शन, राधा पब्लिकेशन्स, नई दिल्ली, 2001
6. श्री स्वामी ओमानन्द, पातंजलयोगप्रदीप, गीता प्रेस, गोरखपुर, सं. 2030
7. Fernando & D. Carmen Tola, The Yoga Sutras of Patanjali, on concentration of Mind, Motilal Banarsidas, Delhi, 2001

Outcomes - The students after their study will be able to alleviate and mitigate the sufferings and stresses of the masses at large.

Course Learning Outcome (COs)

CO1- Understanding a General Introduction of Patanjal Yogasutra and Importance of Yoga Philosophy
CO2- Concept of Yoga Chitta and Chittavritties Techniques.
CO3- Concept of Yoga Ashtanga Yoga - Yama, Niyama, Asana and Pranayama.
CO4- Understanding Pratyahara, Dharna, Dhyana and Samadhi.
CO5- Understanding Abhyasa and Klesha.

दर्शनशास्त्र **Philosophy**

एम. ए. द्वितीय सेमेस्टर **M.A. II Semester**

Course	-	**Comprehensive Viva-voce**
Types of Course	-	**Core Course (C.C.)**
Paper	-	**205**
Marks	-	**100 (Minimum Passing Marks = 35)**

Objective - Students will be able to learn communication skills through viva-voce.

Comprehensive Viva-voce will be based on entire course of M. A. Second Semester, Philosophy.

विशद् मौखिकी परीक्षा एम. ए. द्वितीय सेमेस्टर दर्शनशास्त्र के सम्पूर्ण पाठ्यक्रमों पर आधारित होगी।

Outcomes - Students will find themselves prepared for interviews.

दर्शनशास्त्र **Philosophy**

एम. ए. तृतीय सेमेस्टर **M.A. III Semester**

Course	-	**Philosophy of Religion - I (धर्म दर्शन - I)**
Types of Course	-	**Core Course (C.C.)**
Paper	-	**301**
Marks	-	**60 (Theory) + 40 (Internal Assessment) = 100**

Objective - The objective of teaching this course to dish out to the students the lucid exposition of Religion, Theology and morality and various theories regarding the origin of Religion. Theism, Atheism, Deism, Dualism, Panentheism and their different types and brands are lucidly presented to enrich the knowledge of students.

इकाई – 1 Unit - I

धर्म–दर्शन – स्वरूप, महत्व, धर्मदर्शन एवं ईश्वरशास्त्र, धर्मदर्शन एवं तत्त्वशास्त्र, धर्मदर्शन एवं धर्म, धर्म एवं नैतिकता। Philosophy of Religion - Nature, Importance, Philosophy of Religion and Theology, Philosophy of Religion and Metaphysics, Philosophy of Religion and Religion, Religion and Morality.

इकाई – 2 Unit - II

धर्म की उत्पत्ति – पूर्व मानव–शास्त्रीय सिद्धान्त, मानव–शास्त्रीय सिद्धान्त, मनोवैज्ञानिक सिद्धान्त, ऐतिहासिक सिद्धान्त, विश्व धर्म की अवधारणा, सनातन धर्म की अवधारणा। Origin of Religion - Pre-anthropological Theory, Anthropological Theory, Psychological Theory, Historical Theory, Concept of Universal Religion, Concept of Sanatan (Eternal) Religion.

इकाई – 3 Unit - III

धार्मिक चेतना – अर्थ, रुडोल्फ ऑटो की व्याख्या, अनीश्वरवाद का स्वरूप, अनीश्वरवाद के विभिन्न रूप, अनीश्वरवाद के विरुद्ध आक्षेप। Religious Consciousness - Meaning, Rudolf Otto's Analysis, Nature of Atheism, Forms of Atheism, Objections against Atheism.

इकाई – 4 Unit - IV

सर्वेश्वरवाद – स्वरूप, मूल्यांकन, द्वैतवाद – स्वरूप, मूल्यांकन, अनेकेश्वरवाद – स्वरूप, आपत्तियाँ। Pantheism - Nature, Evaluation, Dualism - Nature, Evaluation, Polytheism - Nature, Objections.

इकाई – 5 Unit - V

केवलनिमित्तेश्वरवाद – स्वरूप, आपत्तियाँ, निमित्तोपादानेश्वरवाद – स्वरूप, आपत्तियाँ, ईश्वरवाद – स्वरूप, मूल्यांकन। Deism - Nature, Objections, Panentheim - Nature, Objections, Theism - Nature, Evaluation.

उपयोगी ग्रंथ – **Suggested Readings :**

1. डॉ हरेन्द्र प्रसाद सिन्हा, धर्म–दर्शन की रूपरेखा, मोतीलाल बनारसीदास, पटना, 2017
2. डॉ बी. एन. सिंह, धर्म–दर्शन, स्टूडेण्ट्स फ्रेन्ड्स एण्ड कम्पनी, वाराणसी, 1989
3. एल. एन. शर्मा, धर्म–दर्शन, गंगासरन ऐण्ड ग्रैन्ड संस, जतनबर, वाराणसी, 1972
4. डॉ. वेद प्रकाश वर्मा, धर्म–दर्शन की मूल समस्या, हिन्दी माध्यम कार्यान्वयन निदेशालय, दिल्ली विश्वविद्यालय, 2012
5. डॉ. शिवभानु सिंह, धर्म–दर्शन का आलोचनात्मक अध्ययन, शारदा पुस्तक भवन, इलाहाबाद, 2010
6. John H. Hick, Philosophy of Religion, Pearson, 4th Edition, 2015
7. Y. Masih, Introduction to Rligious Philosophy, Motilal Banarsidas, Delhi, 2002

Outcomes - This course will widen and sharpen the critical caliber of the students.

Course Learning Outcome (COs)

CO1- Concept of Philosophy of Religion and Relation of Religion with other field.
CO2- Understanding Origin of Religion History and Universal Religion.
CO3- Concept of Religious Consciousness and Atheism.
CO4- Understanding Pantheism, Dualism and Polytheism and Theism.
CO5- Concept of Deism Panentheim and Theism.

दर्शनशास्त्र **Philosophy**

एम. ए. तृतीय सेमेस्टर **M.A. III Semester**

Course	-	**Logic - I (तर्कशास्त्र - I)**
Types of Course	-	**Core Course (C.C.)**
Paper	-	**302**
Marks	-	**60 (Theory) + 40 (Internal Assessment) = 100**

Objective - Logic is essentially the study of reasoning or argumentation. This course aims at training the students to construct effective arguments that are useful in every field of endeavor as well as in everyday life. It will help students go to the direction of truth and keep away from falsehood.

इकाई – 1 Unit - I

तर्कशास्त्र – स्वरूप, क्षेत्र, युक्ति का स्वरूप, सत्यता और वैधता, निगमनात्मक एवं आगमनात्मक तर्कशास्त्र में अंतर। Logic - Nature, Scope, Nature of Argument, Truth and Validity, Difference in Deductive and Inductive Logic.

इकाई – 2 Unit - II

परिभाषा का अर्थ, परिभाषा के उद्देश्य, परिभाषा के प्रकार – ऐच्छिक, कोशीय, निश्चायक, सैद्धान्तिक, प्रेरक। Meaning of Definintion, Purpose of Definition, Types of Definition - Stipulative, Lexical, Precising, Theoretical, Persuasive.

इकाई – 3 Unit - III

तर्कवाक्य और वाक्य में अंतर, तर्कवाक्य का वर्गीकरण – निरुपाधिक, सोपाधिक, वैकल्पिक, निरुपाधिक तर्कवाक्यों का मानक आकार, परम्परागत विरोध वर्ग, विरोध के प्रकार – व्याघात, विपरीत, विरुद्ध, उपाश्रयण। Difference between Proposition and Sentence, Classification of Proposition - Categorical, Conditional, Disjunctive, Standard form of Categorical Proposition, Traditional Square of Opposition, Kinds of Relation of Opposition - Contradictory, Contrary, Sub-contrary, Subalternation.

इकाई – 4 Unit - IV

अनुमान – निगमनात्मक, आगमनात्मक, निगमनात्मक अनुमान के प्रकार – व्यवहित, अव्यवहित, सत्तात्मक तात्पर्य, सत्तात्मक दोष। Inference - Deductive, Inductive, Kinds of Deductive Inference - Mediate, Immediate, Existential Import, Existential Fallacy.

इकाई – 5 Unit - V

निरपेक्ष न्यायवाक्य – परिभाषा, अवस्था, आकृति, वेन रेखाचित्र, वैधता का नियम एवं तर्कदोष। Categorical Syllogism - Definition, Mood, Figure, Venn Diagram, Rules of Validity and fallacies.

उपयोगी ग्रंथ – **Suggested Readings :**

1. अविनाश तिवारी, तर्कशास्त्र के सिद्धान्त, सरस्वती प्रकाशन, प्रयागराज, 2016
2. संगमलाल पाण्डेय, तर्कशास्त्र का परिचय, एशिया बुक कम्पनी, इलाहाबाद, 2010
3. श्याम किशोर सेठ, तर्कशास्त्र, लोकभारती, इलाहाबाद, 2004
4. सुरेन्द्र बारलिंगे, तर्क–रेखा, राजस्थान हिंदी ग्रन्थ अकादमी, जयपुर, 1972
5. राजनारायण, प्रतीकात्मक तर्कशास्त्र, राजस्थान हिन्दी ग्रन्थ अकादमी, जयपुर, 1973
6. Irving M Copi, Symbolic Logic, Macmillan Publishing Co Inc., New York, 1979

Outcomes - This course will help students avoid making ordinary mistakes of reasoning. It also helps students to clearly understand conceptual relations, which in turn enhances their skills of writing and putting forth their thoughts in a systematic manner.

Course Learning Outcome (COs)

CO1- Concept of Logic, Argument, Deductive and Inductive.
CO2-Understanding of Definintion and Types.
CO3-Understanding of Categorical Proposition and Traditional Square.
CO4-Understanding Deductive and Inductive Method.
CO5- Understanding Categorical Syllogism and Validity and fallacies.

दर्शनशास्त्र **Philosophy**

एम. ए. तृतीय सेमेस्टर **M.A. III Semester**

Course	-	**Gandhian Philosophy (गाँधी दर्शन)**
Types of Course	-	**Discipline Centric Elective (D.C.E.)**
Paper	-	**303 (A)**
Marks	-	**60 (Theory) + 40 (Internal Assessment) = 100**

Objective - This course focuses on the life and thoughts of Gandhi. It touches upon his ideas regarding all important issues of life. The topics that it covers are Philosophical background of Gandhism, Religious background of Gandhism, Philosophical thoughts of Gandhi, economic thoughts of Gandhi, and so on.

इकाई – 1 Unit - I

गाँधीजी का जीवन परिचय, गाँधीवाद, गाँधीवाद की दार्शनिक पृष्ठभूमि, गाँधीवाद की धार्मिक पृष्ठभूमि, गाँधीवाद का उद्देश्य, गाँधीवाद की प्रासंगिकता। Life sketch of Gandhiji, Gandhism, Philosophical background of Gandhism, Religious backgruound of Gandhism, Objectives of Gandhism, Relevance of Gandhism.

इकाई – 2 Unit - II

गाँधीजी की सामाजिक विचारधारा – रामराज्य, वर्णव्यवस्था, स्वदेशी, शिक्षा, सर्वोदय। Social Thoghts of Gandhiji - Ramrajya, Varna-vyavastha, Swadeshi, Education, Sarvodaya.

इकाई – 3 Unit - III

गाँधीजी की राजनीतिक विचारधारा – दार्शनिक अराजकतावाद, राज्यविहीन प्रजातंत्र, विकेन्द्रीकरण, ग्रमीण स्वराज, सत्याग्रह। Philosophical Thoughts of Gandhiji - Philosophical Anarchism, Stateless Democracy, Decentralization, Village Swaraj, Satyagrah.

इकाई – 4 Unit - IV

गाँधीजी की आर्थिक विचारधारा – मशीन युग का विरोध, ग्रामिण कुटीर उद्योग, प्रन्यास का सिद्धान्त, आर्थिक समाजवाद। Economic Thoughts of Gandhiji - Resist Machine Era, Rural Cottage Industries, Doctrine of Trusteeship, Economic Socialism.

इकाई – 5 Unit - V

गाँधीजी की धार्मिक विचारधारा – हिन्दू धर्म, धर्म–सहिष्णुता – सर्वधर्मसमभाव, धार्मिक एकता, गाँधीवाद का समाजवाद, गाँधीवाद एवं मार्क्सवाद, साधन और साध्य। Religious Thoughts of Gandhiji - Hindu Religion, Religious Tolerance - Sarvadharmasamabhava, Religious Unity, Socialism of Gandhism, Gandhism and Marxism, Means and End.

उपयोगी ग्रंथ – **Suggested Readings :**

1. बसन्त कुमार लाल, समकालीन भारतीय दर्शन, मोतीलाल बनारसीदास, दिल्ली, 1993
2. नन्द किशोर देवराज, भारतीय दर्शन, उत्तर प्रदेश हिन्दी ग्रन्थ अकादमी, लखनऊ, 1975
3. लक्ष्मी सक्सेना, समकालीन भारतीय दर्शन, उत्तर प्रदेश हिन्दी संस्थान, लखनऊ, 2002
4. डॉ. ए अवस्थी एवं डॉ. आर के अवस्थी, भारतीय राजनीतिक चिन्तन, रिसर्च पब्लिकेशन्स, जयपुर, 2001
5. N. K. Bose, Studies in Gandhism, Second Edition, Indian Association Publishing Co. Calcutta, 1947
6. D. M. Dutta, The Philosophy of Mahatma Gandhi, University of Calcutta, 1968
7. M. K. Gandhi, An Autobiography or the Story of my Experiments with Truth, Navajivan Pub. House, Ahmedabad, 1948

Outcomes - It will help students know Gandhism in a nutshell an induce them for further study in this field.

Course Learning Outcome (COs)

CO1 - Understanding of Life Sketch of Gandhiji and Gandhism : Background and Relevance.
CO2 - Understanding of Social thoughts of Gandhi ji
CO3 - Understanding of philosophical thoughts of Gandhi ji
CO4 - Understanding of Economic thoughts of gandhi ji.
CO5 - Understanding of Religious thought of Gandhi ji , Socialism and Marxism.

दर्शनशास्त्र **Philosophy**

एम. ए. तृतीय सेमेस्टर **M.A. III Semester**

Course	-	**Western Ethics (पाश्चात्य नीतिशास्त्र)**
Types of Course	-	**Discipline Centric Elective (D.C.E.)**
Paper	-	**303 (B)**
Marks	-	**60 (Theory) + 40 (Internal Assessment) = 100**

Objective - This course will familiarize students with the whole tradition of Western Ethics from Greek period to the time of Kant and several ethical theories put forward by Sophists, Socrates, Plato, Aristotle, Epicureans and Stoics. This course will also introduce the students with all types and branches of ethical theories advocated by Bentham, Mill, Hegel and Kant. This course will throw adequate light on Moral Egoism, Psychological Egoism, Moral Hedonism, Psychological Hedonism, Self-perfectionism and Utilitarianism.

इकाई – 1 Unit - I

नीतिशास्त्र – स्वरूप एवं क्षेत्र, नीतिशास्त्र एवं मनोविज्ञान, नीतिशास्त्र एवं समाजशास्त्र, नीतिशास्त्र एवं राजनीतिशास्त्र, नीतिशास्त्र एवं धर्म। Ethics - Nature and Scope, Ethics and Psychology, Ethics and Sociology, Ethics and Political Science, Ethics and Religion.

इकाई – 2 Unit - II

ग्रीक नैतिक दर्शन – सोफिस्ट, सुकरात, प्लेटो, अरस्तू, एपिक्यूरियनवाद एवं स्टोइकवाद। Greek Moral Philosophy - Sophist, Socrates, Plato, Aristotle, Epicureanism and Stoicism.

इकाई – 3 Unit - III

स्वार्थवाद – स्वरूप, नैतिक स्वार्थवाद, मनोवैज्ञानिक स्वार्थवाद, सुखवाद – स्वरूप, नैतिक सुखवाद, मनोवैज्ञानिक सुखवाद। Egoism - Nature, Moral Egoism, Psychological Egoism, Hedonism - Nature, Moral Hedonism, Psychological Hedonism.

इकाई – 4 Unit - IV

उपयोगितावाद – स्वरूप, बेन्थम, मिल, आत्मपूर्णतावाद – हेगल, अन्तःप्रज्ञावाद का स्वरूप। Utilitarianism - Nature, Bentham, Mill, Self-perfectionism - Hegel, Nature of Intuitionism.

इकाई – 5 Unit - V

कान्ट – शुभ संकल्प का स्वरूप, कर्तव्य का स्वरूप, निरपेक्ष आदेश, मुख्य नैतिक नियम, नैतिकता की पूर्वमान्यताएँ। Kant - Nature of Good Will, Nature of Duty, Categorical Imperative, Main Moral Norms, Postulates of Morality.

उपयोगी ग्रंथ – **Suggested Readings :**

1. डॉ. नित्यानंद मिश्र, नीतिशास्त्र (सिद्धान्त तथा प्रयोग), मोतीलाल बनारसीदास, दिल्ली, 2005
2. डॉ. वेद प्रकाश वर्मा, नीतिशास्त्र के मूल सिद्धान्त, एलाइड पब्लिकेशन, दिल्ली, 1977
3. डॉ. अशोक कुमार वर्मा, नीतिशास्त्र के सिद्धान्त, मोतीलाल बनारसीदास, दिल्ली, 1977
4. संगमलाल पाण्डेय, नीतिशास्त्र का सर्वेक्षण, सेन्ट्रल पब्लिशिंग हाऊस, इलाहाबाद, 2005
5. डॉ. डी. आर. जाटव, नीतिशास्त्र के प्रमुख सिद्धान्त, मलिक एण्ड कम्पनी, जयपुर, 2006
6. Peter Singer, Practical Ethics, Cambridge University, Cambridge, 2011
7. Simon Blackburn, Ethics A very short Introduction, Oxford University Press, 2001

Outcomes - Having studied and imbibed all these tenets and moral theories the students may become good moral preceptors and thus shape a moral society.

Course Learning Outcome (COs)

CO1 - Concepts of Ethics and it Relation with other field .
CO2 - Concept of Greek Moral philosophy : Socrates, Plato, Aristotle etc.
CO3 - Understanding of Egoism and Hedonism.
CO4 - Understanding of Utilitarianism and Self Perfectionism.
CO5 - Concept of Good will, Duty and Postulates of Morality.

दर्शनशास्त्र **Philosophy**

एम. ए. तृतीय सेमेस्टर **M.A. III Semester**

Course	-	**Indian Ethics (भारतीय नीतिशास्त्र)**
Types of Course	-	**Generic Elective (G.E.)**
Paper	-	**304**
Marks	-	**60 (Theory) + 40 (Internal Assessment) = 100**

Objective - The objective of teaching this course to the students is to train and inspire them to learn and discriminate the ethical theories of Jaina and Buddhist. It will also teach concept of four Purusharthas, four Ashramas, sixteen Samskaras, Gita etc.

इकाई – 1 Unit - I

भारतीय नैतिक दर्शन का विकास, भारतीय नीतिशास्त्र की पूर्वमान्यताएँ, भारतीय नीतिशास्त्र के मूल प्रत्यय, ऋत की अवधारणा, चार्वाक दर्शन – सुखवाद। Development of Indian Ethics, Pre-suppositions of Indian Ethics, Fundamental Elements of Indian Ethics, Concept of Rita, Charvaka Philosophy - Hedonism.

इकाई – 2 Unit - II

जैन नीतिशास्त्र – पंचमहाव्रत, समिति, परीषहजय, त्रिरत्न, अनुप्रेक्षा, बौद्ध नीतिशास्त्र – अष्टांग मार्ग, पारमिता, ब्रह्म विहार। Jaina Ethics - Panchmahavrata, Samiti, Parishahjaya, Triratna, Anupreksha, Bauddhist Ethics - Eight fold path, Parmita, Brahma Vihar.

इकाई – 3 Unit - III

पुरुषार्थ – अवधारणा, महत्व, धर्म, अर्थ, काम, मोक्ष। Purushartha - Concept, Importance, Dharma, Artha, Kama, Moksha.

इकाई – 4 Unit - IV

संस्कार – अर्थ, महत्व, सोलह संस्कार, विवाह के प्रकार, गीता – कर्मयोग, स्थितप्रज्ञ। Sanskara - Meaning, Importance, Sixteen Sanskara, Types of Marriage, Gita - Karmayoga, Sthitprajna.

इकाई – 5 Unit - V

वर्ण–व्यवस्था – महत्व, ब्राह्मण, क्षत्रिय, वैश्य, शूद्र, आश्रम व्यवस्था – महत्व, ब्रह्मचर्य, गृहस्थ, वानप्रस्थ, संन्यास। Varna-vyavastha - Importance, Brahmana, Kshatriya, Vaishya, Shudra, Ashram-vyavastha - Importance, Brahmacharya, Grihastha, Vanaprastha, Sannyasa.

उपयोगी ग्रंथ – **Suggested Readings :**

1. डॉ. चन्द्रधर शर्मा, भारतीय दर्शन अलोचन और अनुशीलन, मोतीलाल बनारसीदास, दिल्ली 1995
2. डॉ. बी.एन. सिंह एवं डॉ. आशा सिंह, भारतीय दर्शन, स्टूडेण्ट्स फ्रेण्ड्स एण्ड कम्पनी, 1996
3. प्रो. हरेन्द्र प्रसाद सिन्हा, भारतीय दर्शन की रूपरेखा, मोतीलाल बनारसीदास, दिल्ली, 1963
4. बलदेव उपाध्याय, भारतीय दर्शन, शारदा मन्दिर वाराणसी, 1997
5. नन्द किशोर देवराज, भारतीय दर्शन, उत्तर प्रदेश हिन्दी ग्रन्थ अकादमी, लखनऊ, 1975
6. डॉ. श्रीकान्त मिश्र, भारतीय नीतिशास्त्र, आशा पब्लिशिंग कम्पनी, आगरा, 2018
7. Dutta & Chatterjee, An Introduction to Indian Philosophy, University of Calcutta, 1968.
8. M. Hiriyanna, Outlines of Indian Philosophy, George Allen and Unwin, London, 1932.

Outcomes - This course will help students learn ethical values which will promote a morally good society all around.

Course Learning Outcome (COs)

CO1 - Explain development - Development of Indian Ethics, and Concept of Rita ,Charvaka philosophy.
CO2 - Concept of jaina Ethics and Buddhist Ethics.
CO3 - Concept of Purushartha.
CO4 - Understanding of Sanskara Types Types of Marriage and Gita.
CO5 - Understanding of Varna Vyavastha and Ashrama Vyavastha.

दर्शनशास्त्र **Philosophy**

एम. ए. तृतीय सेमेस्टर **M.A. III Semester**

Course	-	**Comprehensive Viva-voce**
Types of Course	-	**Core Course (C.C.)**
Paper	-	**305**
Marks	-	**100 (Minimum Passing Marks = 35)**

Objective - Students will be able to learn communication skills through viva-voce.

Comprehensive Viva-voce will be based on entire course of M. A. Third Semester, Philosophy.

विशद् मौखिकी परीक्षा एम. ए. तृतीय सेमेस्टर दर्शनशास्त्र के सम्पूर्ण पाठ्यक्रमों पर आधारित होगी।

Outcomes - Students will find themselves prepared for interviews.

दर्शनशास्त्र **Philosophy**

एम. ए. चतुर्थ सेमेस्टर **M.A. IV Semester**

Course	-	**Philosophy of Religion - II (धर्म दर्शन - II)**
Types of Course	-	**Core Course (C.C.)**
Paper	-	**401**
Marks	-	**60 (Theory) + 40 (Internal Assessment) = 100**

Objective - Man has created different religions and each and every religion has the same ultimate reality as its goal. This course aims at providing the concepts of all important religions of the world so that students may have a better understanding about them.

इकाई – 1 Unit - I

ईश्वर के अस्तित्व हेतु प्रमाण – तात्त्विक युक्ति – स्वरूप, आलोचना, विश्व–सम्बन्धी युक्ति – स्वरूप, आलोचना, प्रयोजनमूलक युक्ति – स्वरूप, आलोचना, नैतिक युक्ति – स्वरूप, आलोचना। Arguments for the existence of God - Ontological Argument - Nature, Criticism, Cosmological Argument - Nature, Criticism, Taleological Argument -Nature, Criticism, Moral Argument - Nature, Criticism.

इकाई – 2 Unit - II

अशुभ की समस्या – स्वरूप, प्रकार, ईश्वरवाद एवं अशुभ, अमरत्व – स्वरूप, प्रकार, अमरत्व के प्रमाण, अमरता के विरुद्ध युक्तियाँ। Problem of Evil - Nature, Types, Theism and Evil, Immortality - Nature, Forms, Proof for Immortality, Arguments against Immortality.

इकाई – 3 Unit - III

रहस्यवाद – स्वरूप, विशेषताएँ, मूल्यांकन, धार्मिक ज्ञान का स्वरूप, धार्मिक विश्वास – स्वरूप, आधार, विश्वास और आस्था। Mysticism - Nature, Characteristics, Evaluation, Nature of Religious Knowledge, Religios Belief - Nature, Foundations, Belief and Faith.

इकाई – 4 Unit - IV

धर्म परिवर्तन – स्वरूप, प्रकार, धार्मिक सहिष्णुता का स्वरूप, धर्मनिरपेक्षतावाद, धर्मनिरपेक्ष समाज का स्वरूप। Conversion - Nature, Types, Nature of Religious Tolerance, Secularism, Nature of Secular Society.

इकाई – 5 Unit - V

विश्व–धर्म – अर्थ, प्रासंगिकता, सम्भावना, धर्म में ईश्वर का स्थान, व्यक्तित्व एवं ईश्वर। Universality of Religion - Meaning, Relevence, Possibility, The Place of God in Religion, Personality and God.

उपयोगी ग्रंथ – **Suggested Readings :**

1. डॉ हरेन्द्र प्रसाद सिन्हा, धर्म–दर्शन की रूपरेखा, मोतीलाल बनारसीदास, पटना, 2017
2. डॉ बी. एन. सिंह, धर्म–दर्शन, स्टूडेण्ट्स फ्रेन्ड्स एण्ड कम्पनी, वाराणसी, 1989
3. एल. एन. शर्मा, धर्म–दर्शन, गंगासरन ऐण्ड ग्रैन्ड संस, जतनबर, वाराणसी, 1972
4. डॉ. वेद प्रकाश वर्मा, धर्म–दर्शन की मूल समस्या, हिन्दी माध्यम कार्यान्वयन निदेशालय, दिल्ली विश्वविद्यालय, 2012
5. डॉ. शिवभानु सिंह, धर्म–दर्शन का आलोचनात्मक अध्ययन, शारदा पुस्तक भवन, इलाहाबाद, 2010
6. John H. Hick, Philosophy of Religion, Pearson, 4th Edition, 2015
7. Y. Masih, Introduction to Rligious Philosophy, Motilal Banarsidas, Delhi, 2002

Outcomes - It will make students become better human beings. They will, hopefully, be better equipped to establish harmony in different religions of the world.

Course Learning Outcome (COs)

CO1 - Understanding of Arguments for Existence of God and different Types of Arguments.
CO2 - Understanding of Problem of Evil and immorality.
CO3 - Concept of Mysticism and Religious Belief.
CO4 - Concept of Conversion, Religious tolerance and Secular Society.
CO5 - Understanding of Universality of Religion, Personality and God.

दर्शनशास्त्र **Philosophy**

एम. ए. चतुर्थ सेमेस्टर **M.A. IV Semester**

Course	-	**Logic - II (तर्कशास्त्र - II)**
Types of Course	-	**Core Course (C.C.)**
Paper	-	**402**
Marks	-	**60 (Theory) + 40 (Internal Assessment) = 100**

Objective - Logic plays an important role in our day to day life. When thoughts are logical they are received well and give a strong footing to our concepts. Concepts based on Logic are mean to be more convincing and acceptable in our society. This course aims at teaching students different structures of logic formed in different kinds of sentences and make them well footed in the labyrinth of logic.

इकाई – 1 Unit - I

प्रतीकात्मक तर्कशास्त्र का स्वरूप, सरल एवं मिश्र वाक्य, संयोजन, सत्यता मूल्य, निषेध कथन का सत्यता मूल्य, विकल्पन। Nature of Symbolic Logic, Simple and Compound Statements, Conjunction, Truth Value, Truth Value of Negative Statement, Disjunction.

इकाई – 2 Unit - II

सोपाधिक कथन, शाब्दिक प्रतिपत्ति एवं वास्तविक प्रतिपत्ति में सम्बन्ध, शाब्दिक प्रतिपत्त का विरोधाभास, शाब्दिक प्रतिपत्ति एवं आकारिक प्रतिपत्ति में अंतर, युक्ति और युक्ति आकार, सत्यता सारिणी बनाने की विधि, युक्तियों की वैधता और सत्यता सारिणी। Conditional Statement, Relation between Material and Real Implication, Paradoxes of Material Implication, Difference between Material Implication and Formal Implication, Arguments and Argument Forms, Method of Making Truth Table, Validity of Arguments and Truth Table.

इकाई – 3 Unit - III

वाक्य और वाक्य–आकार, विशिष्ट आकार एवं वाक्य–आकार में अंतर, शाब्दिक सम एवं तार्किक सम, पुनर्कथनात्मक प्रतिपत्ति एवं समता, युक्ति और पुनर्कथन में सम्बन्ध। Statements and Statement Forms, Difference between Specific Form and statement Form, Material Equivalence and Logical Equivalence, Tautological Implication and Equivalence, Relation between Argument and Tautology.

इकाई – 4 Unit - IV

विचार के नियम – तादात्म्य का नियम, व्याघात का नियम, मध्य–परिहार का नियम, विचार के नियमों की आलोचना, सादृश्यानुमान का स्वरूप। Laws of Thought - Law of Identity, Law of Contradiction, Law of Excluded middle, Criticism of Laws of Thought, Nature of Analogy.

इकाई – 5 Unit - V

मिल की प्रायोगिक विधि – अन्वय, व्यतिरेक, अन्वय–व्यतिरेक, सहचारी परिवर्तन, अवशेष विधि। Experimental Method of Mill - Agreement, Difference, Agreement and Difference, Concomitant Verification, Method of Residues.

उपयोगी ग्रंथ – **Suggested Readings :**

1. अविनाश तिवारी, तर्कशास्त्र के सिद्धान्त, सरस्वती प्रकाशन, इलाहाबाद, 2016
2. संगमलाल पाण्डेय, तर्कशास्त्र का परिचय, एशिया बुक कम्पनी, इलाहाबाद, 2010
3. श्याम किशोर सेठ, तर्कशास्त्र, लोकभारती, इलाहाबाद, 2004
4. सुरेन्द्र बारलिंगे, तर्क–रेखा, राजस्थान हिंदी ग्रन्थ अकादमी, जयपुर, 1972
5. राजनारायण, प्रतीकात्मक तर्कशास्त्र, राजस्थान हिन्दी ग्रन्थ अकादमीए जयपुर, 1973
6. Irving M Copi, Symbolic Logic, Macmillan Publishing Co Inc., New York, 1979

Outcomes - Students will be well equipped to understand various structures of logic through this course.

Course Learning Outcome (COs)

CO1 - Concept of Symbolic Logic, Compound Statement, Truth value and Disjunction.
CO2 - Understanding of Coditional Statement, Material Implications and Truth table.
CO3 - Understanding of Statement and Statement firms, Material and Logical Equivalence.
CO4. Concept of Law of Thoughts and Analogy.
CO5 - Understanding of Experimental Method of mill, Agreement and method of Residues.

दर्शनशास्त्र **Philosophy**

एम. ए. चतुर्थ सेमेस्टर **M.A. IV Semester**

Course	-	**Contemporary Indian Philosophy (समकालीन भारतीय दर्शन)**
Types of Course	-	**Discipline Centric Elective (D.C.E.)**
Paper	-	**403 (A)**
Marks	-	**60 (Theory) + 40 (Internal Assessment) = 100**

Objective - This course will teach the contributions made by Vivekananda, Tagore, Gandhi, Sri Aurobindo and Radhakrishnan and to inspire them to emulate the achievements of these stalwarts.

इकाई – 1 Unit - I

स्वामी विवेकानन्द – जीवन परिचय, सत् एवं ईश्वर, जगत् का स्वरूप, माया–सिद्धान्त, मानव का स्वरूप, धर्म का स्वरूप, व्यावहारिक वेदान्त। Swami Vivekananda - Life Sketch, Sat and God, Nature of World, Maya Theory, Nature of Human, Nature of Religion, Practical Vedanta.

इकाई – 2 Unit - II

रबीन्द्रनाथ टैगोर – सत् एवं ईश्वर, जगत्/सृष्टि का स्वरूप, माया, मानव का स्वरूप, धर्म का स्वरूप, मानववाद। Rabindranath Tagore - Sat and God, Nature of World, Maya, Nature of Human, Nature of Religion, Humanism.

इकाई – 3 Unit - III

महात्मा गाँधी – अन्य विचारों का प्रभाव, ईश्वर एवं सत्य, जगत् का स्वरूप, मानव का स्वरूप, कर्म एवं पुनर्जन्म, साधन–साध्य, धर्म एवं नैतिकता। Mahatma Gandhi - Influence of Other Thoughts, God and Truth, Nature of World, Nature of Human, Karma and Rebirth, Means-End, Religion and Morality.

इकाई – 4 Unit - IV

श्री अरबिन्द – जीवन परिचय, सृष्टि/जगत् का स्वरूप, कर्म एवं पुनर्जन्म, अज्ञान का स्वरूप, अतिमानस, पूर्ण अद्वैत योग। Sri Aurobindo - Life Sketch, Nature of World, Karma and Rebirth, Nature of Ignorance, Super Mind, Integral Yoga.

इकाई – 5 Unit - V

राधाकृष्णन् – जीवन परिचय, निरपेक्ष/परम सत् का स्वरूप, निरपेक्ष सत् एवं ईश्वर, जगत् का स्वरूप, आत्म का स्वरूप, पुनर्जन्म का सिद्धान्त। Radhakrishnan - Life Sketch, Nature of Absolute, Absolute and God, Nature of World, Nature of Self, Theory of Rebirth.

उपयोगी ग्रंथ – **Suggested Readings :**

1. बसन्त कुमार लाल, समकालीन भारतीय दर्शन, मोतीलाल बनारसीदास, दिल्ली, 1993
2. नन्द किशोर देवराज, भारतीय दर्शन, उत्तर प्रदेश हिन्दी ग्रन्थ अकादमी, लखनऊ, 1975
3. समकालीन भारतीय दर्शन, लक्ष्मी सक्सेना, उत्तर प्रदेश हिन्दी संस्थान, लखनऊ, 2002
4. डॉ. ए अवस्थी एवं डॉ. आर के अवस्थी, भारतीय राजनीतिक चिन्तन, रिसर्च पब्लिकेशन्स, जयपुर, 2001
5. N. K. Bose, Studies in Gandhism, Second Edition, Indian Association Publishing Co. Calcutta, 1947
6. V. S. Narvane, Rabindranathe Tagore, a Philosophical Study, Allahabad Central Book Depot, 1947
7. V. S. Narvane, Modern Indian Thought, Asia Publishing House, Bombay, 1964
8. Binay Gopal Ray, Contemporary Indian Philosophers, Kitabistan, Allahabad, 1957

Outcomes - This course will help our students to come forward with convincing and appealing interpretations of our glorious philosophical tradition.

Course Learning Outcome (COs)

CO1 - Understanding of Life Sketch of Swami Viveka,Nature of world and Human or religion.
CO2 - Understanding viewpoint of Rabindranath Tagor about Sat, God and wirld.
CO3 - Explain mahatma Gandhi Thoughts, God, Truth, Human, Morality.
CO4 - Understanding of Sri Aurobindo Life Sketch and Integral Yoga.
CO5 - Understanding of Radha Krishnan Life Sketch and Concept of absolute, God and word.

दर्शनशास्त्र **Philosophy**

एम. ए. चतुर्थ सेमेस्टर **M.A. IV Semester**

Course	-	**Contemporary Western Philosophy (समकालीन पाश्चात्य दर्शन)**
Types of Course	-	**Discipline Centric Elective (D.C.E.)**
Paper	-	**403 (B)**
Marks	-	**60 (Theory) + 40 (Internal Assessment) = 100**

Objective - This course aims at teaching the theories of Bradley, Moore, Ayer, Wittgenstein, Russell, Husserl, and such contemporary philosophers. The topics that it covers are Theories of Meaning, Analytic Philosophy, Existentialism and so on so forth.

इकाई – 1 Unit - I

एफ. एच. ब्रेडले – आभास और सत् की समस्या, सत् का स्वरूप, उपयोगितावाद – चार्ल्स सैन्डर्स पर्स – अर्थ का सिद्धान्त, विलियम जेम्स – उत्कट अनुभववाद, जॉन डुवी – उपकरणवाद, शिलर – मानववाद। F. H. Bradley - Problem of Appearance and Reality, Nature of Reality, Charls Sanders Peirce - Theory of Meaning, William Jems - Redical Experience, John Dewey - Instrumentalism, Schiller - Humanism.

इकाई – 2 Unit - II

जी ई. मूर – 'दृश्यते अनेन इति वर्तते' का खण्डन, इन्द्रिय–प्रदत्त दर्शन, सम्बन्ध का स्वरूप, बट्रेन्ड रसेल – साक्षात् परिचय ज्ञान एवं विवरण ज्ञान, तार्किक अणुवाद। G.E. Moore - Refutation of Esse est percipi, Philosophy of Sense Data, Nature of Relation, Bertrand Rusell - Knowledge by Acquaintance and knowledge by Description, Logical Atomism.

इकाई – 3 Unit - III

तार्किक भाववाद – अर्थ सिद्धान्त, तत्त्वमीमांसा का निरसन, दर्शन का भावात्मक कार्य, ए. जे. एयर – सत्यापन सिद्धान्त। Logical Positivism - Theory of Meaning, Elimination of Metaphysics, Positive Function of Philosophy, A.J. Ayer - Principle of Verification.

इकाई – 4 Unit - IV

लु. विट्गेन्सटाइन – ट्रैक्टेटस का सामान्य परिचय, जगत्, तथ्य तथा विषय, 'जो कहा जा सकता है तथा जिसे दिखाया जा सकता है', अर्थ एवं प्रयोग। L. Wittgenstein - A General Intriduction of Tractatus, World, Facts and Objects, What can be said and What can be shown, Meaning and Use.

इकाई – 5 Unit - V

विश्लेषणात्मक दर्शन – परिचय, हुसर्ल की फेनामेनोलॉजी – परिचय, अस्तित्वावाद – जां पाल सार्त्र – अस्तित्व भाव से पहले है, चेतना तथा निषेधभाव, आत्म प्रवंचना। Analytic Philosophy - Introduction, Phenomenology of Edmund Husserl - Introduction, Existentialism - Jaun Paul Sartre - Existence Precedes Essence, Consciousness and Nothingness, Bad Faith.

उपयोगी ग्रंथ – **Suggested Readings :**

1. बसन्त कुमार लाल, समकालीन पाश्चात्य दर्शन, मोतीलाल बनारसीदास, दिल्ली, 1990
2. समकालीन पाश्चात्य दर्शन, लक्ष्मी सक्सेना, उत्तर प्रदेश हिन्दी संस्थान, लखनऊ, 1987
3. D. Pole, The Later Philosophy of Wittgenstein, Athbone Press, London, 1958
4. J. L. Austin, Philosophical Papers (Warnock and Urmson Ed) Oxford Clarendon Press, 1961
5. A. J. Ayer, Origin of Pragmatism, Mac Millan & Co. Ltd, London, Melbourn, Toranto, 1968
6. A. C. Ewing, Idealism, a critical survey, London, 1949

Outcomes - This course will make students acquainted with insightful and motivating thoughts of contemporary philosophers and induce them for further study in this field.

Course Learning Outcome (COs)

CO1 - Understanding theory of F.H. Bradley, Charls Sanders Peirce, William Jems and John Dewey.
CO2 - Understanding theory G.E.Moore and Bertrand Rusell.
CO3 - Understanding Logical Positivism and Principle of Verification.
CO4 - Understanding theory of Wittgenstein.
CO5 - Explain Phenomenology of Edmund Husserl, Existentialism, Consciousness and Nothingness.

दर्शनशास्त्र **Philosophy**

एम. ए. चतुर्थ सेमेस्टर **M.A. IV Semester**

Course	-	**Vedanta Darshan (वेदान्त दर्शन)**
Types of Course	-	**Generic Elective (G.E.)**
Paper	-	**404**
Marks	-	**60 (Theory) + 40 (Internal Assessment) = 100**

Objective - This course aims at enriching students with the entire tradition of Vedanta Philosophy within the fold of classical Indian Philosophy. The students will get an opportunity to study the thoughts of Shankar, Ramanuja, Madhva, Nimbarka, Vallabha, Chaitanya Mahaprabhu, Jiva Goswami on Jiva, Jagat and Moksha.

इकाई – 1 Unit - I

रामानुज – विशिष्टाद्वैत का अर्थ, ईश्वर का स्वरूप, ईश्वर का जीव एवं जगत् से सम्बन्ध, मायावाद की आलोचना – सप्तविध अनुपपत्तियाँ, मोक्ष – स्वरूप, साधन। Ramanuja - Meaning of Vishishtadvaita, Nature of God, Relation to Jiva and jagat of God, Criticism of Mayavada - Saptvidh Anuppattiyan, Moksha - Nature, MeanS.

इकाई – 2 Unit - II

मध्वाचार्य – ज्ञान का स्वरूप, प्रमाण, द्वैतवाद, सत्कार्यवाद और परिणामवाद, जगत् का स्वरूप, जीव का स्वरूप, मोक्ष। Madhvacharya - Nature of Knowledge, Pramana, Dvaitavada, Satkaryavada and Parinamavada, Nature of the world, Nature of Jiva, Moksha.

इकाई – 3 Unit - III

निम्बार्क – ज्ञान का स्वरूप, भेदाभेदवाद, कारणकार्य सिद्धान्त, जगत् का स्वरूप, मोक्ष। Nimbarka - Nature of Knowledge, Bhedabhedvada, Causation Theory, Nature of the World, Moksha.

इकाई – 4 Unit - IV

वल्लभ – ज्ञान का स्वरूप, शुद्धाद्वैतवाद, कारण कार्य सिद्धान्त, मोक्ष। Vallabha - Nature of Knowledge, Shuddhadvaitavada, Causation Theory, Moksha.

इकाई – 5 Unit - V

चैतन्य महाप्रभु – अचिन्त्य भेदाभेदवाद, चैतन्य के अनुयायियों का मत – कृष्णदास, जीव गोस्वामी, बलदेव विद्याभूषण, वैष्णव वेदान्त की तुलना। Chaitanya Mahaprabhu - Achintybhedabhedvada, Opinion of Chaitanya's Disciple's - Krishnadasa, Jiv Goswami, Baladev Vidyabhushana, Comparative study of Vaishnava Vedanta.

उपयोगी ग्रंथ – **Suggested Readings :**

1. डॉ. चन्द्रधर शर्मा, भारतीय दर्शन अलोचन और अनुशीलन, मोतीलाल बनारसीदास, दिल्ली 1995
2. डॉ. बी.एन. सिंह एवं डॉ. आशा सिंह, भारतीय दर्शन, स्टूडेण्ट्स फ्रेण्ड्स एण्ड कम्पनी, 1996
3. प्रो. हरेन्द्र प्रसाद सिन्हा, भारतीय दर्शन की रूपरेखा, मोतीलाल बनारसीदास, दिल्ली, 1963
4. बलदेव उपाध्याय, भारतीय दर्शन, शारदा मन्दिर वाराणसी, 1997
5. नन्द किशोर देवराज, भारतीय दर्शन, उत्तर प्रदेश हिन्दी ग्रन्थ अकादमी, लखनऊ, 1975
6. डॉ. श्रीकान्त मिश्र, भारतीय नीतिशास्त्र, आशा पब्लिशिंग कम्पनी, आगरा, 2018
7. Dutta & Chatterjee, An Introduction to Indian Philosophy, University of Calcutta, 1968.
8. M. Hiriyanna, Outlines of Indian Philosophy, George Allen and Unwin, Lodon-1932.

Outcomes - Students will develop critical insights about different schools of Vedanta Philosophy.

Course Learning Outcome (COs)

CO1-Concept of Vishishtadvaita, God and Means.
CO2- Understanding of madhvacharya & Nature of knowledge and World.
CO3-Concept of Nimbarka; Nature of knowledge and world.
CO4- Understanding of Vallabha Nature of Knowledge and Causation Theory.
CO5- Understanding Chaitanya Mahaprabhu and Opinion of Chaitanya's Disciple's Vaishnava Vedanta.

दर्शनशास्त्र **Philosophy**

एम. ए. चतुर्थ सेमेस्टर **M.A. IV Semester**

Course	-	**Comprehensive Viva-voce**
Types of Course	-	**Core Course (C.C.)**
Paper	-	**405**
Marks	-	**100 (Minimum Passing Marks = 35)**

Objective - Students will be able to learn communication skills through viva-voce.

Comprehensive Viva-voce will be based on entire course of M. A. Fourth Semester, Philosophy.

विशद् मौखिकी परीक्षा एम. ए. चतुर्थ सेमेस्टर दर्शनशास्त्र के सम्पूर्ण पाठ्यक्रमों पर आधारित होगी।

Outcomes - Students will find themselves prepared for interviews.

AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

STRUCTURE OF SYLLABUS FOR Ph.D. COURSE WORK (PHILOSOPHY) 2018-19 ONWARDS

(AS PER ORDINANCE NO. 11 DOCTOR OF PHILOSOPHY)

Paper Code	Name of Theory Papers	Credits	Maximum Marks (Theory + Internal Assessment)	Minimum Passing Marks
Ph.D.101	**Research Methodology**	4	100 (80+20)	55
Ph.D. 102	**Review of Published Research in the Relevant Area**	3	100	55
Ph.D. 103	**Computer Applications**	3	100 (80+20)	55
Ph.D. 104	**Specialization Subjects (Any One of the following) : MP104 (I) Indian Metaphysics &Epistemology MP 104 (II) Western Metaphysics&Epistemology**	3	100 (80+20)	55
Ph.D. 105	**Comprehensive Viva-Voce**	3	100	55
	Total Credit	16		

Ph.D. PHILOSOPHY
Ph.D. 101 : RESEARCH METHODOLOGY

TIME : 03 Hours

Theory Paper : Max Marks - 80
Internal Assessment : Max Marks - 20
Minimum Passing Marks - 55

The paper setter is requested to set in all Eight questions, out of which only four questions are to be attempted by the students. All questions will be of equal marks. Two questions are to be set from each unit. The students are required to attempt at least one question from each unit.

इकाई –I / Unit - I

अनुसंधान का अर्थ, उद्देश्य एवं क्षेत्र, अनुसंधान के प्रकार, शोध–प्रविधि की पद्धतियाँ, अनुसंधान की प्रकृति एवं प्रक्रिया।

Meaning, Objectives and Scope of Research, Kinds of Research, Methods of Research Methodology, Nature and Process of Research.

इकाई – II / Unit - II

शोध प्रबन्ध एवं शोधपत्र, शोधार्थी एवं शोध निर्देशक, शोध विषय का चयन एवं शीर्षक निर्धारण, शोध प्रबन्ध का स्वरूप एवं उसकी रूपरेखा, सामग्री संकलन।

Thesis and Research Paper, Research Scholar and Research Guide, Selection of Subject and Topic, Synopsis and Nature of Thesis, Matter Collection.

इकाई – III / Unit - III

शोध प्रबन्ध के मुख्य अंग – अध्याय अथवा परिच्छेद व्यवस्था, अनुच्छेद व्यवस्था, उद्धरण, पादटिप्पणी, ग्रन्थसूची, परिशिष्ट, उपोद्घात।

Main Parts of Thesis - Chapters, Paragraphs, Quotations, Footnotes, Bibliography, Index, Preface.

इकाई – IV / Unit - IV

शोध प्रबन्ध प्रतिवेदन – प्रतिवेदन का प्रारम्भिक भाग, प्रतिवेदन का मुख्य भाग, सन्दर्भ विभाग।

Thesis Report, Preliminary Section or Front Matter, Main Body of the Report, Reference Section.

Suggested Readings :

1. डॉ. अभिराजराजेन्द्र मिश्र एवं डॉ. (श्रीमती) राजेशकुमारी मिश्रा, शोधप्रविधि एवं पाण्डुलिपिविज्ञान, अक्षयवट प्रकाशन, इलाहाबाद, 2008
2. डॉ. मनोरमा शर्मा, संगीत अनुसंधान प्रक्रिया, हरियाणा ग्रन्थ अकादमी, पंचकूला,1990
3. डॉ. रहस बिहारी द्विवेदी, साहित्यानुसन्धानावबोधप्रविधिः, शिववांगमुनिप्रमेधाप्रकाशनम्, जबलपुर, 2011
4. प्रो. आनन्द प्रकाश सिंह, सामाजिक अनुसंधान, यूनिवर्सिटी पब्लिकेशन, नई दिल्ली, 2008
5. डॉ. विनयमोहन शर्मा, शोध प्रविधि, मयूर पेपरबैक्स, नई दिल्ली, 2016
6. वंदना वोहरा, रिसर्च मैथ्डोलॉजी, ओमेगा पब्लिकेशन्स, नई–दिल्ली, 2012
7. C.R. Kothari, Research Methodology Methods & Techniques, Wishwa Prakashan, New Delhi, 1998

Ph.D. PHILOSOPHY

Ph.D. 102 : Review of Published Research in the Relevant Area

TIME : 03 Hours

Max Marks - 100
Minimum Passing Marks - 55

संबंधित क्षेत्र में प्रकाशित–शोध सामग्री की समीक्षा।
Review of Published Research in the Relevant Area.

Ph.D. PHILOSOPHY
Ph.D. 103 : COMPUTER APPLICATIONS

TIME : 03 Hours

Theory Paper : Max Marks - 80
Internal Assessment : Max Marks - 20
Minimum Passing Marks - 55

The paper setter is requested to set in all Eight questions, out of which only four questions are to be attempted by the students. All questions will be of equal marks. Two questions are to be set from each unit. The students are required to attempt at least one question from each unit.

Unit - I / इकाई - I

कम्प्यूटर का परिचय – कम्प्यूटर का इतिहास, कम्प्यूटर की विशेषताएँ, वर्गीकरण, डिजिल, एनालॉग, हाईब्रिड, माइक्रो, मिनी, मेन फ्रेम एवं सुपर कम्प्यूटर प्रणाली के घटक एवं कम्प्यूटर का ब्लाक चित्र, इनपुट, आउटपुट एवं द्वितीयक संग्रहण युक्तियाँ, हार्डवेयर एवं सॉफ्टवेयर की अवधारणा, उच्च स्तरीय एवं निम्न स्तरीय भाषाएँ, अनुवादक कम्पाइलर एवं इन्टरप्रेटर।

Introduction of Computer - History of Computer, Characteristics of Computer, Categorization, Digital, Analog, Hybrid, Micro, Mini, Mainframe and super Computer, Components of Computer System and block-diagram of Computer. Input, Output, secondary Storage devices. Concept of Hardware and Software. High and low level Languages. Translators, Compiler and interpreter.

Unit - II / इकाई - II

आपरेटिंग सिस्टम का परिचय – आवश्यकता, कार्य, कंट्रोल प्रोग्राम एवं जाब कंट्रोल प्रोग्राम का करेन्ट आपरेटिंग सिस्टम पर्सनल कम्प्यूटर के लिए प्रसिद्ध आपरेटिंग सिस्टम–एम.एस.डास एवं विन्डोस। डास के आन्तरिक एवं बाह्य कमाण्ड, बाह्य कमाण्ड–(ट्री, अनडिलीट, चेकडिस्क, एफडिस्क, एक्सी, बेकअप, रिस्टोर, फॉरमेट, अनफारमेट, ज्याइन) पैथ और कोनफिग फाइल की अवधारणा, फिल्टरिंग पाइपिंग एवं रिडायरेक्टिंग।

Introduction to Operating System - Requirement, Working, Current operating system for control program and job Control program. Famous operating system for personal computer - M.S. Dos and windows. Internet and external commands of Dos. External command - (TREE, UNDELETE, CHKDSK, FDISK, FC, BACKUP, FORMAT, UNFORMAT, RESTORE, JOIN), Concept of botch and config files, Filtering, Piping and redirecting.

Unit - III / इकाई - III

विन्डोज का परिचय – प्रोग्राम मैनेजर, फाइल मैनेजर, कंट्रोल पैनल प्रिंट मैनेजर, पी.आई.एफ. एडिटर, एक अनुप्रयोग से दूसरे अनुप्रयोग मे सूचना का आदान–प्रदान (ओ.एल.ई.)।

Introduction to Windows - Program manager, File Manager, Control Panel, Print Manager PIF editor, Exchange of information from one application to another (O.L.E.).

Unit - IV / इकाई - IV

माइक्रोसाफ्ट–ऑफिस मैनेजर, माइक्रो साफ्ट ऑफिस के साथ सूचना का आदान–प्रदान, जोडी एवं रखी गई सूचना को एडिट करना, माइक्रो साफ्ट आफिस के घटक–वर्ड, एक्सल एवं पावर प्वांइट, वर्ड के साथ शब्दो की प्रोसिसिंग, जैसे–अन्डू, रिडू, रिपीट, इन्सर्ट टेक्स्ट, रिप्लेश टेक्स्ट, टेक्स्ट की फार्मेटिंग करना, नये वर्ड डाक्यूमेंट की कापी अन्य वर्ड डाक्यूमेंट मे करना, प्रिंटिंग प्रक्रिया, आटो फारमेट एवं आटो करेक्ट की प्रक्रिया, आवृत्ति वितरण, माध्य, मध्यिका, बहुलक, प्रसरण, समाश्रयण, सहसंबंध, इन सब का प्रयोग एम.एस. एक्सल अथवा सामाजिक विज्ञान पैकेज के विशेष सन्दर्भ में।

Introduction to Microsoft office - Office Manager, exchange of information with Microsoft office-Editing added and stored information, Components of Microsoft Office - word, Excel and Power Point. Word Processing with MS Word like - Undo, Redo, Repeat, insert text, replace text, formatting the text, Copying new word document to other word document, Printing Process, Process of auto format and auto correct, Introduction to statistics analysis, Frequency distribution, Mean, Median, mode, proliferation, Regression, correlation; use of all these in M.S. Excel or in the particular context of the social Science Package.

Suggested Readings

1. P.K. Sinha, Computer Fundamentals, BPB Publ.
2. Satish Jain, Introduction to Computer Science, BPB, Publ.
3. R. Mansfield, The Compact Guide to M.S.- OFFICE, BPB, Publ.
4. R. Thomas, Dos 6 and 6.2 instant Reference BPB, Publ.
5. Murray, Mastering POWER POINT 6.0 for windows, BPB, Publ.
6. Ray M. And H.S. Sharma, Mathematical Statistics, Ram Prasad and Sons.

Ph.D. PHILOSOPHY
Ph.D. 104 (I) : INDIAN METAPHYSICS & EPISTEMOLOGY

TIME : 03 Hours

Theory Paper : Max Marks - 80
Internal Assessment : Max Marks - 20
Minimum Passing Marks - 55

The paper setter is requested to set in all Eight questions, out of which only four questions are to be attempted by the students. All questions will be of equal marks. Two questions are to be set from each unit. The students are required to attempt at least one question from each unit.

इकाई – I / Unit - I

उपनिषदों में ब्रह्म का स्वरूप, चार्वाक दर्शन का भौतिकवाद, प्रमा का अर्थ एवं स्वरूप, अप्रमा।
Nature of Brahman in Upanishads, Materialism of Charvaka Philosophy, Meaning and Nature of Prama, Aprama.

इकाई – II / Unit - II

जैन दर्शन में जीव का स्वरूप, बौद्ध दर्शन का अनात्मवाद, ख्यातिवाद – अन्यथाख्याति, विपरीतख्याति, अख्याति, अनिर्वचनीयख्याति, सत्ख्याति।
Nature of Jiva in Jaina Philosophy, Anatmavada of Bouddha Philosophy, Khyativada - Anyathakhyativada, Viparitkhyativada, Akhyati, Anirvachaniyakhyati, Satkhyati.

इकाई – III / Unit - III

सांख्य का सत्कार्यवाद, विकासवाद, योग दर्शन में ईश्वर का स्वरूप, अष्टांग योग, शांकर दर्शन में ब्रह्म का स्वरूप, शांकर दर्शन में माया का स्वरूप।
Satkaryavada of Samkhya, Nature of God in Yoga Philosophy, Ashtanga Yoga, Nature of Brahman in Shamkara's Philosophy, Nature of Maya in Shamkara's Philosophy.

इकाई – IV / Unit - IV

स्वतः प्रामाण्यवाद एवं परतः प्रामाण्यवाद, जैन दर्शन का स्याद्वाद, न्याय दर्शन – प्रत्यक्ष, अनुमान, शब्द व उपमान।
Swatah Pramanyavada & Paratah Pramanyavada, Syadavada of Jaina Philosophy, Nyaya Philosophy - Pratyaksha, Anumana, Shabda, Upaman.

Suggested Readings :

1. डॉ. चन्द्रधर शर्मा, भारतीय दर्शन अलोचन और अनुशीलन, मोतीलाल बनारसीदास, दिल्ली 1995
2. डॉ. बी.एन. सिंह एवं डॉ. आशा सिंह, भारतीय दर्शन, स्टूडेण्ट्स फ्रेण्ड्स एण्ड कम्पनी, काशी हिन्दू विश्वविद्यालय मार्ग लंका, वाराणसी–5, 1996
3. प्रो. हरेन्द्र प्रसाद सिन्हा, भारतीय दर्शन की रूपरेखा, मोतीलाल बनारसीदास, दिल्ली, 1963
4. बलदेव उपाध्याय, भारतीय दर्शन, शारदा मन्दिर वाराणसी, 1997
5. नन्द किशोर देवराज, भारतीय दर्शन, उत्तर प्रदेश हिन्दी ग्रन्थ अकादमी, लखनऊ, 1975
6. Dutta & Chatterjee, An Introduction to Indian Philosophy, University of Calcutta, 1968.
7. M. Hiriyanna, Outlines of Indian Philosophy, George Allen and Unwin, Lodon-1932.

Ph.D. PHILOSOPHY
Ph.D. 104 (II) : WESTERN METAPHYSICS & EPISTEMOLOGY

TIME : 03 Hours

Theory Paper : Max Marks - 80
Internal Assessment : Max Marks - 20
Minimum Passing Marks - 55

The paper setter is requested to set in all Eight questions, out of which only four questions are to be attempted by the students. All questions will be of equal marks. Two questions are to be set from each unit. The students are required to attempt at least one question from each unit.

इकाई – I / Unit - I

सुकरात की द्वन्दात्मक पद्धति – प्लेटो – विज्ञानवाद, धारणा एवं ज्ञान, अरस्तू – कारणता का सिद्धान्त, द्रव्य एवं आकार।
Dialectic Method of Socrates, Plato - Idealism, Opinion and Knowledge, - Aristotle - Theory of Causality, Matter and Form.

इकाई – II / Unit - II

देकार्त – संदेह पद्धति, द्वैतवाद, मै सोचता हूँ इसलिए मैं हूँ, स्पिनोजा – सर्वेश्वरवाद, समानान्तरवाद।
Descartes - Method of Doubt, Dualism, Cogito Ergo Sum, Spinoza - Pantheism, Parallelism.

इकाई – III / Unit - III

लाइब्नीत्ज – चिदणुवाद, पूर्वस्थापित सामंजस्य का सिद्धान्त, जॉन लॉक – जन्मजात प्रत्ययों का खण्डन, मूलगुण एवं उपगुण।
Leibnitz - Monadology, Theory of Pre Established Harmony, John Locke - Refutation of Innate Ideas, Primary and Secondary Qualities.

इकाई – IV / Unit - IV

बर्कले – जड़द्रव्य का खण्डन, सत्ता अनुभव मूलक है, ह्यूम – सन्देहवाद, कारणता तथा आत्मा का खण्डन, काण्ट – समीक्षावाद।
Berkalay - Refutation of Matter, Esse Est Percipi, Hume - Skepticism, Refutation of Causation and Soul, Kant - Criticism.

Suggested Readings

1. चन्द्रधर शर्मा, पाश्चात्य दर्शन, मोतीलाल बनारसीदास, दिल्ली, 1997
2. डॉ. बी.एन. सिंह, पाश्चात्य दर्शन, स्टूण्डेन्ट्स फ्रेण्ड्स एण्ड कम्पनी, वाराणसी, 1973
3. याकूब मसीह, पाश्चात्य दर्शन का समीक्षात्मक इतिहास, मोतीलाल बनारसीदास, नई दिल्ली, 2005
4. जगदीश सहाय श्रीवास्तव, आधुनिक पाश्चात्य दर्शन का वैज्ञानिक इतिहास, पुस्तक स्थान, गोरखपुर, 1973
5. Frank Thilly, History of Western Philosophy, Central Book Depot, Allahabad, 1975
6. W.T Stace, .: A Critical History of Greek Philosophy Macmillan, New Delhi, 1985
7. Y. Masih, - A Critical History of Western Philosophy, Motilal Banarasidas, Delhi, 1994

DEPARTMENT OF PHYSICAL EDUCATION & SPORTS SCIENCE

AWADESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

CURRICULUM FRAMEWORK:
TWO-YEAR B.P.ED. PROGRAMME

NATIONAL COUNCIL FOR TEACHER EDUCATION
Hans Bhawan (Wing-II),
1, Bahadur Shah Zafar Marg,
New Delhi-110 002
www.ncte-india.org

GUIDELINES OF REGULATIONS AND MODEL SYLLABUS STRUCTURE FOR B. P. ED. TWO YEARS PROGRAMME (FOUR SEMESTERS)(CBCS)

(If the University or affiliating body is following choice based credit system, (CBCS) as approved and Circulated by the UGC, the credit hours given in the following curriculum framework need to be considered along with the hours of teaching mentioned for each paper/ activity / course)

(If the University oraffiliatingbody isyet to adopt CBCS, only the hours of teaching mentioned for each paper/ activity / course will be considered, the credit in teaching hours may be ignored)

Preamble: Bachelor of Physical Education (B. P. Ed.) two years (Four Semesters Choice Based Credit System) programme is a professional programme meant for preparing teachers of physical education in classes VI to X and for conducting physical education and sports activities in classes XI and XII.

B. P. Ed. programme shall be designed to integrate the study of childhood, social context of Physical Education, subject knowledge, pedagogical knowledge, aim of Physical Education and communication skills. The programme comprises of compulsory and optional theory as well as practical courses and compulsory school internship.

R.B.P.Ed. 1.Eligibility

Intake, Eligibility and Admission Procedure as per the NCTE norms and standards

R. B.P.Ed. 2. Duration:

The B.P.Ed programme shall be of a duration of two academic years,that is, four semesters. However, the students shall be permitted to complete the programme requirements within a maximum of three years from the date of admission to the programme.

R. B.P.Ed. 3. The CBCS System:

All Programmes shall run on Choice Based Credit System (CBCS). It is an instructional package developed to suit the needs of students, to keep pace with the developments in higher education and the quality assurance expected of it in the light of liberalization and globalization in higher education.

R. B.P.Ed 4. Course:

The term course usually referred to, as 'papers' is a component of a programme. All courses need not carry the same weight. The courses should define learning objectives and learning outcomes. A course may be designed to comprise Lectures/ tutorials/laboratory work/ field work/ outreach activities/ project work/ vocational training/viva/ seminars/ term papers/assignments/ presentations/ self-study etc. or a combination of some of these.

R. B.P.Ed. 5. Courses of Programme:

The B.P.Ed. Programme consists of a number of courses, the term 'Course' applied to indicate a logical part of subject matter of the programme and is invariably equivalent to the subject matter of a "paper" in the conventional sense. The following are the various categories of courses suggested for the B.P.Ed. Programme.

Theory:

Core Course:

Elective Course:

Practicum:

Teaching Practices:

R. B.P.Ed.6. Semesters:

An academic year is divided into two semesters. Each semester will consist of 17-20 weeks of academic work equivalent to 100 actual teaching days. The odd semester may be scheduled from May/June to November/Decemberand even semester from November / December to May/June. The institution shall work for a minimum of 36 working hours in a week (five or six days a week).

R. B.P.Ed.7. Working days:

There shall be at least 200 working days per year exclusive of admission and examination processes etc.

R. B.P.Ed 8. Credits:

The term 'Credit' refers to a unit by which the programme is measured. It determines the number of hours of instructions required per week. One credit is equivalent to one hour of teaching (lecture or tutorial) or one and half / two hours of practical work/field work per week.The term 'Credit' refers to the weight given to a course, usually in relation to the instructional hours assigned to it. The total minimum credits, required for completing a B.P.Ed. Programme is 90 credits and for each semester 20 credits.

Provision of Bonus CreditsMaximum 06 Credits in each Semester

Sr. No.	Special Credits for Extra Co-curricular Activities	Credit
1	Sports Achievement at Stale level Competition (Medal Winner) Sports Achievement National level Competition (Medal Winner) Sports participationInternational level Competition	1 2 4
2	Inter Uni. Participation (Any one game)	2
3	Inter College Participation (min. two game)	1
4	National Cadet Corps / National Service Scheme	2
5	Blood donation / Cleanliness drive / Community services /	2
6	Mountaineering – Basic Camp, Advance Camp / Adventure Activities	2
7	Organization / Officiating – State / National level in any two game	2
8	News Reposting / Article Writing / book writing / progress report writing	1
9	Research Project	4

Students can earn maximum 06 Bonus credits in each semester by his/her participation in the above mentioned activities duly certified by the Head of the institution / Department. This Bonus credit will be used only to compensate loss of credits in academic activities.

R. B.P.Ed. 9. Examinations:

i. There shall be examinations at the end of each semester, for first semester in the month of November /December: for second semester in the month of May / June. A candidate who does not pass the examination in any course(s) shall be permitted to appear in such failed course(s) in the subsequent examinations to be held in November /December or May / June.

ii. A candidate should get enrolled /registered for the first semester examination. If enrollment/registration is not possible owing to shortage of attendance beyond condonation limit / rules prescribed OR belated joining OR on medical grounds, such candidates are not permitted to proceed to the next semester. Such candidates shall redo the semester in the subsequent term of that semester as a regular student; however, a student of first semester shall be admitted in the second semester, if he/she has successfully kept the term in first semester.

R. B.P.Ed 10 Condonation:

Student must have 75% of attendance in each course for appearing the examination. Students who have 74% to 65% of attendance shall apply for condonation in the prescribed form with the prescribed fee. Students who have 64% to 50% of attendance shall apply for

condonation in prescribed form with the prescribed fee along with the Medical Certificate. Students who have below 50% of attendance are not eligible to appear for the examination.

R. B.P.Ed 11. Pattern of Question Papers:

Question Papers shall have five questions corresponding to four units of each theory course.

B.P.Ed.: Format of Question Paper for 4 Units.

Each question paper shall have five questions. The pattern will be as follows:

Question No.	Description	Marks
1	Answer in detail (Long Question) Or Answer in detail (Long Question) (Form Unit 1)	15
2	Answer in detail (Long Question) Or Answer in detail (Long Question) (Form Unit 2)	15
3	Answer in detail (Long Question) Or Answer in detail (Long Question) (Form Unit 3)	15
4	Write short notes: any two out of four (Form Unit 4)	15
5	M.C.Q. Type Questions (10 out of 12 Que.) (3 Questions. from each unit)	10
	Total	**70**

R. B.P.Ed. 12. Evaluation:

The performance of a student in each course is evaluated in terms of percentage of marks with a provision for conversion to grade point. Evaluation for each course shall be done by a continuous internal assessment (CIA) by the concerned course teacher as well as by end semester examination and will be consolidated at the end of course. The components for continuous internal assessment are;

One Test	15 Marks
Seminar / Quiz	5 Marks
Assignments	5 Marks
Attendance	5 Marks
Total	30 Marks

Attendance shall be taken as a component of continuous assessment, although the students should have minimum 75% attendance in each course. In addition to continuous evaluation component, the end semester examination, which will be written type examination of at least 3 hours duration, would also form an integral component of the evaluation. The ratio of marks to be allotted to continuous internal assessment and to end semester examination is 30:70. The evaluation of practical work, wherever applicable, will also be based on continuous internal assessment and on an end-semester practical examination.

R. B.P.Ed. 13. Minimum Passing Standard:

The minimum passing standard for CIA (Continuous Internal Assessment) and External Examinations shall be 40%, i.e. 12 marksout of 30 marks and 28 marks out of 70 marks respectively for theory courses.The minimum passing for both CIA & external examination shall be 50%,i.e. 15 marks out of 30 and 35 marks out of 70 marks for the practical courses.

R. B.P.Ed 14. Grading:

Once the marks of the CIA (Continues Internal Assessment) and SEA (Semester End Assesment) for each of the courses are available, both (CIA and SEA) will be added. The marks thus obtained for each of the courses will then be graded as per details provided in R. B.P.Ed. 17 from the first semester onwards the average performance within any semester from the first semester is indicated by Semester Grade Point Average (SGPA) while continuous performance (including the performance of the previous semesters also) starting from the first semesteris indicated by Cumulative Grade Point Average (CGPA). These two are calculated by the following formula:

$$= \frac{\Sigma}{\Sigma}$$

$$= \frac{\Sigma}{}$$

Where C*i* is the Credit earned for the course is in any semester; G*i* is the Grade point obtained by the student for the course *i* and *n* number of courses obtained in that semester; is SGPA of semester *j* and *N* number of semester. Thus CGPA is average of SGPA of all the semesters starting from the first semester to the current semester.

R. B.P.Ed. 15. Classification of Final Results:

For the purpose of declaring a candidate to have qualified for the Degree of Bachelor of Physical Education in the First class / Second class / Pass class or First class with Distinction, the

marks and the corresponding CGPA earned by the candidate in Core Courses will be the criterion. It is further provided that the candidate should have scored the First / Second Class separately in both the grand total and end Semester (External) examinations.

R. B.P.Ed.16. Award of the B.P.Ed. Degree:

A candidate shall be eligible for the award of the degree of the B.P.Ed. only if he/she has earned the minimum required credit including Bonus Credits of the programme prescribed above.

R. B.P.Ed.17. Letter Grades and Grade Points:

i. Two methods-relative grading or absolute grading– have been in vogue for awarding grades in a course. The relative grading is based on the distribution (usually normal distribution) of marks obtained by all the students in the course and the grades are awarded based on a cut-off mark or percentile. Under the absolute grading, the marks are converted to grades based on pre-determined class intervals. To implement the following grading system, the colleges and universities can use any one of the above methods.

ii. The grades for each course would be decided on the basis of the percentage marks obtained at the end-semester external and internal examinations as per following table:

Percentage	Grade Point	Latter Grade	Description	Classification of final result
85 & above	8.5-10.0	O	Outstanding	First class with Distinction
70-84.99	7.0-8.49	A^+	Excellent	
60-69.99	6.0-6.99	A	Very Good	First Class
55-59.99	5.5-5.99	B+	Good	Higher Second Class
50-54.99	5.0-5.49	B	Above Average	Second Class
40-49.99	4.0-4.99	C	Average	Pass Class
Below 40	0.0	F	Fail/ Dropped	Dropped
	0	AB	Absent	

R. B.P.Ed.18. Grade Point Calculation

Calculation of **Semester Grade Point Average (SGPA)** and **Credit Grade Point (CGP)** and declaration of class for B. P. Ed. Programme.

The credit grade points are to be calculated on the following basis:

$$= \frac{\Sigma}{\Sigma}$$

Example – I

Marks obtained by Student in course CC101 = 65/100

Percentage of marks = 65 %

Grade from the conversion table is = A

Grade Point = 6.0 + 5 (0.99/9.99)
= 6.0 + 5x0.1
= 6.0+ 0.5
=6.5
The Course Credits = 04
Credits Grade Point (CGP) = 6.5 × 04 = 26

The semester grade point average (SGPA) will be calculated as a weighted average of all the grade point of the semester courses. That is Semester grade point average (SGPA) = (sum of grade points of all eight courses of the semester) / total credit of the semester as per example given below:

SEMESTER-1

Courses No.	Credit	Marks out of 100 (%)	Grade	Grade Point	Credit Grade point
CC-101	4	65	A	6.5	26
CC-102	4	60	A	6	24
CC-103	4	62	A	6.2	24.8
EC-101/EC-102	4	57	B+	5.7	22.8
PC-101	4	55	B+	5.5	22
PC-102	4	72	A+	7.2	28.8
PC-103	4	66	A	6.6	26.4
PC - 104	4	72	A+	7.2	28.8
	32				203.6

Examples: Conversion of marks into grade points

CC-101 65 = 60 + 5 = 6.0 + 5 x (0.99 / 9.99) = 6.0 + 5 x 0.1 = 6.0 + 0.5 = 6.5
CC-102 60 = 6.0
CC-103 62 = 60 + 2 =6.0 + 2 x (0.99/9.99) = 6.0 + 2 x 0.1 = 6.0 + 0.2 = 6.2
EC-101/EC-102 57 = 55 + 2 = 5.5 + 2 x (0.49 / 4.99) = 5.5 + 2 x 0.1 = 5.5 + 0.2 = 5.7
PC-101 55 = 5.5
PC-102 72 = 70 + 2 = 7.0+ 2 x (1.49 /14.99) = 7.0 + 2 x 0.1 = 7.0 +0.2 = 7.2
PC-103 66 = 60 + 6 = 6.0 + 6 x (0.99 / 9.99) = 6.0 + 6 x 0.1 = 6.0 + 0.6 = 6.6
PC – 104 72 = 70 + 2 = 7.0+ 2 x (1.49 /14.99) = 7.0 + 2 x 0.1 = 7.0 +0.2 = 7.2

SEMESTER GRADE POINT AVERAGE (SGPA) = Total Credit Grade Points
= 203.6 /32 = 6.3625
SGPA Sem. I = 6.3625
At the end of Semester-1
Total SGPA = 6.3625
Cumulative Grade Point Average (CGPA) = 6.3625/1 = 6.3625

CGPA = 6.66875, Grade = A, Class = First Class

SEMESTER-2

Courses No.	Credit	Marks out of 100 (%)	Grade	Grade Point	Credit Grade point
CC-201	4	76	A+	7.6	30.4
CC-202	4	64	A	6.4	25.6
CC-203	4	59	B+	5.9	23.6
EC-201/EC-202	4	80	A+	8	32
PC-201	4	49	C	4.9	19.6
PC-202	4	64	A	6.4	25.6
PC-203	4	55	B+	5.5	22
TP - 201	4	72	A+	7.2	28.8
	32				207.6

SGPA Sem. II = 6.4875

At the end of Semester-2

Total SGPA for two Semesters = 12.85
Cumulative Grade Point Average (CGPA) = 12.85/2 = 6.425
CGPA = 6.66875, Grade = A, Class = First Class

SEMESTER-3

Courses No.	Credit	Marks out of 100 (%)	Grade	Grade Point	Credit Grade point
CC-301	4	64	A	6.4	25.6
CC-302	4	64	A	6.4	25.6
CC-303	4	59	B+	5.9	23.6
EC-301/EC-302	4	81	A+	8.1	32.4
PC-301	4	49	C	4.9	19.6
PC-302	4	64	A	6.4	25.6
PC-303	4	68	A	6.8	27.2
TP - 301	4	75	A+	7.5	30
	32				209.6

SGPA Sem. III = 6.55
At the end of Semester-3

Total SGPA for three Semesters = 19.4
Cumulative Grade Point Average (CGPA) = 19.4/3 = 6.466667
CGPA = 6.66875, Grade = A, Class = First Class

SEMESTER-4

Courses No.	Credit	Marks out of 100 (%)	Grade	Grade Point	Credit Grade point
CC-401	4	83	A+	8.3	33.2
CC-402	4	76	A+	7.6	30.4
CC-403	4	59	B+	5.9	23.6
EC-401/EC-402	4	81	A+	8.1	32.4
PC-401	4	49	C	4.9	19.6
PC-402	4	78	A+	7.8	31.2
TP-401	4	81	A+	8.1	32.4
TP-402	4	75	A+	7.5	30
	32				232.8

SGPA Sem. IV = 7.275

At the end of Semester-4

Total SGPA for all the four semesters = 26.675

Cumulative Grade Point Average (CGPA) = 26.675 /4 = 6.66875

CGPA = 6.66875, Grade = A, Class = First Class

Note:

(1) SGPA is calculated only if the candidate passes in all the courses i.e. get minimum C grade in all the courses.

(2) CGPA is calculated only when the candidate passes in all the courses of all the previous and current semesters.

(3)The cumulative grade point average will be calculated as the average of the SGPA of all the semesters continuously, as shown above.

(4)For the award of the class, CGPA shall be calculated on the basis of:

(a) Marks of each Semester EndAssesment And

(b) Marks of each Semester Continuous Internal Assessment for each course. The final Class for B.P.Ed. Degree shall be awarded on the basis of last CGPA (grade) fromall theone to four semester examinations.

R. B.P.Ed.19. Grievance Redressal Committee:

The college/department shall form a Grievance Redressal Committee for each course in each college/department with the course teacher / Principal / Director and the HOD of the faculty as the members. This Committee shall solve all grievances of the students.

R. B.P.Ed.20. Revision of Syllabi:

1. Syllabi of every course should be revised according to the NCTE.
2. Revised Syllabi of each semester should be implemented in a sequential way.
3. In courses, where units / topics related to governmental provisions, regulations or laws, that change to accommodate the latest developments, changes or corrections are to be made consequentially as recommended by the Academic Council.

4. All formalities for revisions in the syllabi should be completed before the end of the semester for implementation of the revised syllabi in the next academic year.
5. During every revision, up to twenty percent of the syllabi of each course should be changed so as to ensure the appearance of the students who have studied the old (unrevised) syllabi without any difficulties in the examinations of revised syllabi.
6. In case, the syllabus of any course is carried forward without any revision, it shall also be counted as revised in the revised syllabi.

Semester - I

PartA:TheoreticalCourse						
Course Code	TitleofthePapers	Total Hours	Credit	Internal Marks	External Marks	Total Marks
CoreCourse						
CC-101	History, Principles and foundation of Physical Education	4	4	30	70	100
CC-102	Anatomy and Physiology	4	4	30	70	100
CC-103	Health Education and Environmental Studies	4	4	30	70	100
Elective Course (Anyone)						
EC-101	Olympic Movement	4	4	30	70	100
EC-102	Officiating and Coaching					
Part–B PracticalCourse						
PC-101	Track and Field (Running Events)	**6**	**4**	30	70	100
PC-102	Swimming/Gymnastics/ Shooting	**6**	**4**	30	70	100
PC-103	Indigenous Sports: Kabaddi / Malkhambh/ lezim / March past	**6**	**4**	30	70	100
PC - 104	Mass Demonstration Activities: Kho-Kho / dumbbells / tipri / wands / hoop /umbrella	**6**	**4**	30	70	100
Total		40	32	240	560	800

Note: Total Number of hours required to earn 4 credits foreach Theory Course are 68-80 hours per semester whereas 102-120 hours foreach Practicum Course.

Semester - II

PartA:TheoreticalCourse						
Course Code	TitleofthePapers	Total Hours	Credit	Internal Marks	External Marks	Total Marks
CoreCourse						
CC-201	Yoga Education	4	4	30	70	100
CC-202	Educational Technology and Methods of Teaching in Physical Education	4	4	30	70	100
CC-203	Organization and Administration	4	4	30	70	100
Elective Course (Anyone)						
EC-201	Contemporary issues in physical education, fitness and wellness	4	4	30	70	100
EC-202	Sports Nutrition and Weight Management					
Part–B PracticalCourse						
PC-201	Track and Field (Jumping Events)	**6**	**4**	30	70	100
PC-202	Yoga/Aerobics/ Gymnastics/ Swimming	**6**	**4**	30	70	100
PC-203	Racket Sports: Badminton/ Table Tennis/ Squash/ Tennis	**6**	**4**	30	70	100
Part – C Teaching Practices						
TP - 201	Teaching Practices (05lessons in class room teaching and 05 lessons in outdoor activities)	**6**	**4**	30	70	100
Total		40	32	240	560	800

Note: Total Number of hours required to earn 4 credits foreach Theory Course are 68-80 hours per semester whereas 102-120 hours for each Practicum Course.

Semester - III

PartA:TheoreticalCourse						
Course Code	TitleofthePapers	Total Hours	Credit	Internal Marks	External Marks	Total Marks
CoreCourse						
CC-301	Sports Training	4	4	30	70	100
CC-302	Computer Applications in Physical Education	4	4	30	70	100
CC-303	Sports Psychology and Sociology	4	4	30	70	100
Elective Course (Anyone)						
EC-301	Sports Medicine, Physiotherapy and Rehabilitation	4	4	30	70	100
EC-302	Curriculum Design					
Part–B PracticalCourse						
PC-301	Track and Field (Throwing Events)	**6**	**4**	30	70	100
PC-302	Combative Sports: Martial Art/ Karate/ Judo/ Fencing/ Boxing/ Taekwondo/ Wrestling (Any two out of these)	**6**	**4**	30	70	100
PC-303	Team Games: Baseball/ Cricket/ Football/ Hockey/ Softball/ Volleyball/ Handball/ Basketball/ Netball (Any two of these)	**6**	**4**	30	70	100
Part – C Teaching Practices						
TP - 301	Teaching Practice: (Teaching Lesson Plans for Racket Sport/ Team Games/Indigenous Sports) (out of 10 lessons 5 internal and 5 external at practicing school)	**6**	**4**	30	70	100
Total		40	32	240	560	800

Note: Total Number of hours required to earn 4 credits foreach Theory Course are 68-80 hours per semester whereas 102-120 hours for each Practicum Course.

Semester - IV

PartA:TheoreticalCourse						
Course Code	TitleofthePapers	Total Hours	Credit	Internal Marks	External Marks	Total Marks
CoreCourse						
CC-401	Measurement and Evaluation in Physical Education	4	4	30	70	100
CC-402	Kinesiology and Biomechanics	4	4	30	70	100
CC-403	Research and Statistics in Physical Education	4	4	30	70	100
Elective Course (Anyone)						
EC-401	Theory of sports and game	4	4	30	70	100
EC-402	Sports Management					
Part–B PracticalCourse						
PC-401	Track and Field / Swimming / Gymnastics (Any one out of three)	**6**	**4**	30	70	100
PC-402	Kabaddi/ Kho-Kho/ Baseball/ Cricket/ Football/Hockey/Softball/ Volleyball/ Handball/ Basketball/ Netball/ Badminton/ Table Tennis/ Squash/ Tennis (Any Two of these)	**6**	**4**	30	70	100
Part – C Teaching Practices						
TP-401	Sports specialization: Coaching lessons Plans (One for Sports 5 lessons)	**6**	4	30	70	100
TP-402	Games specialization: Coaching lessons Plans (One for Games 5 lessons)	**6**	4	30	70	100
Total		40	32	240	560	800
		160	128	960	2240	3200

Note: Total Number of hours required to earn 4 credits foreach Theory Course are 68-80 hours per semester whereas 102-120 hours for each Practicum Course.

SCHEME OF EXAMINATION

SEMESTER - I

Paper	Subject	Internal	External	Total Marks
	THEORY (400)			
CC-101	History, Principles and foundation of Physical Education	30	70	100
CC-102	Anatomy and Physiology	30	70	100
CC-103	Health Education and Environmental Studies	30	70	100
EC-101/102	Olympic Movement/Officiating and Coaching (Elective)	30	70	100
	PRACTICAL (400)			
PC-101	Track and Field (Running Events)	30	70	100
PC-102	Swimming/Gymnastics/Shooting	30	70	100
PC-103	Indigenous Sports: Kabaddi/ Malkhambh/ lezim / March past (Any of one out of these)	30	70	100
PC-104	Mass Demonstration Activities: Kho-Kho / dumbbells / tipri / wands / hoop /umbrella (Any one out of these)	30	70	100
	Total	**240**	**560**	**800**

SEMESTER -II

Paper	Subject	Internal	External	Total Marks
	THEORY (400)			
CC-201	Yoga Education	30	70	100
CC-202	Educational Technology and Methods of Teaching in Physical Education	30	70	100
CC-203	Organization and Administration	30	70	100
EC-201/202	Contemporary issues in physical education, fitness and wellness/ Sports Nutrition and Weight Management (Elective)	30	70	100
	PRACTICAL (300)			
PC-201	Track and Field (Jumping Events)	30	70	100
PC-202	Yoga/Aerobics / Swimming / Gymnastics (Any of the two out of these)	30	70	100
PC-203	Racket Sports: Badminton/ Table Tennis/ Squash/ Tennis (Any of the two out of these)	30	70	100
	TEACHING PRACTICE (100)			
TP-201	Teaching Practice (Classroom and outdoor)	30	70	100
	Total	**240**	**560**	**800**

SEMESTER –III

Paper	Subject	Internal	External	Total Marks
	THEORY (400)			
CC-301	Sports Training	30	70	100
CC-302	Computer Applications in Physical Education	30	70	100
CC-303	Sports Psychology and Sociology	30	70	100
EC-301/302	Sports Medicine, Physiotherapy and Rehabilitation/Curriculum Design (Elective)	30	70	100
	PRACTICAL (300)			
PC-301	Track and Field (Throwing Events)	30	70	100
PC-302	Combative Sports : Martial Art, Karate, Judo, Fencing, Boxing, Taekwondo, Wrestling (Any two out of these)	30	70	100
PC-303	Team Games: Baseball, Cricket, Football, Hockey, Softball, Volleyball, Handball, Basketball, Netball (Any two of these)	30	70	100
	TEACHING PRACTICE (100)			
TP-301	Teaching Practice (Teaching Lesson Plans for Racket Sport/ Team Games/Indigenous Sports)	30	70	100
	Total	**240**	**560**	**800**

SEMESTER -IV

Paper	**Subject**	**Internal**	**External**	**Total Marks**
	THEORY (400)			
CC-401	Measurement and Evaluation in Physical Education	30	70	100
CC-402	Kinesiology and Biomechanics	30	70	100
CC-403	Research and Statistics in Physical Education	30	70	100
EC-401/402	Theory of sports and games(Specifically sports and games specialization)/Sports Management (Elective)	30	70	100
	PRACTICAL (200)			
PC-401	Track and Field/Swimming /Gymnastics (Any of one out of these)	30	70	100
PC-402	Kabaddi/ Kho-Kho/ Baseball/ Cricket/ Football/Hockey/Softball/ Volleyball/ Handball/ Basketball/ Netball/ Badminton/ Table Tennis/ Squash/ Tennis (Any of one out of these)	30	70	100
	TEACHING PRACTICE (200)			
TP-401	Sports Specialization: Coaching lessons Plans Track and Field/Swimming /Gymnastics (Any of one out of these)	30	70	100
TP-402	Game specialization Coaching lessons: Kabaddi/ Kho-Kho/ Baseball/ Cricket/Football/Hockey /Softball/ Volleyball/ Handball/ Basketball/ Netball/ Badminton/ Table Tennis/ Squash/ Tennis (Any of one out of these)	30	70	100
	Total	**240**	**560**	**800**

B. P. Ed. – Outline of Syllabus

Semester – I

Theory Courses

CC-101 HISTORY, PRINCIPLES AND FOUNDATION OF PHYSICAL EDUCATION

Unit – 1: Introduction

- Meaning, Definition and Scope of Physical Education
- Aims and Objective of Physical Education
- Importance of Physical Education in present era.
- Misconceptions about Physical Education.
- Relationship of Physical Education with General Education.
- Physical Education as an Art and Science.

Unit- 2 – Historical Development of Physical Education in India

- Indus Valley Civilization Period. (3250 BC – 2500 BC)
- Vedic Period (2500 BC – 600 BC)
- Early Hindu Period (600 BC – 320 AD) and Later Hindu Period (320 AD – 1000 AD)
- Medieval Period (1000 AD – 1757 AD)
- British Period (Before 1947)
- Physical Education in India (After 1947)
- Contribution of Akhadas and Vyayamshals
- Y.M.C.A. and its contributions.

Unit- 3- Foundation of Physical Education

- Philosophical foundation:
- Idealism, Pragmatism, Naturalism, Realism, Humanism, Existentialism and Indian Philosophy and Culture.
- Fitness and wellness movement in the contemporary perspectives
- Sports for all and its role in the maintenance and promotion of fitness.

Unit-4- Principles of Physical Education

- Biological
    - Growth and development
    - Age and gender characteristics
    - Body Types
    - Anthropometric differences
- Psychological
    - Learning types, learning curve
    - Laws and principles of learning
    - Attitude, interest, cognition, emotions and sentiments

- Sociological
    - Society and culture
    - Social acceptance and recognition
    - Leadership
    - Social integration and cohesiveness

References:

Bucher, C. A. (n.d.) *Foundation of physical education.* St. Louis: The C.V. Mosby Co.

Deshpande, S. H. (2014). *Physical Education in Ancient India*. Amravati: Degree college of Physical education.

Mohan, V. M. (1969). *Principles of physical education.* Delhi: Metropolitan Book Dep.

Nixon, E. E. & Cozen, F.W. (1969). *An introduction to physical education*. Philadelphia: W.B. Saunders Co.

Obertuffer, (1970). *Delbert physical education*. New York: Harper & Brothers Publisher.

Sharman, J. R. (1964). *Introduction to physical education*. New York: A.S. Barnes & Co.

William, J. F. (1964). *The principles of physical education*. Philadelphia: W.B. Saunders Co.

Semester I

Theory Courses

CC-102 ANATOMY AND PHYSIOLOGY

UNIT-I

- Brief Introduction of Anatomy and physiology in the field of Physical Education.
- Introduction of Cell and Tissue.
- The arrangement of the skeleton – Function - of the skeleton – Ribs and Vertebral column and the extremities – joints of the body and their types
- Gender differences in the skeleton.
- Types of muscles.

UNIT-II

- **Blood and circulatory system:** Constituents of blood and their function –Blood groups and blood transfusion, clotting of blood, the structure of the heart-properties of the heart muscle, circulation of blood, cardiac cycle, blood pressure, Lymph and Lymphatic circulation. Cardiac output.
- **The Respiratory system:** The Respiratory passage – the lungs and their structure and exchange of gases in the lungs, mechanism of respiration (internal and external respiration) lung capacity, tidal volume.
- **The Digestive system:** structure and functions of the digestive system, Digestive organs, Metabolism,
- **The Excretory system:** Structure and functions of the kidneys and the skin.
- **The Endocrine glands:** Functions of glands pituitary, Thyroid, Parathyroid. Adrenal, Pancreatic and the sex glands.
- **Nervous systems:** Function of the Autonomic nervous system and Central nervous system. Reflex Action,
- **Sense organs:** A brief account of the structure and functions of the Eye and Ear.

UNIT-III

- Definition of physiology and its importance in the field of physical education and sports.
- Structure, Composition, Properties and functions of skeletal muscles.
- Nerve control of muscular activity:
  - Neuromuscular junction
  - Transmission of nerve impulse across it.
- Fuel for muscular activity
- Role of oxygen- physical training, oxygen debt, second wind, vital capacity.

UNIT-IV

- Effect of exercise and training on cardiovascular system.
- Effect of exercise and training on respiratory system.
- Effect of exercise and training on muscular system
- Physiological concept of physical fitness, warming up, conditioning and fatigue.
- Basic concept of balanced diet – Diet before, during and after competition.

References:

Gupta, A. P. (2010). *Anatomy and physiology.* Agra: SumitPrakashan.

Gupta, M. and Gupta, M. C. (1980). *Body and anatomical science.* Delhi: Swaran Printing Press.

Guyton, A.C. (1996). Textbook of Medical Physiology, 9th edition. Philadelphia: W.B. Saunders.

Karpovich, P. V. (n.d.). *Philosophy of muscular activity.* London: W.B. Saunders Co.

Lamb, G. S. (1982). Essentials of exercise physiology. Delhi: Surjeet Publication.

Moorthy, A. M. (2014). *Anatomy physiology and health education.*Karaikudi: Madalayam Publications.

Morehouse, L. E. & Miller, J. (1967). *Physiology of exercise*. St. Louis: The C.V. Mosby Co.

Pearce, E. C. (1962). *Anatomy and physiology for nurses.* London: Faber & Faber Ltd.

Sharma, R. D. (1979). *Health and physical education,* Gupta Prakashan.

Singh, S. (1979). *Anatomy of physiology and health education*. Ropar: Jeet Publications.

Semester I

Theory courses

CC-103 HEALTH EDUCATION AND ENVIRONMENTAL STUDIES

Unit – I Health Education

- Concept, Dimensions, Spectrum and Determinants of Health
- Definition of Health, Health Education, Health Instruction, Health Supervision
- Aim, objective and Principles of Health Education
- Health Service and guidance instruction in personal hygiene

Unit – II Health Problems in India

- Communicable and Non Communicable Diseases
- Obesity, Malnutrition, Adulteration in food, Environmental sanitation, Explosive Population,
- Personal and Environmental Hygiene for schools
- Objective of school health service, Role of health education in schools
- Health Services – Care of skin, Nails, Eye health service, Nutritional service, Health appraisal, Health record, Healthful school environment, first- aid and emergency care etc.

Unit – III Environmental Science

- Definition, Scope, Need and Importance of environmental studies.
- Concept of environmental education, Historical background of environmental education,
- Celebration of various days in relation with environment.
- Plastic recycling & probation of plastic bag / cover.
- Role of school in environmental conservation and sustainable development.

Unit – IVNatural Resources and related environmental issues:

- Water resources, food resources and Land resources
- Definition, effects and control measures of:
- Air Pollution, Water Pollution, Soil Pollution, Noise Pollution, Thermal Pollution
- Management of environment and Govt. policies , Role of pollution control board.

References:

Agrawal, K.C. (2001). *Environmental biology*.Bikaner: Nidhi publishers Ltd.

Frank, H. &Walter, H., (1976). *Turners school health education*. Saint Louis: The C.V. Mosby Company.

Nemir, A. (n.d.). The school health education. New York:Harber and Brothers.

Odum, E.P. (1971). *Fundamental of ecology*. U.S.A.: W.B. Saunders Co.

Semester – I

Theory courses

EC-101 OLYMPIC MOVEMENT (ELECTIVE)

Unit – I Origin of Olympic Movement

- Philosophy of Olympic movement
- The early history of the Olympic movement
- The significant stages in the development of the modern Olympic movement
- Educational and cultural values of Olympic movement

Unit – IIModern Olympic Games

- Significance of Olympic Ideals, Olympic Rings, Olympic Flag
- Olympic Protocol for member countries
- Olympic Code of Ethics
- Olympism in action
- Sports for All

Unit – III Different Olympic Games

- Para Olympic Games
- Summer Olympics
- Winter Olympics
- Youth Olympic Games

Unit – IV Committees of Olympic Games

- International Olympic Committee - Structure and Functions
- National Olympic committees and their role in Olympic movement
- Olympic commission and their functions
- Olympic medal winners of India

Reference:

Osborne, M. P. (2004). *Magictree house fact tracker: ancient greece and the olympics: a nonfiction companion to magic tree house: hour of the Olympics. New York:* Random House Books for Young Readers.

Burbank, J. M., Andranovich, G. D. &Heying Boulder, C. H. (2001). Olympic dreams: the impact of mega-events on local politics: Lynne Rienner

Semester – I

Theory courses

EC-102 OFFICIATING AND COACHING (Elective)

Unit- I: Introduction of Officiating and coaching

- Concept of officiating and coaching
- Importance and principles of officiating
- Relation of official and coach with management, players and spectators
- Measures of improving the standards of officiating and coaching

Unit- II: Coach as a Mentor

- Duties of coach in general, pre, during and post game.
- Philosophy of coaching
- Responsibilities of a coach on and off the field
- Psychology of competition and coaching

Unit- III: Duties of Official

- Duties of official in general, pre, during and post game.
- Philosophy of officiating
- Mechanics of officiating – position, singles and movement etc.
- Ethics of officiating

Unit- IV: Qualities and Qualifications of Coach and Official

- Qualities and qualification of coach and official
- General rules of games and sports
- Eligibility rules of intercollegiate and inter-university tournaments, preparation of TA, DA bills
- Integrity and values of sports

Reference Books:

Bunn, J. W. (1968). *The art of officiating sports*. Englewood cliffs N.J. Prentice Hall.

Bunn, J. W. (1972). *Scientific principles of coaching.* Englewood cliffs N. J. Prentice Hall.

Dyson, G. H. (1963). *The mechanics of athletics*. London: University of London Press Ltd.

Dyson, G. H. (1963). *The mechanics of Athletics*. London: University of London Press Ltd.

Lawther, J.D. (1965). *Psychology of coaching.* New York: Pre. Hall.

Singer, R. N. (1972). *Coaching, athletic & psychology*.New York: M.C. Graw Hill.

Semester – II

Theory Courses

CC-201 YOGA EDUCATION

Unit – I: Introduction

- Meaning and Definition of Yoga
- Aims and Objectives of Yoga
- Yoga in Early Upanisads
- The Yoga Sutra: General Consideration
- Need and Importance of Yoga in Physical Education and Sports

Unit - II: Foundation of Yoga

- The Astanga Yoga: Yama, Niyama, Asana, Pranayama, Pratyahara, Dharana, Dhyana and Samadhi
- Yoga in the Bhagavadgita - Karma Yoga, Raja Yoga, Jnana Yoga and Bhakti Yoga

Unit - III Asanas

- Effect of Asanas and Pranayama on various system of the body
- Classification of asanas with special reference to physical education and sports
- Influences of relaxtive, meditative posture on various system of the body
- Types of Bandhas and mudras
- Type of kriyas

Unit – IVYoga Education

- Basic, applied and action research in Yoga
- Difference between yogic practices and physical exercises
- Yoga education centers in India and abroad
- Competitions in Yogasanas

References:

Brown, F. Y.(2000). *How to use yoga*. Delhi:Sports Publication.

Gharote, M. L. &Ganguly, H. (1988). *Teaching methods for yogic practices*.Lonawala: Kaixydahmoe.

Rajjan, S. M. (1985). *Yoga strenthening ofrelexation for sports man.* New Delhi:Allied Publishers.

Shankar,G.(1998). *Holistic approach of yoga.* New Delhi:Aditya Publishers.

Shekar,K. C. (2003). *Yoga for health.* Delhi: Khel Sahitya Kendra.

Semester – II

Theory Courses

CC-202 EDUCATIONAL TECHNOLOGY AND METHODS OF TEACHING N PHYSICAL EDUCATION

Unit – I Introduction

- Education and Education Technology- Meaning and Definitions
- Types of Education- Formal, Informal and Non- Formal education.
- Educative Process
- Importance of Devices and Methods of Teaching.

Unit – II Teaching Technique

- Teaching Technique – Lecture method, Command method, Demonstration method, Imitation method, project method etc.
- Teaching Procedure – Whole method, whole – part – whole method, part – whole method.
- Presentation Technique – Personal and technical preparation
- Command- Meaning, Types and its uses in different situations.

Unit – III Teaching Aids

- Teaching Aids – Meaning, Importance and its criteria for selecting teaching aids.
- Teaching aids – Audio aids, Visual aids, Audio – visual aids, Verbal, Chalk board, Charts, Model, Slide projector, Motion picture etc
- Team Teaching – Meaning, Principles and advantage of team teaching.
- Difference between Teaching Methods and Teaching Aid.

Unit – IV Lesson Planning and Teaching Innovations

- Lesson Planning – Meaning, Type and principles of lesson plan.
- General and specific lesson plan.
- Micro Teaching – Meaning, Types and steps of micro teaching.
- Simulation Teaching - Meaning, Types and steps of simulation teaching.

Reference:

Bhardwaj, A. (2003). *New media of educational planning.*New Delhi:Sarup of Sons.

Bhatia,& Bhatia,(1959). *The principles and methods of teaching.*New Delhi: Doaba House.

Kochar, S.K. (1982). *Methods and techniques of teaching.*New Delhi: Sterling Publishers Pvt. Ltd.

Sampath, K.,Pannirselvam, A. &Santhanam, S. (1981). *Introduction to educational technology.*New Delhi: Sterling Publishers Pvt. Ltd.

Walia, J.S. (1999). *Principles and methods of education.*Jullandhar:Paul Publishers.

Semester – II

Theory Courses

CC-203 ORGANZATION AND ADMINISTRATION IN PHYSICAL EUCATION

Unit – I: Organization and administration

- Meaning and importance of Organization and Administration in physical education
- Qualification and Responsibilities of Physical Education teacher and pupil leader
- Planning and their basic principles,
- Program planning: Meaning, Importance, Principles of program planning in physical education.
- Functions of Planning, organizing, staffing, directing, communicating, co-ordination, controlling, evaluating and innovating.

Unit- II: Office Management, Record, Register & Budget

- Office Management: Meaning, definition, functions and kinds of office management
- Records and Registers: Maintenance of attendance Register, stock register, cash register, physical efficiency record, Medical examination Record.
- Budget: Meaning, Importance of Budget making,
- Criteria of a good Budget, Sources of Income, Expenditure, Preparation of Budget.

Unit-III: Facilities, & Time-Table Management

- Facilities and equipment management: Types of facilities Infrastructure-indoor, out door.
- Care of school building, Gymnasium, swimming pool, Play fields, Play grounds
- Equipment: Need, importance, purchase, care and maintenance.
- Time Table Management: Meaning, Need, Importance and Factor affecting time table.

Unit-IV:Competition Organization

- Importance of Tournament,
- Types of Tournament and its organization structure - Knock-out Tournaments, League or Round Robin Tournaments, Combination Tournament and challenge Tournament.
- Organization structure of Athletic Meet
- Sports Event Intramurals & Extramural Tournament planning

References:

Broyles, F. J. &Rober, H. D. (1979). *Administration of sports, Athletic programme: A Managerial Approach.* New York: Prentice hall Inc.

Bucher, C. A. (1983). *Administration of Physical Education and Athletic programme.*St. Lolis: The C.V. Hosby Co.

Kozman, H.C. Cassidly, R. & Jackson, C. (1960).*Methods in Physical Education*. London: W.B. Saunders Co.

Pandy, L.K. (1977). *Methods in Physical Education.*Delhe: Metropolitan Book Depo.

Sharma, V.M. & Tiwari, R.H.: (1979). *Teaching Methods in Physical Education.* Amaravati: Shakti Publication.

Thomas, J. P.(1967). *Organization & administration of Physical Education*. Madras: Gyanodayal Press.

Tirunarayanan, C. &Hariharan, S. (1969). *Methods in Physical Education.*Karaikudi: South India Press.

Voltmer, E. F. &Esslinger, A. A. (1979).*The organization and administration of Physical Education.* New York: Prentice Hall Inc.

Semester – II

Theory Courses

EC-201 CONTEMPORARY ISSUES IN PHYSICAL EDUCATION, FITNESS AND WELLNESS (ELECTIVE)

Unit – I Concept of Physical Education and Fitness

- Definition, Aims and Objectives of Physical Education, fitness and Wellness
- Importance and Scope of fitness and wellness
- Modern concept of Physical fitness and Wellness
- Physical Education and its Relevance in Inter Disciplinary Context.

Unit – II Fitness, Wellness and Lifestyle

- Fitness – Types of Fitness and Components of Fitness
- Understanding of Wellness
- Modern Lifestyle and Hypo kinetic Diseases – Prevention and Management
- Physical Activity and Health Benefits

Unit – III Principles of Exercise Program

- Means of Fitness development – aerobic and anaerobic exercises
- Exercises and Heart rate Zones for various aerobic exercise intensities
- Concept of free weight Vs Machine, Sets and Repetition etc
- Concept of designing different fitness training program for different age group.

Unit – IV Safety Education and Fitness Promotion

- Health and Safety in Daily Life
- First Aid and Emergency Care
- Common Injuries and their Management
- Modern Life Style and Hypo-kinetic Disease –Prevention and Management

References:

Difiore, J.(1998). *Complete guide to postnatal fitness.* London: A & C Black,.

Giam, C.K & The, K.C. (1994). *Sport medicine exercise and fitness.* Singapore: P.G. Medical Book.

Mcglynn, G., (1993). *Dynamics of fitness*. Madison: W.C.B Brown.

Sharkey, B. J.(1990). *Physiology of fitness*, Human Kinetics Book.

Semester II

Theory courses

EC-202 SPORTS NUTRITION AND WEIGHT MANAGEMENT (ELECTIVE)

Unit – I Introduction to Sports Nutrition

- Meaning and Definition of Sports Nutrition
- Basic Nutrition guidelines
- Role of nutrition in sports
- Factor to consider for developing nutrition plan

Unit – II Nutrients: Ingestion to energy metabolism

- Carbohydrates, Protein, Fat – Meaning, classification and its function
- Role of carbohydrates, Fat and protein during exercise
- Vitamins, Minerals, Water – Meaning, classification and its function
- Role of hydration during exercise, water balance, Nutrition – daily caloric requirement and expenditure.

Unit – III Nutrition and Weight Management

- Meaning of weight management Concept of weight management in modern era Factor affecting weight management and values of weight management
- Concept of BMI (Body mass index), Obesity and its hazard, Myth of Spot reduction, Dieting versus exercise for weight control, Common Myths about Weight Loss
- Obesity – Definition, meaning and types of obesity,
- Health Risks Associated with Obesity, Obesity - Causes and Solutions for Overcoming Obesity.

Unit – IV Steps of planning of Weight Management

- Nutrition – Daily calorie intake and expenditure, Determination of desirable body weight
- Balanced diet for Indian School Children, Maintaining a Healthy Lifestyle
- Weight management program for sporty child, Role of diet and exercise in weight management, Design diet plan and exercise schedule for weight gain and loss

References:

Bessesen, D. H. (2008). Update on obesity. *J ClinEndocrinolMetab.93*(6), 2027-2034.

Butryn, M.L., Phelan, S., &Hill, J. O.(2007). Consistent self-monitoring of weight: a key component of successful weight loss maintenance.*Obesity(Silver Spring)*. *15*(12), 3091-3096.

Chu, S.Y. & Kim, L. J. (2007). Maternal obesity and risk of stillbirth: a metaanalysis. *Am J ObstetGynecol*, *197*(3), 223-228.

DeMaria, E. J. (*2007).* Bariatric surgery for morbid obesity. *N Engl J Med,356*(21), 2176-2183.

Dixon, J.B., O'Brien, P.E., Playfair, J. (n.d.). Adjustable gastric banding and conventional therapy for type 2 diabetes: a randomized controlled trial. *JAMA. 299*(3), 316-323.

Semester – III

Theory Courses

CC-301 SPORTS TRAINING

Unit – I Introduction to Sports Training

- Meaning and Definition of Sports Training
- Aim and Objective of Sports Training
- Principles of Sports Training
- System of Sports Training – Basic Performance, Good Performance and High Performance Training

Unit – II Training Components

- Strength – Mean and Methods of Strength Development
- Speed – Mean and Methods of Speed Development
- Endurance - Mean and Methods of Endurance Development
- Coordination – Mean and Methods of coordination Development
- Flexibility – Mean and Methods of Flexibility Development

Unit – III Training Process

- Training Load- Definition and Types of Training Load
- Principles of Intensity and Volume of stimulus
- Technical Training – Meaning and Methods of Technique Training
- Tactical Training – Meaning and Methods of Tactical Training

Unit – IV Training programming and planning

- Periodization – Meaning and types of Periodization
- Aim and Content of Periods – Preparatory, Competition, Transitional etc.
- Planning – Training session
- Talent Identification and Development

Reference:

Dick, W. F. (1980).*Sports training principles.*London: Lepus Books.

Harre, D.(1982).*Principles of sports training.*Berlin: Sporulated.

Jensen, R. C.& Fisher, A.G. (1979). *Scientific basis of athletic conditioning*. Philadelphia: Lea and Fibiger, 2nd Edn.

Matvyew, L.P. (1981).*Fundamental of sports training.* Moscow: Progress Publishers.

Singh, H. (1984).*Sports training, general theory and methods*.Patials: NSNIS.

Uppal, A.K., (1999).*Sports Training.*New Delhi: Friends Publication.

Semester III

Theory Courses

CC-302 COMPUTER APPLICATIONS IN PHYSICAL EDUCATION

Unit – I: Introduction to Computer

- Meaning, need and importance of information and communication technology (ICT). Application of Computers in Physical Education
- Components of computer, input and output device
- Application software used in Physical Education and sports

Unit – II: MS Word

- Introduction to MS Word
- Creating, saving and opening a document
- Formatting Editing features Drawing table ,
- page setup, paragraph alignment, spelling and grammar check printing option, inserting page number, graph, footnote and notes

Unit – III: MS Excel

- Introduction to MS Excel
- Creating, saving and opening spreadsheet
- creating formulas
- Format and editing features adjusting columns width and row height understanding charts.

Unit – IV: MS Power Point

- Introduction to MS Power Point
- Creating, saving and opening a ppt. file
- format and editing features slide show , design , inserting slide number
- picture ,graph ,table
- Preparation of Power point presentations

Referances:

Irtegov, D. (2004). *Operating system fundamentals.* Firewall Media.
Marilyn, M.& Roberta, B.(n.d.).*Computers in your future*. 2nd edition, India: Prentice Hall.
Milke, M.(2007). *Absolute beginner's guide to computer basics*. Pearson Education Asia.
Sinha, P. K. & Sinha, P. (n.d.).*Computer fundamentals*. 4th edition, BPB Publication.

Semester – III

Theory Courses

CC-303 SPORTS PSYCHOLOGY AND SOCIOLOGY

Unit -I: introduction

- Meaning, Importance and scope of Educational and Sports Psychology
- General characteristics of Various Stages of growth and development
- Types and nature of individual differences; Factors responsible -Heredity And environment
- Psycho-sociological aspects of Human behavior in relation to physical education and sports

Unit-II: Sports Psychology

- Nature of learning, theories of learning, Laws of learning,
- Plateau in Learning; & transfer of training
- Meaning and definition of personality, characteristics of personality,
- Dimension of personality, Personality and Sports performance
- Nature of motivation: Factors influencing motivation; Motivation and techniques and its impact on sports performance.
- Mental Preparation Strategies: Attention focus, Self- talk, Relaxation, Imaginary.
- Aggression and Sports, Meaning and nature of anxiety, Kinds of anxiety
- Meaning and nature of stress; Types of stress, Anxiety, Stress, Arousal and their effects on sports performance

Unit-III: Relation between Social Science and Physical Education.

- Orthodoxy, customs, Tradition and Physical Education.
- Festivals and Physical Education.
- Socialization through Physical Education.
- Social Group life, Social conglomeration and Social group, Primary group and Remote group.

Unit-4 Culture : Meaning and Importance.

- Features of culture,
- Importance of culture.
- Effects of culture on people life style.
- Different methods of studying Observation/ Inspection method, Questionnaire method, Interview method

References:

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Semester – III

Theory Courses

EC-301 SPORTS MEDICINE, PHYSIOTHERAPY AND REHANLITATION (ELECTIVE)

Unit-I: - Sports Medicine:

- Sports Medicine: Meaning, Definition, Aims, Objectives, Modern Concepts and Importance.
- Athletes Care and Rehabilitation: Contribution of Physical Education Teachers and Coaches.
- Need and Importance of the study of sports injuries in the field of Physical Education
- Prevention of injuries in sports – Common sports injuries – Diagnosis –
- First Aid - Treatment - Laceration – Blisters – Contusion - Strain – Sprain – Fracture – Dislocation and Cramps – Bandages – Types of Bandages – trapping and supports.

Unit-II: Physiotherapy

- Definition – Guiding principles of physiotherapy, Importance of physiotherapy, Introduction and demonstration of treatments - Electrotherapy – infrared rays – Ultraviolet rays –short wave diathermy – ultrasonic rays.

Unit-III: Hydrotherapy:

- Introduction and demonstration of treatments of Cry therapy, Thermo therapy, Contrast Bath, Whirlpool Bath – Steam Bath – Sauna Bath – Hot Water Fomentation – Massage: History of Massage – Classification of Manipulation (Swedish System) physiological Effect of Massage.

Unit-IV: Therapeutic Exercise:

- Definition and Scope – Principles of Therapeutic Exercise – Classification, Effects and uses of Therapeutic exercise – passive Movements (Relaxed, Forced and passive - stretching) – active movements (concentric, Eccentric and static) application of the therapeutic exercise: Free Mobility Exercise – Shoulder, Elbow – Wrist and Finger Joints – Hips, Knee, ankle and Foot joints – Trunk. Head and Neck exercises.

References:

Christine, M. D., (1999). *Physiology of sports and exercise*.USA: Human Kinetics.

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Khanna, G.L., (1990). *Exercise physiology & sports medicine.* Delhi:Lucky Enterprises.
Mathew, D.K. & Fox, E.L, (1971). *Physiological basis of physical education and athletics.* Philadelphia:W.B. Saunders Co.
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Williams, J. G. P. (1962). *Sports medicine*. London: Edward Arnold Ltd.

Semester – III

Theory Courses

EC-302 CURRICULUM DESIGN (Elective)

UNIT-I Modern concept of the curriculum

- Need and importance of curriculum, Need and importance of curriculum development, the role of the teacher in curriculum development.
- Factors affecting curriculum - Social factors - Personnel qualifications - Climatic consideration - Equipment and facilities -Time suitability of hours.
- National and Professional policies, Research finding

UNIT-IIBasic Guide line for curriculum construction; contest (selection and expansion).

- Focalization
- Socialization
- Individualization
- Sequence and operation
- Steps in curriculum construction.

UNIT-IIICurriculum-Old and new concepts, Mechanics of curriculum planning.

- Basic principles of curriculum construction.
- Curriculum Design, Meaning, Importance and factors affecting curriculum design.
- Principles of Curriculum design according to the needs of the students and state and national level policies.
- Role of Teachers

UNIT-IV Under-graduate preparation of professional preparation.

- Areas of Health education, Physical education and Recreation.
- Curriculum design-Experience of Education, Field and Laboratory.
- Teaching practice.
- Professional Competencies to be developed-Facilities and special resources for library, laboratory and other facilities.

Reference:

Barrow, H. M. (1983). *Man and movement: principles of physical education*. Philadelphia: Lea and Febiger.

Bucher, C. A. (1986). Foundation of physical education: St. Louis: The C. V. Mosby & Company.

Cassidy, R. (1986). *Curriculum development in physical education*. New York: Harper & Company.

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Underwood, G. L. (1983). *The physical education curriculum in secondary school: planning and implementation.*England: Taylor and Francis Ltd.

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Semester – IV

Theory Courses

CC-401 MEASUREMENT AND EVALUATION IN PHYSICAL EDUCATION

Unit- IIntroduction to Test & Measurement & Evaluation

- Meaning of Test & Measurement & Evaluation in Physical Education
- Need & Importance of Test & Measurement & Evaluation in Physical Education
- Principles of Evaluation

Unit- IICriteria; ClassificationandAdministration of test

- Criteria of good Test
- Criteria of tests, scientific authenticity (reliability, objectivity, validity and availability of norms)
- Type and classification of Test
- Administration of test, advance preparation – Duties during testing – Duties after testing.

Unit- III Physical Fitness Tests

- AAHPER youth fitness test
- National physical Fitness Test
- Indiana Motor Fitness Test
- JCR test
- U.S Army Physical Fitness Test

Unit- IV Sports Skill Tests

- Lockhart and McPherson badminton test
- Johnson basketball test
- McDonald soccer test
- S.A.I volleyball test
- S.A.I Hockey test

References:

Bangsbo, J. (1994). *Fitness training in football: A scientific approach*. Bagsvaerd, Denmark: Ho+Storm.

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Sodhi, H.S., & Sidhu, L.S. (1984). *Physique and selection of sports- a kinanthropometric study*. Patiala: Punjab Publishing House.

Semester – IV
Theory Courses

CC-402 KINESIOLOGY AND BIOMECHANICS

Unit – I Introduction to Kinesiology and Sports Biomechanics

- Meaning and Definition of Kinesiology and Sports Biomechanics
- Importance of Kinesiology and Sports Biomechanics to Physical Education Teacher, Athletes and Sports Coaches.
- Terminology of Fundamental Movements
- Fundamental concepts of following terms – Axes and Planes, Centre of Gravity, Equilibrium, Line of Gravity

Unit – II Fundamental Concept of Anatomy and Physiology

- Classification of Joints and Muscles
- Types of Muscle Contractions
- Posture – Meaning, Types and Importance of good posture.
- Fundamental concepts of following terms- Angle of Pull, All or None Law, Reciprocal Innovation

Unit – III Mechanical Concepts

- Force - Meaning, definition, types and its application to sports activities
- Lever - Meaning, definition, types and its application to human body.
- Newton's Laws of Motion – Meaning, definition and its application to sports activities.
- Projectile – Factors influencing projectile trajectory.

Unit – IV Kinematics and Kinetics of Human Movement

- Linear Kinematics – Distance and Displacement, speed and velocity, Acceleration
- Angular kinematics – Angular Distance and Displacement, Angular Speed and velocity, Angular Acceleration.
- Linear Kinetics – Inertia, Mass, Momentum, Friction.
- Angular Kinetics – Moment of inertia ,Couple, Stability.

Reference:

Bunn, J. W. (1972).*Scientific principles of coaching.* Englewood Cliffs, N.J.: Prentice Hall Inc.

Hay, J. G. & Reid, J. G.(1982).*The anatomical and mechanical basis of human motion.* Englewood Cliffs, N.J.: prentice Hall Inc.

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Semester – IV
Theory Courses
CC-403 RESEARCH AND STATISTICS IN PHYSICAL EDUCATION

Unit-I Introduction to Research

- Definition of Research
- Need and importance of Research in Physical Education and Sports.
- Scope of Research in Physical Education & Sports.
- Classification of Research
- Research Problem, Meaning of the term, Location and criteria of Selection of Problem, Formulation of a Research Problem, Limitations and Delimitations.

Unit-II Survey of Related Literature

- Need for surveying related literature.
- Literature Sources, Library Reading
- Research Proposal, Meaning and Significance of Research Proposal.
- Preparation of Research proposal / project.
- Research Report: A group project is to be undertaken by a small batch of students under the supervision of a teacher, wherein it is expected to survey school facilities of physical education, health assessment programme evaluation, fitness status of the students, staff and other stakeholders etc. and submit the report to the institution.

Unit-III Basics of Statistical Analysis

- Statistics: Meaning, Definition, Nature and Importance
- Class Intervals: Raw Score, Continuous and Discrete Series, Class Distribution, Construction of Tables
- Graphical Presentation of Class Distribution: Histogram, Frequency Polygon, Frequency Curve. Cumulative Frequency Polygon, Ogive, Pie Diagram

Unit- IVStatistical Models in Physical Education and Sports

- Measures of Central Tendency: Mean, Median and Mode-Meaning, Definition, Importance, Advantages, Disadvantages and Calculation from Group and Ungrouped data
- Measures of Variability: Meaning, importance, computing from group and ungroup data
- Percentiles and Quartiles: Meaning, importance, computing from group and ungroup data

References:

Best, J.W. (1963). *Research in education*. U.S.A.: Prentice Hall.

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Semester – IV
Theory Courses

EC-401 THEORY OF SPORTS AND GAMES (ELECTIVE)

UNIT-IINTRODUCTION

General Introduction of speciliazed games and sports–

- Athletics,
- Badminton,
- Basketball,
- Cricket,
- Football,
- Gymnastic,
- Hockey,
- Handball,
- Kabaddi,
- Kho-Kho,
- Tennis,
- Volleyball and
- Yoga.

Each game or sports to be dealt under the following heads

- History and development of the Game and Sports
- Ground preparation, dimensions and marking
- Standard equipment and their specifications
- Ethics of sports and sportsmanship

UNIT-II Scientific Principles of coaching: **(particular sports and game specific)**

- Motion – Types of motion and Displacement, Speed, Velocity, Acceleration, Distance and Newton's Law of motions.
- Force – Friction, Centripetal and Centrifugal force, Principles of force.
- Equilibrium and its types
- Lever and its types
- Sports Training – Aims, Principles and characteristics.
- Training load – Components, Principles of load, Over Load (causes and symptoms).

UNIT-III Physical fitness components: (particular sports and game specific)

- Speed and its types
- Strength and its types
- Endurance and its types
- Flexibility and its types
- Coordinative ability and its types

- Training methods: - Development of components of physical fitness and motor fitness through following training methods (continuous method, interval method, circuit method, fartlek /speed play and weight training)

UNIT-IV Conditioning exercises and warming up.

- Concept of Conditioning and warming up.
- Role of weight training in games and sports.
- Teaching of fundamental skill & their mastery (technique, tactic and different phases of skill acquisition).
- Recreational and Lead up games
- Strategy – Offence and defense, Principles of offence and defense.

References:

Bunn, J. W. (1968). *The art of officiating sports*. Englewood cliffs N.J. Prentice Hall.

Bunn, J. W. (1972). *Scientific principles of coaching.* Englewood cliffs N. J. Prentice Hall.

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Semester – IV

Theory Courses

EC-402 SPORTS MANAGEMENT

Unit-I

- Nature and Concept of Sports Management.
- Progressive concept of Sports management.
- The purpose and scope of Sports Management.
- Essential skills of Sports Management.
- Qualities and competencies required for the Sports Manager.
- Event Management in physical education and sports.

Unit-II

- Meaning and Definition of leadership
- Leadership style and method.
- Elements of leadership.
- Forms of Leadership.
    - Autocratic
    - Laissez-faire
    - Democratic
    - Benevolent Dictator
- Qualities of administrative leader.
- Preparation of administrative leader.
- Leadership and Organizational performance.

Unit-III

- Sports Management in Schools, colleges and Universities.
- Factors affecting planning
- Planning a school or college sports programme.
- Directing of school or college sports programme.
- Controlling a school, college and university sports programme.
    - Developing performance standard
    - Establishing a reporting system
    - Evaluation
    - The reward/punishment system

Unit-IV

- Financial management in Physical Education & sports in schools, Colleges and Universities.
- Budget – Importance, Criteria of good budget,
- Steps of Budget making
- Principles of budgeting

REFERENCES:

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Bucher, C.A. *Administration of physical education and athletic programme.* 7th Edition, St. Louis: The C.V. Mosby Co.

Daughtrey, G. & Woods, J.B. (1976). *Physical education and intramural programmes, organisation and administration.* Philadelphia U.S.A. : W.B. Sounders Cp.

Earl, F. Z,& Gary, W. B. (1963).*Management competency development in sports and physical education*. Philadelphia: W. Lea and Febiger.

Part – B
Practical Courses
Semester – I

PC - 101
Track and Field:

Running Event

- Starting techniques: Standing start, Crouch start and its variations, Proper use of blocks.
- Finishing Techniques: Run, Through, Forward lunging, Shoulder Shrug
- Ground Marking, Rules and Officiating
- Hurdles:
    - Fundamental Skills- Starting, Clearance and Landing Techniques.
    - Types of Hurdles
    - Ground Marking and Officiating.

Relays: Fundamental Skills

- Various patterns of Baton Exchange
- Understanding of Relay Zones
- Ground Marking
- Interpretation of Rules and Officiating.

PC 102

Gymnastics: Floor Exercise

- Forward Roll, Backward Roll, Sideward Roll, different kinds of scales, Leg Split, Bridge, Dancing steps, Head stand, Jumps-leap, scissors leap.
- Vaulting Horse
- Approach Run, Take off from the beat board, Cat Vault, Squat Vault.

PC – 102

Swimming: Fundamental Skills

- Entry into the pool.
- Developing water balance and confidence
- Water fear removing drills.
- Floating-Mushroom and Jelly fish etc.
- Gliding with and without kickboard.
- Introduction of various strokes
- Body Position, Leg, Kick, Arm pull, Breathing and Co ordination.
- Start and turns of the concerned strokes.
- Introduction of Various Strokes.
- Water Treading and Simple Jumping.

- Starts and turns of concerned strokes.
- Rules of Competitive swimming-officials and their duties, pool specifications, seeding heats and finals, Rules of the races.

PC – 102

Shooting Fundamental Skills

- Basic stance, grip, Holding rifle/ Pistol, aiming target
- Safety issues related to rifle shooting
- Rules and their interpretations and duties of officials

(Any one out of three)

PC – 103 Indigenous sports:

Kabaddi: Fundamental Skills

- Skills in Raiding-Touching with hand, various kicks, crossing of baulk line, Crossing of Bonus line, luring the opponent to catch, Pursuing.
- Skills of Holding the Raider-Various formations, Catching from particular position, Different catches, Luring the raider to take particular position so as to facilitate catching, catching formations and techniques.
- Additional skills in raiding-Bringing the antis in to particular position, Escaping from various holds, Techniques of escaping from chain formation, Combined formations in offence and defense.
- Ground Marking, Rules and Officiating

PC – 103

Malkhambh and Light Apparatus:

- Lathi-Two counts exercises, Four Count exercises, eight count exercises, sixteen count exercises.
- GhatiLezuim-AathAawaaz, Bethakawaaz, AagePaon, Aagekadam, Do pherawaaz, Chau pherawaaz, Kadamtaal, Pavitra, Uchhakpavitra, Kadampavitra.
- Mass P.T. Exercises-Two count, four count and eight count exercises.
- Hindustani Lezuim-Char Awaaz, EkJagah, AantiLagaav, Pavitra, Do Rukh, Chau Rukh, Chau rukhbethak, Momiya.
- Drill and Marching
- Malkhamb-Salaami, Hold, Saadiudi, Bagaludi, Dashrangudi, Bagliudi, Veludi, Soydoro, Phirki, Padmasana, T.Balance, Pataka, Landing.
- Rope Malkhamb-Salaami, PadmasanaChadh, Katibandh1-2, Sadiadhi, Rikebpakkad, Rikebpagniadhi, Kamaradhi, Nakkikasadhi, Kamaradhi, Nakkikasadhi, Urubandhtedhi, Sadibagli, Do hatibagli, Kamarbandhbagli, nakkikasbagli, Dashrang, Hanuman pakad, Gurupakkad, various padmasana, Landing.

PC - 104

Kho Kho:

- General skills of the game-Running, chasing, Dodging, Faking etc.
- Skills in chasing-Correct Kho, Moving on the lanes, Pursuing the runner, Tapping the inactive runner, Tapping the runner on heels, Tapping on the pole, Diving, Judgement in giving Kho, Rectification of Foul.
- Skills in Running-Zig zag running, Single and double chain, Ring play, Rolling in the sides, Dodging while facing and on the back, fakes on the pole, fake legs, body arm etc, Combination of different skills.
- Ground Marking
- Rules and their interpretations and duties of officials.

PC – 104

Dumbells/ Wands/ Hoop/ Umbrella/ Tipri: Fundamentals skills

- Apparatus/ Light apparatus Grip
- Attention with apparatus/ Light apparatus
- Stand – at – ease with apparatus/ ligfht apparatus
- Exrcise with verbal command,drum, whistle and music – Two count, Four count, Eight count and Sixteen count.
- Standing Exercise
- Jumping Exercise
- Moving Exercise
- Combination of above all

Semester – II

PC – 201

Track and Field

Athletics: Jumping Events

- High Jump (Straddle Roll)
- Approach Run,
- Take off
- Clearance over the bar.
- Landing

PC – 202

Gymnastics:

- Parallel Bar:
- Mount from one bar
- Straddle walking on parallel bars.
- Single and double step walk
- Perfect swing
- Shoulder stand on one bar and roll forward.
- Roll side
- Shoulder stand
- Front on back vault to the side(dismount)
- Horizontal /Single Bar:
- Grip
- Swings
- Fundamental Elements
- Dismount
- Uneven Parallal Bar:
- Grip
- Swings
- Fundamental Elements
- Dismount

PC – 202

Yoga:

- Surya Namaskara,
- Pranayams
- Corrective Asanas
- Kriyas
- Asanas
  - Sitting
  - Standing
  - Laying Prone Position,
  - Laying Spine Position

PC – 202

Swimming:

Introduction of water polo game

- Fundamental skills
- Swimm with the ball
- Passing
- Catching
- Shooting
- Goal keeping
- Rules of the games and responsibility of officials

Introduction of Diving sports.

- Basic Diving Skills from spring boards
- Basic Diving Skills from platform

PC – 202

Aerobics: Introduction of Aerobics

- Rhythmic Aerobics - dance
- Low impact aerobics
- High impact aerobics
- Aerobics kick boxing
- Postures – Warm up and cool down
- THR Zone – Being successful in exercise and adaptation to aerobic workout.

PC - 203

Badminton: Fundamental Skills

- Racket parts, Racket grips, Shuttle Grips.
- The basic stances.
- The basic strokes-Serves, Forehand-overhead and underarm, Backhand-overhead and underarm
- Drills and lead up games
- Types of games-Singles, doubles, including mixed doubles.
- Rules and their interpretations and duties of officials.

PC - 203

Table Tennis: Fundamental Skills

- The Grip-The Tennis Grip, Pen Holder Grip.
- Service-Forehand, Backhand, Side Spin, High Toss.
- Strokes-Push, Chop, Drive, Half Volley, Smash, Drop-shot, Balloon, Flick Shit, Loop Drive.
- Stance and Ready position and foot work.
- Rules and their interpretations and duties of officials.

PC – 203

Squash Fundamental Skills

- Service- Under hand and Over hand
- Service Reception
- Shot- Down the line, Cross Court
- Drop
- Half Volley
- Tactics – Defensive, attacking in game
- Rules and their interpretations and duties of officials.

PC – 203

Tennis: Fundamental Skills**.**

- Grips- Eastern Forehand grip and Backhand grip, Western grip, Continental grip, Chopper grip.
- Stance and Footwork.
- Basic Ground strokes-Forehand drive, Backhand drive.
- Basic service.
- Basic Volley.
- Over-head Volley.
- Chop
- Tactics – Defensive, attacking in game
- Rules and their interpretations and duties of officials.

Semester – III

PC – 301

Track and fields (Throwing Events)

- Discus Throw, Javelin, Hemmer throw, shot-put
- Basic Skills and techniques of the Throwing events
- Ground Marking / Sector Marking
- Interpretation of Rules and Officiating.
- Grip
- Stance
- Release
- Reserve/ (Follow through action)
- Rules and their interpretations and duties of officials

PC – 302

Boxing: Fundamental Skills

- Player stance
- Stance - Right hand stance, left hand stance.
- Footwork – Attack, defense.
- Punches – Jab, cross, hook, upper cut, combinations.
- Defense slip – bob and weave, parry/block, cover up, clinch, counter attack
- Tactics – Toe to toe, counter attack, fighting in close, feinting
- Rules and their interpretations and duties of officials.

PC – 302

Martial Arts/Karate: Fundamental Skills

- Player Stances – walking, hand positions, front-leaning, side-fighting.
- Hand Techniques - Punches (form of a punch, straight punch, and reverse punch), Blocks (eight basic).
- Leg Techniques - Snap kicks, stretching straight leg, thrust kicks, sidekicks, round house.
- Forms - The first cause Katas.
- Self Defense - against punches, grabs and strikes, against basic weapons (knife, club sticks).
- Sparring - One step for middle punch, high punch and groin punch. (Defended by appropriate block from eight basic blocks).
- Rules and their interpretations and duties of officials.

PC – 302

Taekwondo Fundamental Skills

- Player Stances – walking, extending walking, L stance, cat stance.
- Fundamental Skills – Sitting stance punch, single punch, double punch, triple punch.
- Punching Skill from sparring position – front-fist punch, rear fist punch, double punch, and four combination punch.
- Foot Tenchniques (Balgisul) – standing kick (soseochagi), Front kick (AP chagi), Arc kick (BandalChagi), Side kick, (YeopChagi), Turning kick (DollyoChagi), Back kick (Twit Chagi), Reverse turning kick (BandaeDollyoChagi), Jump kick (TwimyoChagi),
- Poomsae (Forms) – Jang, Yi Jang, Sam Jang, Sa Jang, O Jang, Yook Jang, Chil Jang, Pal Jang (Fundamental Movement – eye control, concentration of spirit, speed control, strength control, flexibility, balance, variety in techniques)
- Sparring (Kyorugi) – One Step Sparring (hand techniques, foot techniques, self defense techniques, combination kicks), Free Sparring.
- Board Breaking (Kyokpa) – eye control, balance, power control, speed, point of attack.
- Rules and their interpretations and duties of officials.

PC – 302

Judo: Fundamental skills

- Rei (Salutation)-Ritsurei(Salutation in standing position), Zarai (Salutation in the sitting position)
- Kumi kata (Methods of holding judo costume)
- Shisei (Posture in Judo)
- Kuzushi (Act of disturbing the opponent posture)
- Tsukuri and kake (Preparatory action for attack)
- Ukemi (Break Fall)-UrhiroUkemi (Rear break Fall), Yoko Ukemi (Side Break Fall), Mae Ukemi (Front Break Fall), Mae mawariUkemi (Front Rolling break fall)
- Shin Tai (Advance or retreat foot movement)-Suri-ashi (Gliding foot), Twugi-ashi (Following footsteps), Ayumi-ashi (Waling steps.
- Tai Sabaki (Management of the body)
- NageWaze (Throwing techniques)-HizaGuruma (Knee wheel), SesaeTwurikomi-ashi (Drawing ankle throw), De ashihari (Advance foot sweep), O Goshi (Major loinm), SeoiNage (Shoulder throw).
- Katamawaze(Grappling techniques)-Kesagatame (Scaff hold), Kata gatame (Shoulder hold), Kami shihogatama (Locking of upper four quarters), Method of escaping from each hold.

PC – 302

Wrestling: Fundamental Skills

- Take downs, Leg tackles, Arm drag.
- Counters for take downs, Cross face, Whizzer series.
- Escapes from under-sit-out turn in tripped.
- Counters for escapes from under-Basic control back drop, Counters for stand up.
- Pinning combination-Nelson series(Half Nelson, Half Nelson and Bar arm), Leg lift series, Leg cradle series, Reverse double bar arm, chicken wing and half Nelson.
- Escapes from pining: Wing lock series, Dopuble arm lock roll, Cridge.
- Standing Wrestling-Head under arm series, whizzer series
- Referees positions.

PC – 302

Fencing: Fundamental Skill

- Basic Stance - on-guard position (feet and legs)
- Footwork – advance, retire, lunge, Step-lunge
- Grip – hold a foil correctly, Etiquette – salute and handshake to coaches and partners
- Hit a target (glove, mask, person) at riposte distance
- Lunge from an on-guard position.
- Attack - simple attacks from sixte – direct, disengage, doublé attack, compound attacks high line – one-two and cut-over disengage, Cut-over attack, Low line attacks
- Semi circular parries – octave and septime
- Understand the layout of a piste.
- Compound or successive parries.
- Lateral parry and direct riposte
- Fence a bout – judges etc. salutes and handshakes
- Rules and their interpretations and duties of officials.

PC 303 Team Games

PC 303

Base Ball Fundamental Skills

- Player Stances – walking, extending walking, L stance, cat stance.
- Grip – standard grip, choke grip,
- Batting – swing and bunt.
- Pitching –

- Baseball : slider, fast pitch, curve ball, drop ball, rise ball, change up, knuckle ball, screw ball,
- Softball: windmill, sling shot,
- starting position: wind up, set.
- Fielding –
    - Catching: basics to catch fly hits, rolling hits,
    - Throwing: over arm, side arm.

- Base running –
    - Base running: single, double, triple, home run,
    - Sliding: bent leg slide, hook slide, head first slide.

- Rules and their interpretations and duties of officials.

PC 303

Netball: Fundamental Skills

- Catching: one handed, two handed, with feet grounded, in flight.
- Throwing (different passes and their uses): one handed passes (shoulder, high shoulder, underarm, bounce, lob); two handed passes (push, overhead, bounce).
- Footwork: landing on one foot; landing on two feet; pivot; running pass.
- Shooting: one hand; two hands; forward step shot; backward step shot.
- Techniques of getting free: dodge and sprint; sudden sprint; sprint and stop; sprinting with change of speed.
- Defending: marking the player; marking the ball; blocking; inside the circle; outside the circle (that is, defending the circle edge against the pass in).
- Intercepting: pass; shot.
- The toss-up.
- Role of individual players
- Rules and their interpretations and duties of officials.

PC – 303

Cricket: Fundamental Skills

- Batting-Forward and backward defensive stroke
- Bowling-Simple bowling techniques
- Fielding-Defensive and offensive fielding
- Catching-High catching and Slip catching
- Stopping and throwing techniques
- Wicket keeping techniques

PC 303

Football: Fundamental Skills

- Kicks-Inside kick, Instep kick, Outer instep kick, lofted kick
- Trapping-trapping rolling the ball, trapping bouncing ball with sole
- Dribbling-With instep, inside and outer instep of the foot.
- Heading-From standing, running and jumping.
- Throw in
- Feinting-With the lower limb and upper part of the body.
- Tackling-Simple tackling, Slide tackling.
- Goal Keeping-Collection of balls, Ball clearance-kicking, throwing and deflecting.

PC 303

Hockey: Fundamental Skills

- Player stance & Grip
- Rolling the ball
- Dribbling
- Push
- Stopping
- Hit
- Flick
- Scoop
- Passing – Forward pass, square pass, triangular pass, diagonal pass, return pass,
- Reverse hit
- Dodging
- Goal keeping – Hand defence, foot defence
- Positional play in attack and defense.
- Rules and their interpretations and duties of officials.
- Rules and their interpretations and duties of officials.
- Ground Marking.

PC – 303

Softball Fundamental Skills

- Catching: one handed, two handed, with feet grounded, in flight.
- Throwing (different passes and their uses): one handed passes (shoulder, high shoulder, underarm, bounce, lob); two handed passes (push, overhead, bounce).
- Footwork: landing on one foot; landing on two feet; pivot; running pass.
- Shooting: one hand; two hands; forward step shot; backward step shot.

- Techniques of getting free: dodge and sprint; sudden sprint; sprint and stop; sprinting with change of speed.
- Defending: marking the player; marking the ball; blocking; inside the circle; outside the circle (that is, defending the circle edge against the pass in).
- Intercepting: pass; shot.
- The toss-up.
- Role of individual players
- Rules and their interpretations and duties of officials.

PC 303

Volleyball: Fundamental Skills

- Players Stance-Receiving the ball and passing to the team mates,
- The Volley (Over head pass),
- The Dig(Under hand pass).
- Service-Under Arm Service, Side Arm Service, Tennis Service, Round Arm Service.
- Rules and their interpretations and duties of officials.

PC - 303

Hand Ball:

- Fundamental Skills-Catching, Throwing, Ball Control, Goal Throws-Jump Shot, Centre Shot, Dive Shot, Reverse Shot, Dribbling-High and Low, Attack and Counter Attack, Simple Counter Attack, Counter Attack from two wings and centre, Blocking, Goal keeping, Defense.
- Rules and their interpretations and duties of officials.

PC – 303

Basket ball: Fundamental Skills

- Player stance and ball handling
- Passing-Two Hand chest pass, Two hand Bounce Pass, One Hand Base ball pass, Side Arm Pass, Over Head pass, Hook Pass.
- Receiving-Two Hand receiving, One hand receiving, Receiving in stationary position, Receiving while jumping, Receiving while running.
- Dribbling-How to start dribble, How to drop dribble, High dribble, Low dribble, Reverse dribble, Rolling dribble.
- Shooting-Layup shot and its variations, one hand set shot, One hand jump shot, Hook shot, Free throw.
- Rebounding-Defensive rebound, Offensive rebound, Knock out, Rebound Organization.
- Individual Defensive-Guarding the man with the ball and without the ball.
- Pivoting.
- Rules and their interpretations and duties of the officials.

TP – 201 Teaching practices:

10 teaching practice lessons out of which 5 lessons in class-room situation and 5 lessons for out-door activities within premises on the students of B.P.Ed course.

TP – 301 Teaching practices:

10 teaching lesson plans for Racket Sport/ Team Games/ Indigeneous Sports out of which 5 lessons internal and 5 lessons external at school.

TP – 401 **Sports Specialization: Track and field / Gymnastics / Swimming**

(4 internal lesson at prcticing school and 1 final external lesson on the students of practicing school as a sports specialization of any discipline mentioned above.)

TP- 402 **Games Specialization: Kabaddi, Kho-kho, Base ball, cricket, Football, Hockey, Softball Volleyball, Handball, Basketball, Netball, Badminton, Table Tennis, Squash, Tennis**

(4 internal lesson at prcticing school and 1 final external lesson on the students of practicing school as a games specialization of any discipline mentioned above.)

Note: Where ever details of any activities are not mentioned, it is expected to elaborate skills by the competent bodies of local Universities.

Table – 1: Semester wise distribution of hours per week

Semester	***Theory***	***Practicum***	***Teaching practice***	***Total***
I	*16*	*24*	*00*	*40*
II	*16*	*18*	*6*	*40*
III	*16*	*18*	*6*	*40*
IV	*16*	*12*	*12*	*40*
Total	*64*	*72*	*24*	*160*
Minimum of 36 teaching hours per week is required in five or six days in a week				

Table – 2: Number of credits per semester

Semester	***Theory***	***Practicum***	***Teaching practice***	***Total***
I	*16*	*16*	*00*	*32*
II	*16*	*12*	*04*	*32*
III	*16*	*12*	*04*	*32*
IV	*16*	*08*	*08*	*32*
Total	*64*	*48*	*16*	*128*
Minimum of 36 teaching hours per week is required in five or six days in a week				

Awadhesh Pratap Singh University, Rewa (M.P.)

As Per Model Syllabus of NCTE, New Delhi drafted by Physical Education Samiti

Course of Studies & Prescribed Books

Department of Physical Education & Sports Science

Faculty of Physical Education

M.P.Ed. Two Year (Four Semester)

Syllabus

Awadhesh Pratap Singh University, Rewa (M.P.)

As Per Model Syllabus of NCTE, New Delhi drafted by Physical Education Samiti

Course of Studies & Prescribed Books

Faculty of Physical Education

M.P.Ed. Two Year (Four Semester)

Syllabus

First Semester

M.P.Ed. Two Year (Four Semester)

INDEX

First Semester

1. Course Code :
2. Course Name : M.P.Ed.
3. Total Paper : 04
4. Compulsory Paper : 05
5. Optional Paper : N
6. Practical : 01

7. Maximum Marks : 500
8. Theory Passing Percentage
9. Practical Marks : 100
10. Practical Passing Percentage :

Paper code	Paper No.	Subject Name	Theory							Practical		Total	
			External			Internal		Total Marks					
			1st	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
		Compulsory Paper											
	I	Research Process In Physical Education & Sports Sciences	80	80	29	20	7	100	36	0	0	100	36
	II	Physiology of Exercise	80	80	29	20	7	100	36	0	0	100	36
	III	Test, Measurement And Evaluation In Physical Education	80	80	29	20	7	100	36	0	0	100	36
	IV	Sports Journalism and Mass Media	80	80	29	20	7	100	36	0	0	100	36
	V	**Practical** (Class Room Teaching (Lessons On Theory Subjects)	---	---	---	---	---	---	---	100	36	100	36

Note :-

- **Student should obtain minimum 36% passing marks in external & internal separately.**
- **Aggregate of internal & external include in the percentage.**

SYLLABUS FOR TWO YEARS M.P.Ed PROGRAMME 2015-16 (FOUR SEMSTERS)

M.P.Ed (Semester-I)

PAPER–I

MPEd-101 RESEARCH PROCESS IN PHYSICAL EDUCATION AND SPORTS SCIENCES

UNIT I – Introduction

Meaning and Definition of Research – Need, Nature and Scope of research in Physical Education. Classification of Research, Location of Research Problem, Criteria for selection of a problem, Qualities of a good researcher.

UNIT II – Methods of Research

Descriptive Methods of Research; Survey Study, Case study, Introduction of Historical Research, Steps in Historical Research, Sources of Historical Research: Primary Data and Secondary Data, Historical Criticism: Internal Criticism and External Criticism.

UNIT III – Experimental Research

Experimental Research – Meaning, Nature and Importance, Meaning of Variable, Types of Variables. Experimental Design - Single Group Design, Reverse Group Design, Repeated Measure Design, Static Group Comparison Design, Equated Group Design, Factorial Design.

UNIT IV – Sampling

Meaning and Definition of Sample and Population. Types of Sampling; Probability Methods; Systematic Sampling, Cluster sampling, Stratified Sampling. Area Sampling – Multistage Sampling. Non- Probability Methods; Convenience Sample, Judgement Sampling, Quota Sampling.

UNIT V – Research Proposal and Report

Chapterization of Thesis / Dissertation, Front Materials, Body of Thesis – Back materials. Method of Writing Research proposal, Thesis / Dissertation; Method of writing abstract and full paper for presenting in a conference and to publish in journals ,Mechanics of writing Research Report, Footnote and Bibliography writing.

REFERENCE :

Best J. W (1971) Research in Education, New Jersey; Prentice Hall, Inc Clarke David. H & Clarke H, Harrison (1984) Research processes in Physical Education, New Jersey; Prentice Hall Inc. Craig Williams and Chris Wragg (2006) Data Analysis and Research for Sport and Exercise Science, Londonl Routledge Press Jerry R Thomas & Jack K Nelson (2000) Research Methods in Physical Activities; Illonosis; Human Kinetics; Kamlesh, M. L. (1999) Reserach Methodology in Physical Education and Sports, New Delhi Moses, A. K. (1995) Thesis Writing Format, Chennai; Poompugar Pathippagam Rothstain, A (1985) Research Design and Statistics for Physical Education, Englewood Cliffs: Prentice Hall, Inc Subramanian, R, Thirumalai Kumar S & Arumugam C (2010) Research Methods in Health, Physical Education and Sports, New Delhi; Friends Publication Moorthy A. M. Research Processes in Physical Education (2010); Friend Publication, New Delhi

M.P.Ed (Semester-I)
PAPER-II

MPEd-102 PHYSIOLOGY OF EXERCISE

UNIT I - Skeletal Muscles and Exercise

Macro & Micro Structure of the Skeletal Muscle,Chemical Composition. Sliding Filament theory of Muscular Contraction. Types of Muscle fibre. Muscle Tone, Chemistry of Muscular Contraction - Heat Production in the Muscle, Effect of exercises and training on the muscular system.

UNIT II - Cardiovascular System and Exercise

Heart Valves and Direction of the Blood Flow - Conduction System of the Heart - Blood Supply to the Heart - Cardiac Cycle - Stroke Volume - Cardiac Output - Heart Rate - Factors Affecting Heart Rate - Cardiac Hypertrophy - Effect of exercises and training on the Cardio vascular system.

UNIT III - Respiratory System and Exercise

Mechanics of Breathing - Respiratory Muscles, Minute Ventilation - Ventilation at Rest and During Exercise. Diffusion of Gases - Exchange of Gases in the Lungs -Exchange of Gases in the Tissues - Control of Ventilation - Ventilation and the Anaerobic Threshold. Oxygen Debt - Lung Volumes and Capacities - Effect of exercises and training on the respiratory system.

UNIT IV - Metabolism and Energy Transfer

Metabolism - ATP - PC or Phosphagen System - Anaerobic Metabolism - Aerobic Metabolism - Aerobic and Anaerobic Systems during Rest and Exercise. Short Duration High Intensity Exercises - High Intensity Exercise Lasting Several Minutes - Long Duration Exercises.

UNIT V - Climatic conditions and sports performance and ergogenic aids Variation in Temperature and Humidity - Thermoregulation - Sports performance in hot climate, Cool Climate, high altitude. Influence of: Amphetamine, Anabolic steroids, Androstenedione, Beta Blocker, Choline, Creatine, Human growth hormone on sports performance. Narcotic, Stimulants: Amphetamines, Caffeine, Ephedrine, Sympathomimetic amines. Stimulants and sports performance.

Note: Laboratory Practicals in Physiology be designed and arranged internally.

REFERENCES:

Amrit Kumar, R, Moses. (1995). Introduction to Exercise Physiology. Madras: Poompugar Pathipagam.

Beotra Alka, (2000) Drug Education Handbook on Drug Abuse in Sports: Sports Authority of India Delhi.

Clarke, D.H. (1975). Exercise Physiology. New Jersey: Prentice Hall Inc., Englewood Cliffs. David, L Costill. (2004). Physiology of Sports and Exercise. Human Kinetics.

Fox, E.L., and Mathews, D.K. (1981). The Physiological Basis of Physical Education and Athletics.

Philadelphia: Sanders College Publishing. Guyton, A.C. (1976). Textbook of Medical Physiology. Philadelphia: W.B. Sanders co. Richard, W. Bowers. (1989). Sports Physiology. WMC: Brown Publishers. Sandhya Tiwaji. (1999). Exercise Physiology. Sports Publishers. Shaver, L. (1981). Essentials of Exercise Physiology. New Delhi: Subject Publications. Vincent, T. Murche. (2007). Elementary Physiology. Hyderabad: Sports Publication. William, D. Mc Aradle. (1996). Exercise Physiology, Energy, Nutrition and Human Performance.

Philadelphia: Lippincott Williams and Wilkins Company.

M.P.Ed (Semester-I)
PAPER -III

MPEd-103 TEST, MEASUREMENT AND EVALUATION IN PHYSICAL EDUCATION

UNIT I - Introduction

Meaning and Definition of Test, Measurement and Evaluation. Need and Importance of Measurement and Evaluation. Criteria for Test Selection - Scientific Authenticity. Meaning, definition and establishing Validity, Reliability, Objectivity. Norms - Administrative Considerations.

UNIT II - Motor Fitness Tests

Meaning and Definition of Motor Fitness. Test for Motor Fitness; Indiana Motor Fitness Test (for elementary and high school boys, girls and College Men) Oregon Motor Fitness Test (Separately for boys and girls) - JCR test. Motor Ability; Barrow Motor Ability Test - Newton Motor Ability Test - Muscular Fitness - Kraus Weber Minimum Muscular Fitness Test.

UNIT III - Physical Fitness Tests

Physical Fitness Test: AAHPERD Health Related Fitness Battery (revised in 1984), ACSM Health Related Physical Fitness Test, Roger's physical fitness Index. Cardio vascular test; Harvard step test, 12 minutes run / walk test, Multi-stage fitness test (Beep test)

UNIT IV - Anthropometric and Aerobic-Anaerobic Tests

Physiological Testing: Aerobic Capacity: The Bruce Treadmill Test Protocol, 1.5 Mile Run test for college age males and females. Anaerobic Capacity: Margaria-Kalamen test, Wingate Anaerobic Test, Anthropometric Measurements: Method of Measuring Height: Standing Height, Sitting Height. Method of measuring Circumference: Arm, Waist, Hip, Thigh. Method of Measuring Skin folds: Triceps, Sub scapular, Suprailiac.

UNIT V - Skill Tests

Specific Spots Skill Test: Badminton: Miller Wall Volley Test. Basketball: Johnson Basketball Test, Harrison Basketball Ability Test. Cricket: Sutcliff Cricket test. Hockey: Friendel Field Hockey Test, Harban's Hockey Test, Volleyball, Russel Lange Volleyball Test, Brady Volleyball Test. Football: Mor-Christian General Soccer Ability Skill Test Battery, Johnson Soccer Test, Mc-Donald Volley Soccer Test. Tennis: Dyer Tennis Test.

Note: Practicals of indoors and out-door tests be designed and arranged internally.

REFERENCES :

Authors Guide (2013) ACSM's Health Related Physical Fitness Assessment Manual, USA: ACSM Publications

Collins, R.D., & Hodges P.B. (2001) A Comprehensive Guide to Sports Skills Tests and

Measurement (2nd edition) Lanham: Scarecrow Press Cureton T.K. (1947) Physical Fitness Appraisal and Guidance, St. Louis: The C. Mosby Company Getchell B (1979) Physical Fitness A Way of Life, 2nd Edition New York, John Wiley and Sons, Inc Jenson, Clayne R and Cynt ha, C. Hirst (1980) Measurement in Physical Education and Athletics,

New York, Macmillan Publising Co. Inc Kansal D.K. (1996), "Test and Measurement in Sports and Physical Education, New Delhi: DVS

Publications

Krishnamurthy (2007) Evaluation in Physical Education and Sports, New Delhi; Ajay Verma Publication

Vivian H. Heyward (2005) Advance Fitness Assessment and Exercise Prescription, 3rd Edition,

Dallas TX: The Cooper Institute for Aerobics Research Wilmore JH and Costill DL. (2005) Physiology of Sport and Exercise: 3rd Edition. Champaigm IL:

Human Kinetics

Yobu, A (2010), Test, Measurement and Evaluation in Physical Education in Physical Education and Sports. New Delhi; Friends Publicat

M.P.Ed (Semester-I)
PAPER-IV

MPEd-104 SPORTS JOURNALISM AND MASS MEDIA

UNIT I Introduction

Meaning and Definition of Journalism, Ethics of Journalism - Canons of journalism- Sports Ethics and Sportsmanship - Reporting Sports Events. National and International Sports News Agencies.

UNIT II Sports Bulletin

Concept of Sports Bulletin: Journalism and sports education - Structure of sports bulletin -Compiling a bulletin - Types of bulletin - Role of Journalism in the Field of Physical Education: Sports as an integral part of Physical Education - Sports organization and sports journalism -General news reporting and sports reporting.

UNIT III Mass Media

Mass Media in Journalism: Radio and T.V. Commentary - Running commentary on the radio -Sports expert's comments. Role of Advertisement in Journalism. Sports Photography: Equipment-Editing - Publishing.

UNIT IV Report Writing on Sports

Brief review of Olympic Games, Asian Games, Common Wealth Games World Cup, National Games and Indian Traditional Games. Preparing report of an Annual Sports Meet for Publication in Newspaper. Organization of Press Meet.

UNIT -V Journalism

Sports organization and Sports Journalism - General news reporting and sports reporting. Methods of editing a Sports report. Evaluation of Reported News. Interview with and elite Player and Coach.

Practical assignments to observe the matches and prepare report and news of the same; visit to News Paper office and TV Centre to know various departments and their working. Collection of Album of newspaper cuttings of sports news.

REFERENCE:

Ahiya B.N. (1988) Theory and Practice of Journalism: Set to Indian context Ed3. Delhi : Surjeet Publications

Ahiya B.N. Chobra S.S.A. (1990) Concise Course in Reporting. New Delhi: Surjeet Publication Bhatt S.C. (1993) Broadcast Journalism Basic Principles. New Delhi. Haranand Publication Dhananjay Joshi (2010) Value Education in Global Perspective. New Delhi: Lotus Press. Kannan K (2009) Soft Skills, Madurai: Madurai: Yadava College Publication Mohit Chakrabarti (2008): Value Education: Changing Perspective, New Delhi: Kanishka Publication.

Padmanabhan. A & Perumal A (2009), Science and Art of Living, Madurai: Pakavathi Publication Shiv Khera (2002), You Can Win, New Delhi: Macmillan India Limited. Varma A.K. (1993) Journalism in India from Earliest Times to the Present Period. Sterling publication Pvt. Ltd.

Venkataiah. N (2009) Value Education,- New Delhi: APH Publishing Corporation. 43

Practical

MPPC-403 CLASS ROOM TEACHING (LESSONS ON THEORY SUBJECTS)

The students of M.P.Ed-IV Semester need to develop proficiency in taking teaching lessons as per selected subjects/Topics of BP.Ed. level. In view of this, the students shall be provided with selected or specialized subject teaching experience. The duration of the lesson to be conducted by these students shall be in the range of 30 to 40 minutes depending on the class time they are going to handle at school and college level.

Each student teacher is expected to take at least five lessons during the course of the forth semester. The lessons will be supervised by the faculty members and experts who would discuss the merits and demerits of the concerned lesson and guide them for the future. In these teaching lessons, the duration should slowly increase and all the parts of the lesson covered progressively. (10 Internal/1External)

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Course of Studies & Prescribed Books

Faculty of Physical Education

M.P.Ed. Two Year (Four Semester)

Syllabus-

Second Semester

1. Course Code : **7. Maximum Marks : 500**

2. Course Name : M.P.Ed. **8. Theory Passing Percentage**

3. Total Paper : 04 **9. Practical Marks : 100**

4. Compulsory Paper : 05 **10. Practical Passing Percentage :**

5. Optional Paper : N

6. Practical : 01

Paper code	Paper No.	Subject Name	Theory							Practical		Total	
			External			Internal		Total Marks					
			1st	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
		Compulsory Paper											
	I	Applied Statistic In Physical Education & Sports	80	80	29	20	7	100	36	0	0	100	36
	II	Sports Biomechanics & Kinsesiology	80	80	29	20	7	100	36	0	0	100	36
	III	Athletic Care And Rehabilitation	80	80	29	20	7	100	36	0	0	100	36
	IV	Sports Technology	80	80	29	20	7	100	36	0	0	100	36
	V	**Practical** (Officiating Lessons of Game Specializations)	---	---	---	---	---	---	---	100	36	100	36

Note :-

- **Student should obtain minimum 36% passing marks in external & internal separately.**
- **Aggregate of internal & external include in the percentage.**

M.P.Ed (Semester-II)

PAPER –I

MPEd-201 APPLIED STATISTIC IN PHYSICAL EDUCATION & SPORTS

UNIT I – Introduction

Meaning and Definition of Statistics. Function, need and importance of Statistics. Types of Statistics. Meaning of the terms, Population, Sample, Data, types of data. Variables; Discrete, Continuous. Parametric and non-parametric statistics.

UNIT II – Data Classification, Tabulation and Measures of Central Tendency Meaning, uses and construction of frequency table. Meaning, Purpose, Calculation and advantages of Measures of central tendency – Mean, median and mode.

UNIT III – Measures of Dispersions and Scales

Meaning, Purpose, Calculation and advances of Range, Quartile, Deviation, Mean Deviation, Standard Deviation, Probable Error. Meaning, Purpose, Calculation and advantages of scoring scales; Sigma scale, Z Scale, Hull scale

UNIT IV – Probability Distributions and Graphs

Normal Curve. Meaning of probability- Principles of normal curve – Properties of normal curve. Divergence form normality – Skewness and Kurtosis. Graphical Representation in Statistics; Line diagram, Bar diagram, Histogram, Frequency Polygon, Ogive Curve.

UNIT V – Inferential and Comparative Statistics

Tests of significance; Independent “t” test, Dependent “t” test – chi – square test, level of confidence and interpretation of data. Meaning of correlation – co-efficient of correlation – calculation of co-efficient of correlation by the product moment method and rank difference method. Concept of ANOVA and ANCOVA.

Note : It is recommended that the theory topics be accompanied with practical, based on computer software of statistics.

REFERENCE

Best J. W (1971) Research in Education, New Jersey; Prentice Hall, Inc

Clark D.H. (1999) Research Problem in Physical Education 2nd edition, Eaglewood Cliffs, Prentice Hall, Inc.

Jerry R Thomas & Jack K Nelson (2000) Research Methods in Physical Activities; Illonosis; Human Kinetics;

Kamlesh, M. L. (1999) Reserach Methodology in Physical Education and Sports, New Delhi

Rothstain A (1985) Research Design and Statistics for Physical Education, Englewood Cliffs: Prentice Hall, Inc

Sivaramakrishnan. S. (2006) Statistics for Physical Education, Delhi; Friends Publication

Thirumalaisamy (1998), Statistics in Physical Education, Karaikudi, Senthilkumar Publications.

M.P.Ed (Semester-II)

PAPER–II

MPEd-202 SPORTS BIOMECHANICS AND KINSESIOLOGY

UNIT I - Introduction

Meaning, nature, role and scope of Applied kinesiology and Sports Biomechanics. Meaning of Axis and Planes, Dynamics, Kinematics, Kinetics, Statics Centre of gravity -Line of gravity plane of the body and axis of motion, Vectors and Scalars.

UNIT II - Muscle Action

Origin, Insertion and action of muscles: Pectoralis major and minor, Deltoid, Biceps, Triceps (Anterior and Posterior), Trapezius, serratus, Sartorius, Rectus femoris, Abdominis, Quadriceps, Hamstring, Gastrocnemius.

UNIT III - Motion and Force

Meaning and definition of Motion. Types of Motion: Linear motion, angular motion, circular motion, uniform motion. Principals related to the law of Inertia, Law of acceleration, and law of counter force. Meaning and definition of force- Sources of force -Force components .Force applied at an angle - pressure -friction -Buoyancy, Spin - Centripetal force - Centrifugal force.

UNIT IV - Projectile and Lever

Freely falling bodies -Projectiles -Equation of projectiles stability Factors influencing equilibrium -Guiding principles for stability -static and dynamic stability. Meaning of work, power, energy, kinetic energy and potential energy. Leverage -classes of lever - practical application. Water resistance - Air resistance -Aerodynamics. Note: Laboratory practicals should be designed and arranged for students internally.

UNIT V - Movement Analysis

Analysis of Movement: Types of analysis: Kinesiological, Biomechanical. Cinematographic. Methods of analysis - Qualitative, Quantitative, Predictive.

Note: Laboratory Practicals be designed and arranged internally.

REFERENCE:

Deshpande S.H.(2002). Manav Kriya Vigyan - Kinesiology (Hindi Edition) Amravati :Hanuman Vyayam Prasarak Mandal. Hoffman S.J. Introduction to Kinesiology. Human Kinesiology publication In.2005. Steven Roy, & Richard Irvin. (1983). Sports Medicine. New Jersery: Prentice hall. Thomas. (2001). Manual of structural Kinesiology, New York: Me Graw Hill. Uppal A.K. Lawrence Mamta MP (2004) Kinesiology. Delhi, Friends Publication . Uppal, A K. (2004), Kinesiology in Physical Education and Exercise Science, Delhi, Friends publications. Williams M (1982) Biomechanics of Human Motion, Philadelphia; Saunders Co.

M.P.Ed (Semester-II)

PAPER –III

MPEd-203 ATHLETIC CARE AND REHABILITATION

UNIT I - Corrective Physical Education

Definition and objectives of corrective physical Education. Posture and body mechanics, Standards of Standing Posture. Value of good posture, Drawbacks and causes of bed posture. Posture test - Examination of the spine.

UNIT II - Posture

Normal curve of the spine and its utility, Deviations in posture: Kyphosis, lordosis, flat back, Scoliosis, round shoulders, Knock Knee, Bow leg, Flat foot. Causes for deviations and treatment including exercises.

UNIT III - Rehabilitation Exercises

Passive, Active, Assisted, Resisted exercise for Rehabilitation, Stretching, PNF techniques and principles.

UNIT IV - Massage

Brief history of massage - Massage as an aid for relaxation - Points to be considered in giving massage - Physiological , Chemical, Psychological effects of massage - Indication / Contra indication of Massage - Classification of the manipulation used massage and their specific uses in the human body - Stroking manipulation: Effleurage - Pressure manipulation: Petrissage Kneading (Finger, Kneading, Circular) ironing Skin Rolling - Percussion manipulation: Tapotement, Hacking, Clapping, Beating, Pounding, Slapping, Cupping, Poking, Shaking Manipulation, Deep massage.

UNIT V - Sports Injuries Care, Treatment and Support

Principles pertaining to the prevention of Sports injuries - care and treatment of exposed and unexposed injuries in sports - Principles of apply cold and heat, infrared rays - Ultrasonic, Therapy - Short wave diathermy therapy. Principles and techniques of Strapping and Bandages.

Note: Each student shall submit Physiotherapy record of attending the Clinic and observing the cases of athletic injuries and their treatment procedure.(To be assessed internally)

REFERENCES:

Dohenty. J. Meno.Wetb, Moder D (2000) Track & Field, Englewood Cliffs, Prentice Hal Inc. Lace, M. V. (1951) Massage and Medical Gymnastics, London: J & A Churchill Ltd. Mc Ooyand Young (1954) Tests and Measurement, New York: Appleton Century. Naro, C. L. (1967) Manual of Massage and, Movement, London: Febra and Febra Ltd. Rathbome, J.l. (1965) Corrective Physical education, London: W.B. Saunders & Co. Stafford and Kelly, (1968) Preventive and Corrective Physical Education, New York

M.P.Ed (Semester-II)
PAPER–IV

MPEd-204 SPORTS TECHNOLOGY

UNIT I - Sports Technology

Meaning, definition, purpose, advantages and applications, General Principles and purpose of instrumentation in sports, Workflow of instrumentation and business aspects, Technological impacts on sports.

UNIT II - Science of Sports Materials

Adhesives- Nano glue, nano moulding technology, Nano turf. Foot wear production, Factors and application in sports, constraints. Foams- Polyurethane, Polystyrene, Styrofoam, closedcell and open-cell foams, Neoprene, Foam. Smart Materials - Shape Memory Alloy (SMA), Thermo chromic film, High-density modelling foam.

UNIT III - Surfaces of Playfields

Modern surfaces for playfields, construction and installation of sports surfaces. Types of materials - synthetic, wood, polyurethane. Artificial turf. Modern technology in the construction of indoor and outdoor facilities. Technology in manufacture of modern play equipments. Use of computer and software in Match Analysis and Coaching.

UNIT IV - Modern equipment

Playing Equipments: Balls: Types, Materials and Advantages, Bat/Stick/ Racquets: Types, Materials and Advantages. Clothing and shoes: Types, Materials and Advantages. Measuring equipments: Throwing and Jumping Events. Protective equipments: Types, Materials and Advantages. Sports equipment with nano technology, Advantages.

UNIT V - Training Gadgets

Basketball: Ball Feeder, Mechanism and Advantages. Cricket: Bowling Machine, Mechanism and Advantages, Tennis: Serving Machine, Mechanism and Advantages, Volleyball: Serving Machine Mechanism and Advantages. Lighting Facilities: Method of erecting Flood Light and measuring luminous. Video Coverage: Types, Size, Capacity, Place and Position of Camera in Live coverage of sporting events.

Note: Students should be encouraged to design and manufacture improvised sports testing equipment in the laboratory/workshop and visit sports technology factory/ sports goods manufacturers.

REFERENCE:

Charles J.A. Crane, F.A.A. and Furness, J.A.G. (1987) "Selection of Engineering Materials" UK:

Butterworth Heiremann. Finn, R.A. and Trojan P.K. (1999) "Engineering Materials and their Applications" UK: Jaico

Publisher.

John Mongilo, (2001), "Nano Technology 101 "New York: Green wood publishing group. Kochar, S.K. (1982) Methods and Techniques of Teaching (New Delhi, Jullandhar, Sterling Publishers Pvt. Ltd.)

Kozman, Cassidy and Jackson. (1952) Methods in Physical Education (W.B. Saunders Company,

Philadelphia and London) Walia, J.S. (1999)Principles and Methods of Education (Paul Publishers, Jullandhar)

Practical

OFFICIATING LESSONS OF GAME SPECIALIZATIONS

The students of M.P.Ed – IV Semester need to be develop proficiency in taking officiating lesson on selected game specialization. In view of this, the students shall be provided with advance mechanism of officiating in selected game specialization. The duration of the lesson to be conducted by these students shall be in the range of 30 to 40 minutes depending on the class time they are going to handle at school and college level. Each student teacher is expected to take at least five lessons during the course of the fourth semester. The lessons will be supervised by the faculty members and experts who would discuss the merits and demerits of the concerned lesson and guide them for the future. In these officiating lessons, the duration should slowly increase and all the parts of the lesson covered progressively.

Note: Where ever details of any activities are not mentioned, it is expected to elaborate skills by the competent bodies of local Universities/ Autonomous Colleges.

Awadhesh Pratap Singh University, Rewa (M.P.)

As Per Model Syllabus of NCTE, New Delhi drafted by Physical Education Samiti

Course of Studies & Prescribed Books

Faculty of Physical Education

M.P.Ed. Two Year (Four Semester)

Syllabus-

Third Semester

Third Semester

1. Course Code :
2. Course Name : M.P.Ed.
3. Total Paper : 04
4. Compulsory Paper : 05
5. Optional Paper : N
6. Internship : 01
7. Maximum Marks : 500
8. Theory Passing Percentage :
9. Internship Marks : 100
10. Internship Passing Percentage :

Paper code	Paper No.	Subject Name	Theory							Practical		Total	
			External			Internal		Total Marks					
			1st	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
		Compulsory Paper											
	I	Scientific Principles of Sports Training (Lab Practicals- Tread mill, Bicycle ergometer, strength, endurance & fitness testing)- Internal.	80	80	29	20	7	100	36	0	0	100	36
	II	Sports Medicine (Lab Practicals)- Internal	80	80	29	20	7	100	36	0	0	100	36
	III	Health Education And Sports Nutrition	80	80	29	20	7	100	36	0	0	100	36
	IV	Physical Fitness And Wellness (Elective)	80	80	29	20	7	100	36	0	0	100	36
	V	**Internship & Project**		---	---	---	---	---	---	100	36	100	36

Note :-

- **Student should obtain minimum 36% passing marks in external & internal separately.**
- **Aggregate of internal & external include in the percentage.**

M.P.Ed (Semester-III)

PAPER –I

MPEd-301 SCIENTIFIC PRINCIPLES OF SPORTS TRAINING

UNIT I - Introduction

Sports training: Definition - Aim, Characteristics, Principles of Sports Training, Over Load: Definition, Causes of Over Load, Symptoms of Overload, Remedial Measures - Super Compensation - Altitude Training - Cross Training

UNIT II - Components of Physical Fitness

Strength: Methods to improve Strength: Weight Training, Isometric, Isotonic, Circuit Training, Speed: Methods to Develop Speed: Repetition Method, Downhill Run, Parachute Running, Wind Sprints, Endurance, Methods to Improve Endurance: Continuous Method, Interval Method, Repetition Method, Cross Country, Fartlek Training

UNIT III - Flexibility

Flexibility: Methods to Improve the Flexibility- Stretch and Hold Method, Ballistic Method, Special Type Training: Plyometric Training. Training for Coordinative abilities: Methods to improve Coordinative abilities: Sensory Method, Variation in Movement Execution Method, Variation in External Condition Method, Combination of Movement Method, Types of Stretching Exercises.

UNIT IV - Training Plan

Training Plan: Macro Cycle, Meso-Cycle. Short Term Plan and Long Term Plans - Periodisation: Meaning, Single, Double and Multiple Periodisation, Preparatory Period, Competition Period and Transition Period.

UNIT V - Doping

Definition of Doping - Side effects of drugs - Dietary supplements - IOC list of doping classes and methods. Blood Doping - The use of erythropoietin in blood boosting - Blood doping control

- The testing programmes - Problems in drug detection - Blood testing in doping control - Problems with the supply of medicines Subject to IOC regulations: over the- counter drugs (OTC)

- prescription only medicines (POMs) - Controlled drugs (CDs). Reporting test results - Education

REFERENCES :

Beotra Alka, (2000), Drug Education Handbook on Drug Abuse in Sports. Delhi: Sports Authority of India. Bunn, J.N. (1998) Scientific Principles of Coaching, New Jersey Engle Wood Cliffs, Prentice Hall Inc. Cart, E. Klafs &Daniel, D. Arnheim (1999) Modern Principles of Athletic Training St. Louis C. V. Mosphy Company Daniel, D. Arnheim (1991) Principles of Athletic Traning, St. Luis, Mosby Year Book David R. Mottram (1996) Drugs in Sport, School of Pharmacy, Liverpool: John Moore University Gary, T. Moran (1997) - Cross Training for Sports, Canada : Human Kinetics Hardayal Singh (1991) Science of Sports Training, New Delhi, DVS Publications Jensen, C.R. & Fisher A.G. (2000) Scientific Basic of Athletic Conditioning, Philadelphia Ronald, P. Pfeiffer (1998) Concepts of Athletics Training 2nd Edition, London: Jones and Bartlett Publications Yograj Thani (2003), Sports Training, Delhi : Sports Publications

M.P.Ed (Semester-III)

PAPER –II

MPEd-302 SPORTS MEDICINE

UNIT I - Introduction

Meaning, definition and importance of Sports Medicine, Definition and Principles of therapeutic exercises. Coordination exercise, Balance training exercise, Strengthening exercise, Mobilization exercise, Gait training, Gym ball exercise Injuries: acute, sub-acute, chronic. Advantages and Disadvantages of PRICE, PRINCE therapy, Aquatic therapy.

UNIT II - Basic Rehabilitation

Basic Rehabilitation: Strapping/Tapping: Definition, Principles Precautions Contraindications. Proprioceptive neuromuscular facilitation: Definition hold, relax, repeated contractions. Show reversal technique exercises. Isotonic, Isokinetic, isometric stretching. Definition. Types of stretching, Advantages, dangers of stretching, Manual muscle grading.

UNIT III - Spine Injuries and Exercise

Head, Neck and Spine injuries: Causes, Presentational of Spinal anomalies, Flexion, Compression, Hyperextension, Rotation injuries. Spinal range of motion. Free hand exercises, stretching and strengthening exercise for head neck, spine. Supporting and aiding techniques and equipment for Head, Neck and Spine injuries.

UNIT IV - Upper Extremity Injuries and Exercise

Upper Limb and Thorax Injuries: Shoulder: Sprain, Strain, Dislocation, and Strapping. Elbow: Sprain, Strain, Strapping. Wrist and Fingers: Sprain Strain, Strapping. Thorax, Rib fracture. Breathing exercises, Relaxation techniques, Free hand exercise, Stretching and strengthening exercise for shoulder, Elbow, Wrist and Hand. Supporting and aiding techniques and equipment for Upper Limb and Thorax Injuries

UNIT V - Lower Extremity Injuries and Exercise

Lower Limb and Abdomen Injuries: Hip: Adductor strain, Dislocation, Strapping. Knee: Sprain, Strain, Strain, Strapping. Ankle: Sprain, Strain, Strapping. Abdomen: Abdominal wall, Contusion, Abdominal muscle strain. Free exercises - Stretching and strengthening exercise for Hip, knee, ankle and Foot. Supporting and aiding techniques and equipment for Lower limb and Abdomen injures.

Practicals: Lab. Practicals and visit to Physiotherapy Centre to observe treatment procedure of sports injuries; data collection of sports injury incidences etc. should be planned internally.

REFERENCES:

Christopher M. Norris. (1993). Sports Injures Diagnosis and Management for Physiotherapists.

East Kilbride: Thomson Litho Ltd. James, A. Gould & George J. Davies. (1985) Physical Therapy. Toronto: C.V. Mosby Company. Morris B. Million (1984) Sports Injuries and Athletic Problem. New Delhi: Surjeet Publication. Pande. (1998). Sports Medicine. New delhi: Khel Shitya Kendra

The Encyclopedia of Sports Medicine. (1998). The Olympic Book of Sports Medicine, Australia: Tittel Blackwell Scientific publications. Practical: Anthropometric Measurements,

M.P.Ed (Semester-III)

PAPER–III

MPEd-303 HEALTH EDUCATION AND SPORTS NURTITION

UNIT I- Health Education

Concept, Dimensions, Spectrum and Determinants of Health Definition of Health, Health Education, Health Instruction, Health Supervision Aim, objective and Principles of Health Education Health Service and guidance instruction in personal hygiene

UNIT II- Health Problems in India

Communicable and Non Communicable Diseases Obesity, Malnutrition, Adulteration in food, Environmental sanitation, Explosive, Population, Personal and Environmental Hygiene for schools Objective of school health service, Role of health education in schools Health Services -Care of skin, Nails, Eye health service, Nutritional service, Health appraisal, Health record, Healthful school environment, first- aid and emergency care etc

UNIT III - Hygiene and Health

Meaning of Hygiene, Type of Hygiene, dental Hygiene, Effect of Alcohol on Health, Effect of Tobacco on Health, Life Style Management, Management of Hypertension, Management of Obesity, Management of Stress

UNIT IV- Sports Nutrition

Nutrition Meaning and Definition of Sports Nutrition, Role of nutrition in sports, Basic Nutrition guidelines, Nutrients: Ingestion to energy metabolism (Carbohydrate, Protein and Fat), Role of carbohydrates, Fat and protein during exercise.

UNIT V- Weight Control Management

Concept of BMI (Body mass index), Obesity and its hazard, Dieting versus exercise for weight control Maintaining a Healthy Lifestyle, Weight management program for sporty child, Role of diet and exercise in weight management, Design diet plan and exercise schedule for weight gain and loss.

REFERENCES:

Boyd-Eaton S. et al (1989) The Stone Age Health Programme: Diet and Exercise as Nature

Intended. Angus and Robertson. Bucher, Charles A. "Administration of Health and Physical Education Programme". Delbert, Oberteuffer, et. al." The School Health Education". Ghosh, B.N. "Treaties of Hygiene and Public Health". Hanlon, John J. "Principles of Public Health Administration" 2003. Moss and et. At. "Health Education" (National Education Association of U.T.A.) Nemir A. 'The School Health Education" (Harber and Brothers, New York). Nutrition Encyclopedia, edited by Delores C.S. James, The Gale Group, Inc. Terras S. (1994) Stress, How Your Diet can Help: The Practical Guide to Positive Health Using

Diet, Vitamins, Minerals, Herbs and Amino Acids, Thorons. Turner, C.E. "The School Health and Health Education".

M.P.Ed (Semester-III)

PAPER–IV

MPEd-304 PHYSICAL FITNESS AND WELLNESS

UNIT I - Introduction

Meaning and Definition" of Physical Fitness, Physical Fitness Concepts and Techniques, Principles of physical fitness, Physiological principles involved in human movement. Components of Physical Fitness. Leisure time physical activity and identify opportunities in the community to participate in this activity. Current trends in fitness and conditioning, components of total health fitness and the relationship between physical activity and lifelong wellness.

UNIT II - Nutrition

Nutrients; Nutrition labelling information, Food Choices, Food Guide Pyramid, Influences on food choices-social, economic, cultural, food sources, Comparison of food values. Weight Management-proper practices to maintain, lose and gain. Eating Disorders, Proper hydration, the effects of performance enhancement drugs

UNIT III - Aerobic Exercise

Cardio respiratory Endurance Training; proper movement forms, i.e., correct stride, arm movements, body alignment; proper warm-up, cool down, and stretching, monitoring heart rates during activity. Assessment of cardio respiratory fitness and set goals to maintain or improve fitness levels. Cardio respiratory activities including i.e. power walking, pacer test, interval training, incline running, distance running, aerobics and circuits.

UNIT IV - Anaerobic Exercise

Resistance Training for Muscular Strength and Endurance; principles of resistance training, Safety techniques (spotting, proper body alignment, lifting techniques, spatial, awareness. and proper breathing techniques). Weight training principles and concepts; basic resistance exercises (including free hand exercise, free weight exercise, weight machines, exercise bands and tubing. medicine balls, fit balls) Advanced techniques of weight training

UNIT V - Flexibility Exercise

Flexibility Training, Relaxation Techniques and Core Training. Safety techniques (stretching protocol; breathing and relaxation techniques) types of flexibility exercises (i.e. dynamic, static), Develop basic competency in relaxation and breathing techniques. Pilates, Yoga.

REFERENCE:

David K. Miller & T. Earl Allen, Fitness, A life time commitment, Surjeet Publication Delhi 1989. Dificore Judy, the complete guide to the postnatal fitness, A & C Black Publishers Ltd. 35 Bedfordrow, London 1998 Dr. A.K. Uppal, Physical Fitness, Friends Publications (India), 1992. Elizabeth & Ken day, Sports fitness for women, B.T. Batsford Ltd, London, 1986. Emily R. Foster, Karyn Hartiger & Katherine A. Smith, Fitness Fun, Human Kinetics Publishers 2002. Lawrence, Debbie, Exercise to Music. A & C Black Publishers Ltd. 37, Sohe Square, London 1999 Robert Malt. 90 day fitness plan, D.K. publishing, Inc. 95, Madison Avenue, New York 2001 Warner W.K. Oeger & Sharon A.Hoeger,Fitness and Wellness, Morton Publishing Company,1990.

MPEd-303 INTERNSHIP& PROJECT

INTERNSHIP: Every student has to serve honorary in the institution/ School/fitness centers.

Evaluated on the basis of Daily Diary preparation, regularity, teaching quality, sincerity, class

control and job execution.

Criteria for evaluating Internship Programme:

- A Student will be required to join any school/ organization in any one of the following areas: o Gym and Health Club management. o Aerobics/Mass Demonstration. o Training of Life guard for water sports. o Sports Management/Journalism.
  - o Teaching Physical Education in Schools/Institutions/Centers.
- A student is required to bring a certificate on letter head of the Institute form the Head of the

Organization., specifying that he/she has imparted instruction/training/teaching in that

organization w.e.f ..... to ..... and his/her work has been excellent/very good/good/satisfactory/poor (The administrator may tick any one of the five alternatives).

PROJECT: Informative model (working or simple, preparation of informative chart or flex board) related to Physical Education, sport, health, wellness, yoga & fitness to be prepared individually or in group.

Awadhesh Pratap Singh University, Rewa (M.P.)

As Per Model Syllabus of NCTE, New Delhi drafted by Physical Education Samiti

Course of Studies & Prescribed Books

Faculty of Physical Education

M.P.Ed. Two Year (Four Semester)

Syllabus

Fourth Semester

Fourth Semester

1. Course Code :
2. Course Name : M.P.Ed.
3. Total Paper : 04
4. Compulsory Paper : 05
5. Optional Paper : N
6. Practical : 01
7. Maximum Marks : 500
8. Theory Passing Percentage
9. Practical Marks : 100
10. Practical Passing Percentage :

Paper code	Paper No.	Subject Name	Theory							Practical		Total	
			External			Internal		Total Marks					
			1st	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
		Compulsory Paper											
	I	Sports Psychology	80	80	29	20	7	100	36	0	0	100	36
	II	Sports Management	80	80	29	20	7	100	36	0	0	100	36
	III	Games Specialization: Track & Field /Swimming/ Gymnastics	80	80	29	20	7	100	36	0	0	100	36
	IV	**Dissertation**	---	---	---	---	---	---	---	---	---	100	36
	V	**Practical :** Adventure Or Leadership Camp/Tour/ Training & Seminar Adventure Activities	---	---	---	---	---	---	---	100	36	100	36

Note :-

- **Student should obtain minimum 36% passing marks in external & internal separately.**
- **Aggregate of internal & external include in the percentage.**

M.P.Ed (Semester-IV)
PAPER –I

MPEd-401 SPORTS PSYCHOLOGY

UNIT I - Introduction

Meaning, Definition, History, Need and Importance of Sports Psychology. Present Status of Sports Psychology in India. Motor Learning: Basic Considerations in Motor Learning - Motor Perception : Factors Affecting Perception - Perceptual Mechanism. Personality: Meaning, Definition, Structure - Measuring Personality Traits. Effects of Personality on Sports Performance.

UNIT II - Motivation & Mental State

Meaning and Definition, Types of Motivation: Intrinsic, Extrinsic. Achievement Motivation: Meaning, Measuring of Achievement Motivation. Anxiety: Meaning and Definition, Nature, Causes, Method of Measuring Anxiety. Competitive Anxiety and Sports Performance. Stress: Meaning and Definition, Causes. Stress and Sports Performance. Aggression: Meaning and Definition, Method of Measurement. Aggression and Sports Performance. Self-Concept: Meaning and Definition, Method of Measurement.

UNIT III - Goal Setting

Meaning and Definition, Process of Goal Setting in Physical Education and Sports. Psychological Tests: Types of Psychological Test: Instrument based tests: Pass-along test - Tachistoscope-Reaction timer - Finger dexterity board - Depth perception box - Kinesthesiometer board. Questionnaire: Sports Achievement Motivation, Sports Competition Anxiety.

UNIT IV - Psychological aspects of Competition:

Defining competition, determinants of competitive behavior, psychological characteristics of pre-competition, during competition and post competition. Selected psycho regulative techniques technique for relaxation and activation. Psychological aspects of long term and short term preparation for competition, Psychological care of injuries, sports person, responses to injuries, prevention and coping techniques.

UNIT V - Psycho-Social Facilitation:

Presence of others, co action effect and audience effect in sports. Factors mediating social facilitations. **Volitional regulation actions in sports:** Meaning, Characteristics and Factors affecting volitional regulated behavior. Development of volitional qualities.

Practicals: Atleast five experiments related to the topics listed in the Units above should be conducted by the students in laboratory. (Internal assessment.)

REFERENCES:

Authors Guide (2013) National Library of Educational and Psychological Test (NLEPT) Catalogue of Tests, New Delhi: National Council of Educational Research and Training Publication. Jain. (2002), Sports Sociology, Heal Sahety Kendre Publishers.

Jay Coakley. (2001) Sports in Society - Issues and Controversies in International Education, Mc-Craw Seventh Ed.

John D Lauther (2000) Psychology of Coaching. Ner Jersy: Prenticce Hall Inc. John D. Lauther (1998) Sports Psychology. Englewood, Prentice Hall Inc. Miroslaw Vauks & Bryant Cratty (1999). Psychology and the Superior Athlete. London: The Macmillan Co.

Richard, J. Crisp. (2000). Essential Social Psychology. Sage Publications.

Robert N. Singer (2001). Motor Learning and Human Performance. New York: The Macmillan Co. Robert N. Singer. (1989) The Psychology Domain Movement Behaviour. Philadelphia: Lea and Febiger. Thelma Horn. (2002). Advances in Sports Psychology. Human Kinetic. Whiting, K, Karman. Hendry L.B & Jones M.G. (1999) Personality and Performance in Physical Education and Sports. London: Hendry Kimpton Publishers.

M.P.Ed (Semester-IV)

PAPER–II

MPEd-402 SPORTS MANAGEMENT

UNIT I- Management:

Meaning and Functions, The skills of management, the universal nature of the management process, Management and Administration, Principles and Theories of Management.

UNIT II- Organisation:

Classical Principles, Bureaucracy; Bureaucracy in Democracy and in sports organizations. Open systems perspectives. The constitution of a national sports organization, office holders of an organization and their functional meetings.

UNIT III- Human resource management:

Definition & Aspect of HRM, Job analysis and its process. Human resource planning, Recruitments, Manpower Planning, Personal Management and its principles, Appraisals & Public Relation in physical education.

UNIT IV- Management of performance:

Evaluation and its techniques in physical education. Sports competition and its system, Training structure & performance. Injury management, Ethics of sports.

UNIT V- Management of finance, Facilities and material:

Financial administration in sports and physical education, Sources of funds in sports. Budgeting is sports and games, purpose and principles of budgeting.

Material Management: Improvisation and Standardization of Sports equipments and materials.

Scientific purchasing. Storekeeping, inventory control and value analysis.

Facility (outdoor and indoor) Planning, Construction and maintenance of sports facilities.

REFERENCE:

Bucher Carles, A. (1987) Administration of Physical Education and Athletic programs. London, The C.V. Mosby Co.

Chelladurai P. (1985) Sports Management Macro perspective. canada Sports Dynamics

Earle F. Zeigler & Grary W. Bowie(1993): Management competency Development in sports and physical education philadephip: W. Leo and Febiger. heph Bucher and Earnest Koerigeberg(1968): Scientific Inventory Management . New Delhi:

Prentice Hall of India Pvt. Ltd., Morson James G and Jimpaul (1988) Modern Sports Administration. Englewood Cliffs, NerJersey: Prentice Hall, Inc.

Scholar Rondoll S and Nicholas. J(1983) Personal Management. New York, West Publishing company.

Vanderwag Harold. J(1984) Sports Management (New York: Mac Millon publishing company.

M.P.Ed (Semester-IV)
PAPER –III

MPEd- GAMES SPECIALIZATION:

GAMES SPECIALIZATION: TRACK & FIELD /SWIMMING/ GYMNASTICS

M.P.Ed (Semester-IV)
PAPER–IV

MPEd-404 DISSERTATION

1.A candidate shall have dissertation for M.P.Ed.-IV Semester and must submit his/her Synopsis and get it approved by the Head of Department on the recommendation of D.R.C. (Departmental Research Committee).

2.A candidate selecting dissertation must submit his/her dissertation not less than one week before the beginning of the IVth Semester Examination.

3.The candidate has to face the Viva-Voce conducted by DRC.

Practical

MPEd- ADVENTURE or LEADERSHIP CAMP/TOUR/TRAINING & SEMINAR

ADVENTURE ACTIVITIES: Trekking, Wall climbing, River crossing, Mountaineering, etc **SEMINAR:** Presentation on topics of sports, yoga, wellness, health & fitness their research findings, survey of literature, development, historical or current issues.

10 days leadership camp is compulsory for every student before appearing IV semester Examination

DEPARTMENT OF PHYSICAL EDUCATION & SPORTS SCIENCE

AWADESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

CURRICULUM FRAMEWORK:
TWO-YEAR B.P.ED. PROGRAMME

NATIONAL COUNCIL FOR TEACHER EDUCATION
Hans Bhawan (Wing-II),
1, Bahadur Shah Zafar Marg,
New Delhi-110 002
www.ncte-india.org

GUIDELINES OF REGULATIONS AND MODEL SYLLABUS STRUCTURE FOR B. P. ED. TWO YEARS PROGRAMME (FOUR SEMESTERS)(CBCS)

(If the University or affiliating body is following choice based credit system, (CBCS) as approved and Circulated by the UGC, the credit hours given in the following curriculum framework need to be considered along with the hours of teaching mentioned for each paper/ activity / course)

(If the University oraffiliatingbody isyet to adopt CBCS, only the hours of teaching mentioned for each paper/ activity / course will be considered, the credit in teaching hours may be ignored)

Preamble: Bachelor of Physical Education (B. P. Ed.) two years (Four Semesters Choice Based Credit System) programme is a professional programme meant for preparing teachers of physical education in classes VI to X and for conducting physical education and sports activities in classes XI and XII.

B. P. Ed. programme shall be designed to integrate the study of childhood, social context of Physical Education, subject knowledge, pedagogical knowledge, aim of Physical Education and communication skills. The programme comprises of compulsory and optional theory as well as practical courses and compulsory school internship.

R.B.P.Ed. 1.Eligibility

Intake, Eligibility and Admission Procedure as per the NCTE norms and standards

R. B.P.Ed. 2. Duration:

The B.P.Ed programme shall be of a duration of two academic years,that is, four semesters. However, the students shall be permitted to complete the programme requirements within a maximum of three years from the date of admission to the programme.

R. B.P.Ed. 3. The CBCS System:

All Programmes shall run on Choice Based Credit System (CBCS). It is an instructional package developed to suit the needs of students, to keep pace with the developments in higher education and the quality assurance expected of it in the light of liberalization and globalization in higher education.

R. B.P.Ed 4. Course:

The term course usually referred to, as 'papers' is a component of a programme. All courses need not carry the same weight. The courses should define learning objectives and learning outcomes. A course may be designed to comprise Lectures/ tutorials/laboratory work/ field work/ outreach activities/ project work/ vocational training/viva/ seminars/ term papers/assignments/ presentations/ self-study etc. or a combination of some of these.

R. B.P.Ed. 5. Courses of Programme:

The B.P.Ed. Programme consists of a number of courses, the term 'Course' applied to indicate a logical part of subject matter of the programme and is invariably equivalent to the subject matter of a "paper" in the conventional sense. The following are the various categories of courses suggested for the B.P.Ed. Programme.

Theory:

Core Course:

Elective Course:

Practicum:

Teaching Practices:

R. B.P.Ed.6. Semesters:

An academic year is divided into two semesters. Each semester will consist of 17-20 weeks of academic work equivalent to 100 actual teaching days. The odd semester may be scheduled from May/June to November/Decemberand even semester from November / December to May/June. The institution shall work for a minimum of 36 working hours in a week (five or six days a week).

R. B.P.Ed.7. Working days:

There shall be at least 200 working days per year exclusive of admission and examination processes etc.

R. B.P.Ed 8. Credits:

The term 'Credit' refers to a unit by which the programme is measured. It determines the number of hours of instructions required per week. One credit is equivalent to one hour of teaching (lecture or tutorial) or one and half / two hours of practical work/field work per week.The term 'Credit' refers to the weight given to a course, usually in relation to the instructional hours assigned to it. The total minimum credits, required for completing a B.P.Ed. Programme is 90 credits and for each semester 20 credits.

Provision of Bonus CreditsMaximum 06 Credits in each Semester

Sr. No.	Special Credits for Extra Co-curricular Activities	Credit
1	Sports Achievement at Stale level Competition (Medal Winner) Sports Achievement National level Competition (Medal Winner) Sports participationInternational level Competition	1 2 4
2	Inter Uni. Participation (Any one game)	2
3	Inter College Participation (min. two game)	1
4	National Cadet Corps / National Service Scheme	2
5	Blood donation / Cleanliness drive / Community services /	2
6	Mountaineering – Basic Camp, Advance Camp / Adventure Activities	2
7	Organization / Officiating – State / National level in any two game	2
8	News Reposting / Article Writing / book writing / progress report writing	1
9	Research Project	4

Students can earn maximum 06 Bonus credits in each semester by his/her participation in the above mentioned activities duly certified by the Head of the institution / Department. This Bonus credit will be used only to compensate loss of credits in academic activities.

R. B.P.Ed. 9. Examinations:

i. There shall be examinations at the end of each semester, for first semester in the month of November /December: for second semester in the month of May / June. A candidate who does not pass the examination in any course(s) shall be permitted to appear in such failed course(s) in the subsequent examinations to be held in November /December or May / June.

ii. A candidate should get enrolled /registered for the first semester examination. If enrollment/registration is not possible owing to shortage of attendance beyond condonation limit / rules prescribed OR belated joining OR on medical grounds, such candidates are not permitted to proceed to the next semester. Such candidates shall redo the semester in the subsequent term of that semester as a regular student; however, a student of first semester shall be admitted in the second semester, if he/she has successfully kept the term in first semester.

R. B.P.Ed 10 Condonation:

Student must have 75% of attendance in each course for appearing the examination. Students who have 74% to 65% of attendance shall apply for condonation in the prescribed form with the prescribed fee. Students who have 64% to 50% of attendance shall apply for

condonation in prescribed form with the prescribed fee along with the Medical Certificate. Students who have below 50% of attendance are not eligible to appear for the examination.

R. B.P.Ed 11. Pattern of Question Papers:

Question Papers shall have five questions corresponding to four units of each theory course.

B.P.Ed.: Format of Question Paper for 4 Units.

Each question paper shall have five questions. The pattern will be as follows:

Question No.	Description	Marks
1	Answer in detail (Long Question) Or Answer in detail (Long Question) (Form Unit 1)	15
2	Answer in detail (Long Question) Or Answer in detail (Long Question) (Form Unit 2)	15
3	Answer in detail (Long Question) Or Answer in detail (Long Question) (Form Unit 3)	15
4	Write short notes: any two out of four (Form Unit 4)	15
5	M.C.Q. Type Questions (10 out of 12 Que.) (3 Questions. from each unit)	10
	Total	**70**

R. B.P.Ed. 12. Evaluation:

The performance of a student in each course is evaluated in terms of percentage of marks with a provision for conversion to grade point. Evaluation for each course shall be done by a continuous internal assessment (CIA) by the concerned course teacher as well as by end semester examination and will be consolidated at the end of course. The components for continuous internal assessment are;

One Test	15 Marks
Seminar / Quiz	5 Marks
Assignments	5 Marks
Attendance	5 Marks
Total	30 Marks

Attendance shall be taken as a component of continuous assessment, although the students should have minimum 75% attendance in each course. In addition to continuous evaluation component, the end semester examination, which will be written type examination of at least 3 hours duration, would also form an integral component of the evaluation. The ratio of marks to be allotted to continuous internal assessment and to end semester examination is 30:70. The evaluation of practical work, wherever applicable, will also be based on continuous internal assessment and on an end-semester practical examination.

R. B.P.Ed. 13. Minimum Passing Standard:

The minimum passing standard for CIA (Continuous Internal Assessment) and External Examinations shall be 40%, i.e. 12 marksout of 30 marks and 28 marks out of 70 marks respectively for theory courses.The minimum passing for both CIA & external examination shall be 50%,i.e. 15 marks out of 30 and 35 marks out of 70 marks for the practical courses.

R. B.P.Ed 14. Grading:

Once the marks of the CIA (Continues Internal Assessment) and SEA (Semester End Assesment) for each of the courses are available, both (CIA and SEA) will be added. The marks thus obtained for each of the courses will then be graded as per details provided in R. B.P.Ed. 17 from the first semester onwards the average performance within any semester from the first semester is indicated by Semester Grade Point Average (SGPA) while continuous performance (including the performance of the previous semesters also) starting from the first semesteris indicated by Cumulative Grade Point Average (CGPA). These two are calculated by the following formula:

$$= \frac{\Sigma}{\Sigma}$$

$$= \frac{\Sigma}{}$$

Where C*i* is the Credit earned for the course is in any semester; G*i* is the Grade point obtained by the student for the course *i* and *n* number of courses obtained in that semester; is SGPA of semester *j* and *N* number of semester. Thus CGPA is average of SGPA of all the semesters starting from the first semester to the current semester.

R. B.P.Ed. 15. Classification of Final Results:

For the purpose of declaring a candidate to have qualified for the Degree of Bachelor of Physical Education in the First class / Second class / Pass class or First class with Distinction, the

marks and the corresponding CGPA earned by the candidate in Core Courses will be the criterion. It is further provided that the candidate should have scored the First / Second Class separately in both the grand total and end Semester (External) examinations.

R. B.P.Ed.16. Award of the B.P.Ed. Degree:

A candidate shall be eligible for the award of the degree of the B.P.Ed. only if he/she has earned the minimum required credit including Bonus Credits of the programme prescribed above.

R. B.P.Ed.17. Letter Grades and Grade Points:

i. Two methods-relative grading or absolute grading– have been in vogue for awarding grades in a course. The relative grading is based on the distribution (usually normal distribution) of marks obtained by all the students in the course and the grades are awarded based on a cut-off mark or percentile. Under the absolute grading, the marks are converted to grades based on pre-determined class intervals. To implement the following grading system, the colleges and universities can use any one of the above methods.

ii. The grades for each course would be decided on the basis of the percentage marks obtained at the end-semester external and internal examinations as per following table:

Percentage	Grade Point	Latter Grade	Description	Classification of final result
85 & above	8.5-10.0	O	Outstanding	First class with Distinction
70-84.99	7.0-8.49	A^+	Excellent	
60-69.99	6.0-6.99	A	Very Good	First Class
55-59.99	5.5-5.99	B+	Good	Higher Second Class
50-54.99	5.0-5.49	B	Above Average	Second Class
40-49.99	4.0-4.99	C	Average	Pass Class
Below 40	0.0	F	Fail/ Dropped	Dropped
	0	AB	Absent	

R. B.P.Ed.18. Grade Point Calculation

Calculation of **Semester Grade Point Average (SGPA)** and **Credit Grade Point (CGP)** and declaration of class for B. P. Ed. Programme.

The credit grade points are to be calculated on the following basis:

$$= \frac{\Sigma}{\Sigma}$$

Example – I

Marks obtained by Student in course CC101 = 65/100

Percentage of marks = 65 %

Grade from the conversion table is = A

Grade Point = 6.0 + 5 (0.99/9.99)
= 6.0 + 5x0.1
= 6.0+ 0.5
=6.5
The Course Credits = 04
Credits Grade Point (CGP) = 6.5 × 04 = 26

The semester grade point average (SGPA) will be calculated as a weighted average of all the grade point of the semester courses. That is Semester grade point average (SGPA) = (sum of grade points of all eight courses of the semester) / total credit of the semester as per example given below:

SEMESTER-1

Courses No.	Credit	Marks out of 100 (%)	Grade	Grade Point	Credit Grade point
CC-101	4	65	A	6.5	26
CC-102	4	60	A	6	24
CC-103	4	62	A	6.2	24.8
EC-101/EC-102	4	57	B+	5.7	22.8
PC-101	4	55	B+	5.5	22
PC-102	4	72	A+	7.2	28.8
PC-103	4	66	A	6.6	26.4
PC - 104	4	72	A+	7.2	28.8
	32				203.6

Examples: Conversion of marks into grade points

CC-101 65 = 60 + 5 = 6.0 + 5 x (0.99 / 9.99) = 6.0 + 5 x 0.1 = 6.0 + 0.5 = 6.5
CC-102 60 = 6.0
CC-103 62 = 60 + 2 =6.0 + 2 x (0.99/9.99) = 6.0 + 2 x 0.1 = 6.0 + 0.2 = 6.2
EC-101/EC-102 57 = 55 + 2 = 5.5 + 2 x (0.49 / 4.99) = 5.5 + 2 x 0.1 = 5.5 + 0.2 = 5.7
PC-101 55 = 5.5
PC-102 72 = 70 + 2 = 7.0+ 2 x (1.49 /14.99) = 7.0 + 2 x 0.1 = 7.0 +0.2 = 7.2
PC-103 66 = 60 + 6 = 6.0 + 6 x (0.99 / 9.99) = 6.0 + 6 x 0.1 = 6.0 + 0.6 = 6.6
PC – 104 72 = 70 + 2 = 7.0+ 2 x (1.49 /14.99) = 7.0 + 2 x 0.1 = 7.0 +0.2 = 7.2

SEMESTER GRADE POINT AVERAGE (SGPA) = Total Credit Grade Points
= 203.6 /32 = 6.3625
SGPA Sem. I = 6.3625
At the end of Semester-1
Total SGPA = 6.3625
Cumulative Grade Point Average (CGPA) = 6.3625/1 = 6.3625

CGPA = 6.66875, Grade = A, Class = First Class

SEMESTER-2

Courses No.	Credit	Marks out of 100 (%)	Grade	Grade Point	Credit Grade point
CC-201	4	76	A+	7.6	30.4
CC-202	4	64	A	6.4	25.6
CC-203	4	59	B+	5.9	23.6
EC-201/EC-202	4	80	A+	8	32
PC-201	4	49	C	4.9	19.6
PC-202	4	64	A	6.4	25.6
PC-203	4	55	B+	5.5	22
TP - 201	4	72	A+	7.2	28.8
	32				207.6

SGPA Sem. II = 6.4875

At the end of Semester-2

Total SGPA for two Semesters = 12.85
Cumulative Grade Point Average (CGPA) = 12.85/2 = 6.425
CGPA = 6.66875, Grade = A, Class = First Class

SEMESTER-3

Courses No.	Credit	Marks out of 100 (%)	Grade	Grade Point	Credit Grade point
CC-301	4	64	A	6.4	25.6
CC-302	4	64	A	6.4	25.6
CC-303	4	59	B+	5.9	23.6
EC-301/EC-302	4	81	A+	8.1	32.4
PC-301	4	49	C	4.9	19.6
PC-302	4	64	A	6.4	25.6
PC-303	4	68	A	6.8	27.2
TP - 301	4	75	A+	7.5	30
	32				209.6

SGPA Sem. III = 6.55
At the end of Semester-3

Total SGPA for three Semesters = 19.4
Cumulative Grade Point Average (CGPA) = 19.4/3 = 6.466667
CGPA = 6.66875, Grade = A, Class = First Class

SEMESTER-4

Courses No.	Credit	Marks out of 100 (%)	Grade	Grade Point	Credit Grade point
CC-401	4	83	A+	8.3	33.2
CC-402	4	76	A+	7.6	30.4
CC-403	4	59	B+	5.9	23.6
EC-401/EC-402	4	81	A+	8.1	32.4
PC-401	4	49	C	4.9	19.6
PC-402	4	78	A+	7.8	31.2
TP-401	4	81	A+	8.1	32.4
TP-402	4	75	A+	7.5	30
	32				232.8

SGPA Sem. IV = 7.275

At the end of Semester-4

Total SGPA for all the four semesters = 26.675

Cumulative Grade Point Average (CGPA) = 26.675 /4 = 6.66875

CGPA = 6.66875, Grade = A, Class = First Class

Note:

(1) SGPA is calculated only if the candidate passes in all the courses i.e. get minimum C grade in all the courses.

(2) CGPA is calculated only when the candidate passes in all the courses of all the previous and current semesters.

(3)The cumulative grade point average will be calculated as the average of the SGPA of all the semesters continuously, as shown above.

(4)For the award of the class, CGPA shall be calculated on the basis of:

(a) Marks of each Semester EndAssesment And

(b) Marks of each Semester Continuous Internal Assessment for each course. The final Class for B.P.Ed. Degree shall be awarded on the basis of last CGPA (grade) fromall theone to four semester examinations.

R. B.P.Ed.19. Grievance Redressal Committee:

The college/department shall form a Grievance Redressal Committee for each course in each college/department with the course teacher / Principal / Director and the HOD of the faculty as the members. This Committee shall solve all grievances of the students.

R. B.P.Ed.20. Revision of Syllabi:

1. Syllabi of every course should be revised according to the NCTE.
2. Revised Syllabi of each semester should be implemented in a sequential way.
3. In courses, where units / topics related to governmental provisions, regulations or laws, that change to accommodate the latest developments, changes or corrections are to be made consequentially as recommended by the Academic Council.

4. All formalities for revisions in the syllabi should be completed before the end of the semester for implementation of the revised syllabi in the next academic year.
5. During every revision, up to twenty percent of the syllabi of each course should be changed so as to ensure the appearance of the students who have studied the old (unrevised) syllabi without any difficulties in the examinations of revised syllabi.
6. In case, the syllabus of any course is carried forward without any revision, it shall also be counted as revised in the revised syllabi.

Semester - I

PartA:TheoreticalCourse						
Course Code	TitleofthePapers	Total Hours	Credit	Internal Marks	External Marks	Total Marks
CoreCourse						
CC-101	History, Principles and foundation of Physical Education	4	4	30	70	100
CC-102	Anatomy and Physiology	4	4	30	70	100
CC-103	Health Education and Environmental Studies	4	4	30	70	100
Elective Course (Anyone)						
EC-101	Olympic Movement	4	4	30	70	100
EC-102	Officiating and Coaching					
Part–B PracticalCourse						
PC-101	Track and Field (Running Events)	**6**	**4**	30	70	100
PC-102	Swimming/Gymnastics/ Shooting	**6**	**4**	30	70	100
PC-103	Indigenous Sports: Kabaddi / Malkhambh/ lezim / March past	**6**	**4**	30	70	100
PC - 104	Mass Demonstration Activities: Kho-Kho / dumbbells / tipri / wands / hoop /umbrella	**6**	**4**	30	70	100
Total		40	32	240	560	800

Note: Total Number of hours required to earn 4 credits foreach Theory Course are 68-80 hours per semester whereas 102-120 hours foreach Practicum Course.

Semester - II

PartA:TheoreticalCourse						
Course Code	TitleofthePapers	Total Hours	Credit	Internal Marks	External Marks	Total Marks
CoreCourse						
CC-201	Yoga Education	4	4	30	70	100
CC-202	Educational Technology and Methods of Teaching in Physical Education	4	4	30	70	100
CC-203	Organization and Administration	4	4	30	70	100
Elective Course (Anyone)						
EC-201	Contemporary issues in physical education, fitness and wellness	4	4	30	70	100
EC-202	Sports Nutrition and Weight Management					
Part–B PracticalCourse						
PC-201	Track and Field (Jumping Events)	**6**	**4**	30	70	100
PC-202	Yoga/Aerobics/ Gymnastics/ Swimming	**6**	**4**	30	70	100
PC-203	Racket Sports: Badminton/ Table Tennis/ Squash/ Tennis	**6**	**4**	30	70	100
Part – C Teaching Practices						
TP - 201	Teaching Practices (05lessons in class room teaching and 05 lessons in outdoor activities)	**6**	**4**	30	70	100
Total		40	32	240	560	800

Note: Total Number of hours required to earn 4 credits foreach Theory Course are 68-80 hours per semester whereas 102-120 hours for each Practicum Course.

Semester - III

PartA:TheoreticalCourse						
Course Code	TitleofthePapers	Total Hours	Credit	Internal Marks	External Marks	Total Marks
CoreCourse						
CC-301	Sports Training	4	4	30	70	100
CC-302	Computer Applications in Physical Education	4	4	30	70	100
CC-303	Sports Psychology and Sociology	4	4	30	70	100
Elective Course (Anyone)						
EC-301	Sports Medicine, Physiotherapy and Rehabilitation	4	4	30	70	100
EC-302	Curriculum Design					
Part–B PracticalCourse						
PC-301	Track and Field (Throwing Events)	**6**	**4**	30	70	100
PC-302	Combative Sports: Martial Art/ Karate/ Judo/ Fencing/ Boxing/ Taekwondo/ Wrestling (Any two out of these)	**6**	**4**	30	70	100
PC-303	Team Games: Baseball/ Cricket/ Football/ Hockey/ Softball/ Volleyball/ Handball/ Basketball/ Netball (Any two of these)	**6**	**4**	30	70	100
Part – C Teaching Practices						
TP - 301	Teaching Practice: (Teaching Lesson Plans for Racket Sport/ Team Games/Indigenous Sports) (out of 10 lessons 5 internal and 5 external at practicing school)	**6**	**4**	30	70	100
Total		40	32	240	560	800

Note: Total Number of hours required to earn 4 credits foreach Theory Course are 68-80 hours per semester whereas 102-120 hours for each Practicum Course.

Semester - IV

PartA:TheoreticalCourse						
Course Code	TitleofthePapers	Total Hours	Credit	Internal Marks	External Marks	Total Marks
CoreCourse						
CC-401	Measurement and Evaluation in Physical Education	4	4	30	70	100
CC-402	Kinesiology and Biomechanics	4	4	30	70	100
CC-403	Research and Statistics in Physical Education	4	4	30	70	100
Elective Course (Anyone)						
EC-401	Theory of sports and game	4	4	30	70	100
EC-402	Sports Management					
Part–B PracticalCourse						
PC-401	Track and Field / Swimming / Gymnastics (Any one out of three)	**6**	**4**	30	70	100
PC-402	Kabaddi/ Kho-Kho/ Baseball/ Cricket/ Football/Hockey/Softball/ Volleyball/ Handball/ Basketball/ Netball/ Badminton/ Table Tennis/ Squash/ Tennis (Any Two of these)	**6**	**4**	30	70	100
Part – C Teaching Practices						
TP-401	Sports specialization: Coaching lessons Plans (One for Sports 5 lessons)	**6**	4	30	70	100
TP-402	Games specialization: Coaching lessons Plans (One for Games 5 lessons)	**6**	4	30	70	100
Total		40	32	240	560	800
		160	128	960	2240	3200

Note: Total Number of hours required to earn 4 credits foreach Theory Course are 68-80 hours per semester whereas 102-120 hours for each Practicum Course.

SCHEME OF EXAMINATION

SEMESTER - I

Paper	Subject	Internal	External	Total Marks
	THEORY (400)			
CC-101	History, Principles and foundation of Physical Education	30	70	100
CC-102	Anatomy and Physiology	30	70	100
CC-103	Health Education and Environmental Studies	30	70	100
EC-101/102	Olympic Movement/Officiating and Coaching (Elective)	30	70	100
	PRACTICAL (400)			
PC-101	Track and Field (Running Events)	30	70	100
PC-102	Swimming/Gymnastics/Shooting	30	70	100
PC-103	Indigenous Sports: Kabaddi/ Malkhambh/ lezim / March past (Any of one out of these)	30	70	100
PC-104	Mass Demonstration Activities: Kho-Kho / dumbbells / tipri / wands / hoop /umbrella (Any one out of these)	30	70	100
	Total	**240**	**560**	**800**

SEMESTER -II

Paper	Subject	Internal	External	Total Marks
	THEORY (400)			
CC-201	Yoga Education	30	70	100
CC-202	Educational Technology and Methods of Teaching in Physical Education	30	70	100
CC-203	Organization and Administration	30	70	100
EC-201/202	Contemporary issues in physical education, fitness and wellness/ Sports Nutrition and Weight Management (Elective)	30	70	100
	PRACTICAL (300)			
PC-201	Track and Field (Jumping Events)	30	70	100
PC-202	Yoga/Aerobics / Swimming / Gymnastics (Any of the two out of these)	30	70	100
PC-203	Racket Sports: Badminton/ Table Tennis/ Squash/ Tennis (Any of the two out of these)	30	70	100
	TEACHING PRACTICE (100)			
TP-201	Teaching Practice (Classroom and outdoor)	30	70	100
	Total	**240**	**560**	**800**

SEMESTER –III

Paper	Subject	Internal	External	Total Marks
	THEORY (400)			
CC-301	Sports Training	30	70	100
CC-302	Computer Applications in Physical Education	30	70	100
CC-303	Sports Psychology and Sociology	30	70	100
EC-301/302	Sports Medicine, Physiotherapy and Rehabilitation/Curriculum Design (Elective)	30	70	100
	PRACTICAL (300)			
PC-301	Track and Field (Throwing Events)	30	70	100
PC-302	Combative Sports : Martial Art, Karate, Judo, Fencing, Boxing, Taekwondo, Wrestling (Any two out of these)	30	70	100
PC-303	Team Games: Baseball, Cricket, Football, Hockey, Softball, Volleyball, Handball, Basketball, Netball (Any two of these)	30	70	100
	TEACHING PRACTICE (100)			
TP-301	Teaching Practice (Teaching Lesson Plans for Racket Sport/ Team Games/Indigenous Sports)	30	70	100
	Total	**240**	**560**	**800**

SEMESTER -IV

Paper	**Subject**	**Internal**	**External**	**Total Marks**
	THEORY (400)			
CC-401	Measurement and Evaluation in Physical Education	30	70	100
CC-402	Kinesiology and Biomechanics	30	70	100
CC-403	Research and Statistics in Physical Education	30	70	100
EC-401/402	Theory of sports and games(Specifically sports and games specialization)/Sports Management (Elective)	30	70	100
	PRACTICAL (200)			
PC-401	Track and Field/Swimming /Gymnastics (Any of one out of these)	30	70	100
PC-402	Kabaddi/ Kho-Kho/ Baseball/ Cricket/ Football/Hockey/Softball/ Volleyball/ Handball/ Basketball/ Netball/ Badminton/ Table Tennis/ Squash/ Tennis (Any of one out of these)	30	70	100
	TEACHING PRACTICE (200)			
TP-401	Sports Specialization: Coaching lessons Plans Track and Field/Swimming /Gymnastics (Any of one out of these)	30	70	100
TP-402	Game specialization Coaching lessons: Kabaddi/ Kho-Kho/ Baseball/ Cricket/Football/Hockey /Softball/ Volleyball/ Handball/ Basketball/ Netball/ Badminton/ Table Tennis/ Squash/ Tennis (Any of one out of these)	30	70	100
	Total	**240**	**560**	**800**

B. P. Ed. – Outline of Syllabus

Semester – I

Theory Courses

CC-101 HISTORY, PRINCIPLES AND FOUNDATION OF PHYSICAL EDUCATION

Unit – 1: Introduction

- Meaning, Definition and Scope of Physical Education
- Aims and Objective of Physical Education
- Importance of Physical Education in present era.
- Misconceptions about Physical Education.
- Relationship of Physical Education with General Education.
- Physical Education as an Art and Science.

Unit- 2 – Historical Development of Physical Education in India

- Indus Valley Civilization Period. (3250 BC – 2500 BC)
- Vedic Period (2500 BC – 600 BC)
- Early Hindu Period (600 BC – 320 AD) and Later Hindu Period (320 AD – 1000 AD)
- Medieval Period (1000 AD – 1757 AD)
- British Period (Before 1947)
- Physical Education in India (After 1947)
- Contribution of Akhadas and Vyayamshals
- Y.M.C.A. and its contributions.

Unit- 3- Foundation of Physical Education

- Philosophical foundation:
- Idealism, Pragmatism, Naturalism, Realism, Humanism, Existentialism and Indian Philosophy and Culture.
- Fitness and wellness movement in the contemporary perspectives
- Sports for all and its role in the maintenance and promotion of fitness.

Unit-4- Principles of Physical Education

- Biological
    - Growth and development
    - Age and gender characteristics
    - Body Types
    - Anthropometric differences
- Psychological
    - Learning types, learning curve
    - Laws and principles of learning
    - Attitude, interest, cognition, emotions and sentiments

- Sociological
    - Society and culture
    - Social acceptance and recognition
    - Leadership
    - Social integration and cohesiveness

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Obertuffer, (1970). *Delbert physical education*. New York: Harper & Brothers Publisher.

Sharman, J. R. (1964). *Introduction to physical education*. New York: A.S. Barnes & Co.

William, J. F. (1964). *The principles of physical education*. Philadelphia: W.B. Saunders Co.

Semester I

Theory Courses

CC-102 ANATOMY AND PHYSIOLOGY

UNIT-I

- Brief Introduction of Anatomy and physiology in the field of Physical Education.
- Introduction of Cell and Tissue.
- The arrangement of the skeleton – Function - of the skeleton – Ribs and Vertebral column and the extremities – joints of the body and their types
- Gender differences in the skeleton.
- Types of muscles.

UNIT-II

- **Blood and circulatory system:** Constituents of blood and their function –Blood groups and blood transfusion, clotting of blood, the structure of the heart-properties of the heart muscle, circulation of blood, cardiac cycle, blood pressure, Lymph and Lymphatic circulation. Cardiac output.
- **The Respiratory system:** The Respiratory passage – the lungs and their structure and exchange of gases in the lungs, mechanism of respiration (internal and external respiration) lung capacity, tidal volume.
- **The Digestive system:** structure and functions of the digestive system, Digestive organs, Metabolism,
- **The Excretory system:** Structure and functions of the kidneys and the skin.
- **The Endocrine glands:** Functions of glands pituitary, Thyroid, Parathyroid. Adrenal, Pancreatic and the sex glands.
- **Nervous systems:** Function of the Autonomic nervous system and Central nervous system. Reflex Action,
- **Sense organs:** A brief account of the structure and functions of the Eye and Ear.

UNIT-III

- Definition of physiology and its importance in the field of physical education and sports.
- Structure, Composition, Properties and functions of skeletal muscles.
- Nerve control of muscular activity:
  - Neuromuscular junction
  - Transmission of nerve impulse across it.
- Fuel for muscular activity
- Role of oxygen- physical training, oxygen debt, second wind, vital capacity.

UNIT-IV

- Effect of exercise and training on cardiovascular system.
- Effect of exercise and training on respiratory system.
- Effect of exercise and training on muscular system
- Physiological concept of physical fitness, warming up, conditioning and fatigue.
- Basic concept of balanced diet – Diet before, during and after competition.

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Semester I

Theory courses

CC-103 HEALTH EDUCATION AND ENVIRONMENTAL STUDIES

Unit – I Health Education

- Concept, Dimensions, Spectrum and Determinants of Health
- Definition of Health, Health Education, Health Instruction, Health Supervision
- Aim, objective and Principles of Health Education
- Health Service and guidance instruction in personal hygiene

Unit – II Health Problems in India

- Communicable and Non Communicable Diseases
- Obesity, Malnutrition, Adulteration in food, Environmental sanitation, Explosive Population,
- Personal and Environmental Hygiene for schools
- Objective of school health service, Role of health education in schools
- Health Services – Care of skin, Nails, Eye health service, Nutritional service, Health appraisal, Health record, Healthful school environment, first- aid and emergency care etc.

Unit – III Environmental Science

- Definition, Scope, Need and Importance of environmental studies.
- Concept of environmental education, Historical background of environmental education,
- Celebration of various days in relation with environment.
- Plastic recycling & probation of plastic bag / cover.
- Role of school in environmental conservation and sustainable development.

Unit – IVNatural Resources and related environmental issues:

- Water resources, food resources and Land resources
- Definition, effects and control measures of:
- Air Pollution, Water Pollution, Soil Pollution, Noise Pollution, Thermal Pollution
- Management of environment and Govt. policies , Role of pollution control board.

References:

Agrawal, K.C. (2001). *Environmental biology*.Bikaner: Nidhi publishers Ltd.

Frank, H. &Walter, H., (1976). *Turners school health education*. Saint Louis: The C.V. Mosby Company.

Nemir, A. (n.d.). The school health education. New York:Harber and Brothers.

Odum, E.P. (1971). *Fundamental of ecology*. U.S.A.: W.B. Saunders Co.

Semester – I

Theory courses

EC-101 OLYMPIC MOVEMENT (ELECTIVE)

Unit – I Origin of Olympic Movement

- Philosophy of Olympic movement
- The early history of the Olympic movement
- The significant stages in the development of the modern Olympic movement
- Educational and cultural values of Olympic movement

Unit – IIModern Olympic Games

- Significance of Olympic Ideals, Olympic Rings, Olympic Flag
- Olympic Protocol for member countries
- Olympic Code of Ethics
- Olympism in action
- Sports for All

Unit – III Different Olympic Games

- Para Olympic Games
- Summer Olympics
- Winter Olympics
- Youth Olympic Games

Unit – IV Committees of Olympic Games

- International Olympic Committee - Structure and Functions
- National Olympic committees and their role in Olympic movement
- Olympic commission and their functions
- Olympic medal winners of India

Reference:

Osborne, M. P. (2004). *Magictree house fact tracker: ancient greece and the olympics: a nonfiction companion to magic tree house: hour of the Olympics. New York:* Random House Books for Young Readers.

Burbank, J. M., Andranovich, G. D. &Heying Boulder, C. H. (2001). Olympic dreams: the impact of mega-events on local politics: Lynne Rienner

Semester – I

Theory courses

EC-102 OFFICIATING AND COACHING (Elective)

Unit- I: Introduction of Officiating and coaching

- Concept of officiating and coaching
- Importance and principles of officiating
- Relation of official and coach with management, players and spectators
- Measures of improving the standards of officiating and coaching

Unit- II: Coach as a Mentor

- Duties of coach in general, pre, during and post game.
- Philosophy of coaching
- Responsibilities of a coach on and off the field
- Psychology of competition and coaching

Unit- III: Duties of Official

- Duties of official in general, pre, during and post game.
- Philosophy of officiating
- Mechanics of officiating – position, singles and movement etc.
- Ethics of officiating

Unit- IV: Qualities and Qualifications of Coach and Official

- Qualities and qualification of coach and official
- General rules of games and sports
- Eligibility rules of intercollegiate and inter-university tournaments, preparation of TA, DA bills
- Integrity and values of sports

Reference Books:

Bunn, J. W. (1968). *The art of officiating sports*. Englewood cliffs N.J. Prentice Hall.

Bunn, J. W. (1972). *Scientific principles of coaching.* Englewood cliffs N. J. Prentice Hall.

Dyson, G. H. (1963). *The mechanics of athletics*. London: University of London Press Ltd.

Dyson, G. H. (1963). *The mechanics of Athletics*. London: University of London Press Ltd.

Lawther, J.D. (1965). *Psychology of coaching.* New York: Pre. Hall.

Singer, R. N. (1972). *Coaching, athletic & psychology*.New York: M.C. Graw Hill.

Semester – II

Theory Courses

CC-201 YOGA EDUCATION

Unit – I: Introduction

- Meaning and Definition of Yoga
- Aims and Objectives of Yoga
- Yoga in Early Upanisads
- The Yoga Sutra: General Consideration
- Need and Importance of Yoga in Physical Education and Sports

Unit - II: Foundation of Yoga

- The Astanga Yoga: Yama, Niyama, Asana, Pranayama, Pratyahara, Dharana, Dhyana and Samadhi
- Yoga in the Bhagavadgita - Karma Yoga, Raja Yoga, Jnana Yoga and Bhakti Yoga

Unit - III Asanas

- Effect of Asanas and Pranayama on various system of the body
- Classification of asanas with special reference to physical education and sports
- Influences of relaxtive, meditative posture on various system of the body
- Types of Bandhas and mudras
- Type of kriyas

Unit – IVYoga Education

- Basic, applied and action research in Yoga
- Difference between yogic practices and physical exercises
- Yoga education centers in India and abroad
- Competitions in Yogasanas

References:

Brown, F. Y.(2000). *How to use yoga*. Delhi:Sports Publication.

Gharote, M. L. &Ganguly, H. (1988). *Teaching methods for yogic practices*.Lonawala: Kaixydahmoe.

Rajjan, S. M. (1985). *Yoga strenthening ofrelexation for sports man.* New Delhi:Allied Publishers.

Shankar,G.(1998). *Holistic approach of yoga.* New Delhi:Aditya Publishers.

Shekar,K. C. (2003). *Yoga for health.* Delhi: Khel Sahitya Kendra.

Semester – II

Theory Courses

CC-202 EDUCATIONAL TECHNOLOGY AND METHODS OF TEACHING N PHYSICAL EDUCATION

Unit – I Introduction

- Education and Education Technology- Meaning and Definitions
- Types of Education- Formal, Informal and Non- Formal education.
- Educative Process
- Importance of Devices and Methods of Teaching.

Unit – II Teaching Technique

- Teaching Technique – Lecture method, Command method, Demonstration method, Imitation method, project method etc.
- Teaching Procedure – Whole method, whole – part – whole method, part – whole method.
- Presentation Technique – Personal and technical preparation
- Command- Meaning, Types and its uses in different situations.

Unit – III Teaching Aids

- Teaching Aids – Meaning, Importance and its criteria for selecting teaching aids.
- Teaching aids – Audio aids, Visual aids, Audio – visual aids, Verbal, Chalk board, Charts, Model, Slide projector, Motion picture etc
- Team Teaching – Meaning, Principles and advantage of team teaching.
- Difference between Teaching Methods and Teaching Aid.

Unit – IV Lesson Planning and Teaching Innovations

- Lesson Planning – Meaning, Type and principles of lesson plan.
- General and specific lesson plan.
- Micro Teaching – Meaning, Types and steps of micro teaching.
- Simulation Teaching - Meaning, Types and steps of simulation teaching.

Reference:

Bhardwaj, A. (2003). *New media of educational planning.*New Delhi:Sarup of Sons.

Bhatia,& Bhatia,(1959). *The principles and methods of teaching.*New Delhi: Doaba House.

Kochar, S.K. (1982). *Methods and techniques of teaching.*New Delhi: Sterling Publishers Pvt. Ltd.

Sampath, K.,Pannirselvam, A. &Santhanam, S. (1981). *Introduction to educational technology.*New Delhi: Sterling Publishers Pvt. Ltd.

Walia, J.S. (1999). *Principles and methods of education.*Jullandhar:Paul Publishers.

Semester – II

Theory Courses

CC-203 ORGANZATION AND ADMINISTRATION IN PHYSICAL EUCATION

Unit – I: Organization and administration

- Meaning and importance of Organization and Administration in physical education
- Qualification and Responsibilities of Physical Education teacher and pupil leader
- Planning and their basic principles,
- Program planning: Meaning, Importance, Principles of program planning in physical education.
- Functions of Planning, organizing, staffing, directing, communicating, co-ordination, controlling, evaluating and innovating.

Unit- II: Office Management, Record, Register & Budget

- Office Management: Meaning, definition, functions and kinds of office management
- Records and Registers: Maintenance of attendance Register, stock register, cash register, physical efficiency record, Medical examination Record.
- Budget: Meaning, Importance of Budget making,
- Criteria of a good Budget, Sources of Income, Expenditure, Preparation of Budget.

Unit-III: Facilities, & Time-Table Management

- Facilities and equipment management: Types of facilities Infrastructure-indoor, out door.
- Care of school building, Gymnasium, swimming pool, Play fields, Play grounds
- Equipment: Need, importance, purchase, care and maintenance.
- Time Table Management: Meaning, Need, Importance and Factor affecting time table.

Unit-IV:Competition Organization

- Importance of Tournament,
- Types of Tournament and its organization structure - Knock-out Tournaments, League or Round Robin Tournaments, Combination Tournament and challenge Tournament.
- Organization structure of Athletic Meet
- Sports Event Intramurals & Extramural Tournament planning

References:

Broyles, F. J. &Rober, H. D. (1979). *Administration of sports, Athletic programme: A Managerial Approach.* New York: Prentice hall Inc.

Bucher, C. A. (1983). *Administration of Physical Education and Athletic programme.*St. Lolis: The C.V. Hosby Co.

Kozman, H.C. Cassidly, R. & Jackson, C. (1960).*Methods in Physical Education*. London: W.B. Saunders Co.

Pandy, L.K. (1977). *Methods in Physical Education.*Delhe: Metropolitan Book Depo.

Sharma, V.M. & Tiwari, R.H.: (1979). *Teaching Methods in Physical Education.* Amaravati: Shakti Publication.

Thomas, J. P.(1967). *Organization & administration of Physical Education*. Madras: Gyanodayal Press.

Tirunarayanan, C. &Hariharan, S. (1969). *Methods in Physical Education.*Karaikudi: South India Press.

Voltmer, E. F. &Esslinger, A. A. (1979).*The organization and administration of Physical Education.* New York: Prentice Hall Inc.

Semester – II

Theory Courses

EC-201 CONTEMPORARY ISSUES IN PHYSICAL EDUCATION, FITNESS AND WELLNESS (ELECTIVE)

Unit – I Concept of Physical Education and Fitness

- Definition, Aims and Objectives of Physical Education, fitness and Wellness
- Importance and Scope of fitness and wellness
- Modern concept of Physical fitness and Wellness
- Physical Education and its Relevance in Inter Disciplinary Context.

Unit – II Fitness, Wellness and Lifestyle

- Fitness – Types of Fitness and Components of Fitness
- Understanding of Wellness
- Modern Lifestyle and Hypo kinetic Diseases – Prevention and Management
- Physical Activity and Health Benefits

Unit – III Principles of Exercise Program

- Means of Fitness development – aerobic and anaerobic exercises
- Exercises and Heart rate Zones for various aerobic exercise intensities
- Concept of free weight Vs Machine, Sets and Repetition etc
- Concept of designing different fitness training program for different age group.

Unit – IV Safety Education and Fitness Promotion

- Health and Safety in Daily Life
- First Aid and Emergency Care
- Common Injuries and their Management
- Modern Life Style and Hypo-kinetic Disease –Prevention and Management

References:

Difiore, J.(1998). *Complete guide to postnatal fitness.* London: A & C Black,.

Giam, C.K & The, K.C. (1994). *Sport medicine exercise and fitness.* Singapore: P.G. Medical Book.

Mcglynn, G., (1993). *Dynamics of fitness*. Madison: W.C.B Brown.

Sharkey, B. J.(1990). *Physiology of fitness*, Human Kinetics Book.

Semester II

Theory courses

EC-202 SPORTS NUTRITION AND WEIGHT MANAGEMENT (ELECTIVE)

Unit – I Introduction to Sports Nutrition

- Meaning and Definition of Sports Nutrition
- Basic Nutrition guidelines
- Role of nutrition in sports
- Factor to consider for developing nutrition plan

Unit – II Nutrients: Ingestion to energy metabolism

- Carbohydrates, Protein, Fat – Meaning, classification and its function
- Role of carbohydrates, Fat and protein during exercise
- Vitamins, Minerals, Water – Meaning, classification and its function
- Role of hydration during exercise, water balance, Nutrition – daily caloric requirement and expenditure.

Unit – III Nutrition and Weight Management

- Meaning of weight management Concept of weight management in modern era Factor affecting weight management and values of weight management
- Concept of BMI (Body mass index), Obesity and its hazard, Myth of Spot reduction, Dieting versus exercise for weight control, Common Myths about Weight Loss
- Obesity – Definition, meaning and types of obesity,
- Health Risks Associated with Obesity, Obesity - Causes and Solutions for Overcoming Obesity.

Unit – IV Steps of planning of Weight Management

- Nutrition – Daily calorie intake and expenditure, Determination of desirable body weight
- Balanced diet for Indian School Children, Maintaining a Healthy Lifestyle
- Weight management program for sporty child, Role of diet and exercise in weight management, Design diet plan and exercise schedule for weight gain and loss

References:

Bessesen, D. H. (2008). Update on obesity. *J ClinEndocrinolMetab.93*(6), 2027-2034.

Butryn, M.L., Phelan, S., &Hill, J. O.(2007). Consistent self-monitoring of weight: a key component of successful weight loss maintenance.*Obesity(Silver Spring)*. *15*(12), 3091-3096.

Chu, S.Y. & Kim, L. J. (2007). Maternal obesity and risk of stillbirth: a metaanalysis. *Am J ObstetGynecol*, *197*(3), 223-228.

DeMaria, E. J. (*2007).* Bariatric surgery for morbid obesity. *N Engl J Med,356*(21), 2176-2183.

Dixon, J.B., O'Brien, P.E., Playfair, J. (n.d.). Adjustable gastric banding and conventional therapy for type 2 diabetes: a randomized controlled trial. *JAMA. 299*(3), 316-323.

Semester – III

Theory Courses

CC-301 SPORTS TRAINING

Unit – I Introduction to Sports Training

- Meaning and Definition of Sports Training
- Aim and Objective of Sports Training
- Principles of Sports Training
- System of Sports Training – Basic Performance, Good Performance and High Performance Training

Unit – II Training Components

- Strength – Mean and Methods of Strength Development
- Speed – Mean and Methods of Speed Development
- Endurance - Mean and Methods of Endurance Development
- Coordination – Mean and Methods of coordination Development
- Flexibility – Mean and Methods of Flexibility Development

Unit – III Training Process

- Training Load- Definition and Types of Training Load
- Principles of Intensity and Volume of stimulus
- Technical Training – Meaning and Methods of Technique Training
- Tactical Training – Meaning and Methods of Tactical Training

Unit – IV Training programming and planning

- Periodization – Meaning and types of Periodization
- Aim and Content of Periods – Preparatory, Competition, Transitional etc.
- Planning – Training session
- Talent Identification and Development

Reference:

Dick, W. F. (1980).*Sports training principles.*London: Lepus Books.

Harre, D.(1982).*Principles of sports training.*Berlin: Sporulated.

Jensen, R. C.& Fisher, A.G. (1979). *Scientific basis of athletic conditioning*. Philadelphia: Lea and Fibiger, 2nd Edn.

Matvyew, L.P. (1981).*Fundamental of sports training.* Moscow: Progress Publishers.

Singh, H. (1984).*Sports training, general theory and methods*.Patials: NSNIS.

Uppal, A.K., (1999).*Sports Training.*New Delhi: Friends Publication.

Semester III

Theory Courses

CC-302 COMPUTER APPLICATIONS IN PHYSICAL EDUCATION

Unit – I: Introduction to Computer

- Meaning, need and importance of information and communication technology (ICT). Application of Computers in Physical Education
- Components of computer, input and output device
- Application software used in Physical Education and sports

Unit – II: MS Word

- Introduction to MS Word
- Creating, saving and opening a document
- Formatting Editing features Drawing table ,
- page setup, paragraph alignment, spelling and grammar check printing option, inserting page number, graph, footnote and notes

Unit – III: MS Excel

- Introduction to MS Excel
- Creating, saving and opening spreadsheet
- creating formulas
- Format and editing features adjusting columns width and row height understanding charts.

Unit – IV: MS Power Point

- Introduction to MS Power Point
- Creating, saving and opening a ppt. file
- format and editing features slide show , design , inserting slide number
- picture ,graph ,table
- Preparation of Power point presentations

Referances:

Irtegov, D. (2004). *Operating system fundamentals.* Firewall Media.
Marilyn, M.& Roberta, B.(n.d.).*Computers in your future*. 2nd edition, India: Prentice Hall.
Milke, M.(2007). *Absolute beginner's guide to computer basics*. Pearson Education Asia.
Sinha, P. K. & Sinha, P. (n.d.).*Computer fundamentals*. 4th edition, BPB Publication.

Semester – III

Theory Courses

CC-303 SPORTS PSYCHOLOGY AND SOCIOLOGY

Unit -I: introduction

- Meaning, Importance and scope of Educational and Sports Psychology
- General characteristics of Various Stages of growth and development
- Types and nature of individual differences; Factors responsible -Heredity And environment
- Psycho-sociological aspects of Human behavior in relation to physical education and sports

Unit-II: Sports Psychology

- Nature of learning, theories of learning, Laws of learning,
- Plateau in Learning; & transfer of training
- Meaning and definition of personality, characteristics of personality,
- Dimension of personality, Personality and Sports performance
- Nature of motivation: Factors influencing motivation; Motivation and techniques and its impact on sports performance.
- Mental Preparation Strategies: Attention focus, Self- talk, Relaxation, Imaginary.
- Aggression and Sports, Meaning and nature of anxiety, Kinds of anxiety
- Meaning and nature of stress; Types of stress, Anxiety, Stress, Arousal and their effects on sports performance

Unit-III: Relation between Social Science and Physical Education.

- Orthodoxy, customs, Tradition and Physical Education.
- Festivals and Physical Education.
- Socialization through Physical Education.
- Social Group life, Social conglomeration and Social group, Primary group and Remote group.

Unit-4 Culture : Meaning and Importance.

- Features of culture,
- Importance of culture.
- Effects of culture on people life style.
- Different methods of studying Observation/ Inspection method, Questionnaire method, Interview method

References:

Ball, D. W. & Loy, J. W. (1975).*Sport and social order; Contribution to the sociology of sport.*London: Addison Wesley Publishing Co., Inc.

Blair, J.& Simpson, R.(1962). *Educational psychology*, New York:McMillan Co.

Cratty, B. J.(1968). *Psychology and physical activity*. Eaglewood Cliffs. Prentice Hall.

Kamlesh, M.L. (1998). *Psychology inphysical education and sport*. New Delhi:Metropolitan Book Co.

Loy, J. W., Kenyon, G. S. & McPherson, B. D. (1978). Sport and social system. London: Addison Wesley Publishing Company Inc.

Loy, J. W., Kenyon, G. S. & McPherson, B. D. (1981).*Sports culture and society.*Philadelphia: Lea &Febiger.

Mathur, S.S., (1962). *Educational psychology*. Agra.VinodPustakMandir.

Skinnner, C. E., (1984.). *Education psychology*. New Delhi: Prentice Hall of India.

William, F. O.&Meyer, F. N. (1979). A handbook of sociology. New Delhi: Eurasia Publishing House Pvt Ltd.

Semester – III

Theory Courses

EC-301 SPORTS MEDICINE, PHYSIOTHERAPY AND REHANLITATION (ELECTIVE)

Unit-I: - Sports Medicine:

- Sports Medicine: Meaning, Definition, Aims, Objectives, Modern Concepts and Importance.
- Athletes Care and Rehabilitation: Contribution of Physical Education Teachers and Coaches.
- Need and Importance of the study of sports injuries in the field of Physical Education
- Prevention of injuries in sports – Common sports injuries – Diagnosis –
- First Aid - Treatment - Laceration – Blisters – Contusion - Strain – Sprain – Fracture – Dislocation and Cramps – Bandages – Types of Bandages – trapping and supports.

Unit-II: Physiotherapy

- Definition – Guiding principles of physiotherapy, Importance of physiotherapy, Introduction and demonstration of treatments - Electrotherapy – infrared rays – Ultraviolet rays –short wave diathermy – ultrasonic rays.

Unit-III: Hydrotherapy:

- Introduction and demonstration of treatments of Cry therapy, Thermo therapy, Contrast Bath, Whirlpool Bath – Steam Bath – Sauna Bath – Hot Water Fomentation – Massage: History of Massage – Classification of Manipulation (Swedish System) physiological Effect of Massage.

Unit-IV: Therapeutic Exercise:

- Definition and Scope – Principles of Therapeutic Exercise – Classification, Effects and uses of Therapeutic exercise – passive Movements (Relaxed, Forced and passive - stretching) – active movements (concentric, Eccentric and static) application of the therapeutic exercise: Free Mobility Exercise – Shoulder, Elbow – Wrist and Finger Joints – Hips, Knee, ankle and Foot joints – Trunk. Head and Neck exercises.

References:

Christine, M. D., (1999). *Physiology of sports and exercise*.USA: Human Kinetics.

Conley, M. (2000). *Bioenergetics of exercise training*. In T.R. Baechle, & R.W. Earle, (Eds.), Essentials of Strength Training and Conditioning (pp. 73-90). Champaign, IL: Human Kinetics.

David, R. M. (2005).*Drugs in sports,* (4th Ed). Routledge Taylor and Francis Group.

Hunter, M. D. (1979). A *dictionary for physical educators.* In H. M. Borrow & R. McGee, (Eds.), A Practical approach to measurement in Physical Education (pp. 573-74). Philadelphia: Lea &Febiger.

Jeyaprakash, C. S., Sports Medicine, J.P. Brothers Pub., New Delhi, 2003.
Khanna, G.L., (1990). *Exercise physiology & sports medicine.* Delhi:Lucky Enterprises.
Mathew, D.K. & Fox, E.L, (1971). *Physiological basis of physical education and athletics.* Philadelphia:W.B. Saunders Co.
Pandey, P.K., (1987). *Outline of sports medicine*, New Delhi: J.P. Brothers Pub.
Williams, J. G. P. (1962). *Sports medicine*. London: Edward Arnold Ltd.

Semester – III

Theory Courses

EC-302 CURRICULUM DESIGN (Elective)

UNIT-I Modern concept of the curriculum

- Need and importance of curriculum, Need and importance of curriculum development, the role of the teacher in curriculum development.
- Factors affecting curriculum - Social factors - Personnel qualifications - Climatic consideration - Equipment and facilities -Time suitability of hours.
- National and Professional policies, Research finding

UNIT-IIBasic Guide line for curriculum construction; contest (selection and expansion).

- Focalization
- Socialization
- Individualization
- Sequence and operation
- Steps in curriculum construction.

UNIT-IIICurriculum-Old and new concepts, Mechanics of curriculum planning.

- Basic principles of curriculum construction.
- Curriculum Design, Meaning, Importance and factors affecting curriculum design.
- Principles of Curriculum design according to the needs of the students and state and national level policies.
- Role of Teachers

UNIT-IV Under-graduate preparation of professional preparation.

- Areas of Health education, Physical education and Recreation.
- Curriculum design-Experience of Education, Field and Laboratory.
- Teaching practice.
- Professional Competencies to be developed-Facilities and special resources for library, laboratory and other facilities.

Reference:

Barrow, H. M. (1983). *Man and movement: principles of physical education*. Philadelphia: Lea and Febiger.

Bucher, C. A. (1986). Foundation of physical education: St. Louis: The C. V. Mosby & Company.

Cassidy, R. (1986). *Curriculum development in physical education*. New York: Harper & Company.

Cowell, C.C. & Hazelton, H.W. (1965). *Curriculum designs in physical education.* Englewood Cliffs: N.J. prentice Hall Inc.

Larson, L.A. (n.d.). *Curriculum foundation in physical education.* Englewood Cliffs: N.J. Prentice Hall Inc.

Underwood, G. L. (1983). *The physical education curriculum in secondary school: planning and implementation.*England: Taylor and Francis Ltd.

Willgoose, C.E. (1979). *Curriculum in physical education*. 3rd Ed. Englewood Cliffs.: N.J. Prentice Hall, Inc.

Semester – IV

Theory Courses

CC-401 MEASUREMENT AND EVALUATION IN PHYSICAL EDUCATION

Unit- IIntroduction to Test & Measurement & Evaluation

- Meaning of Test & Measurement & Evaluation in Physical Education
- Need & Importance of Test & Measurement & Evaluation in Physical Education
- Principles of Evaluation

Unit- IICriteria; ClassificationandAdministration of test

- Criteria of good Test
- Criteria of tests, scientific authenticity (reliability, objectivity, validity and availability of norms)
- Type and classification of Test
- Administration of test, advance preparation – Duties during testing – Duties after testing.

Unit- III Physical Fitness Tests

- AAHPER youth fitness test
- National physical Fitness Test
- Indiana Motor Fitness Test
- JCR test
- U.S Army Physical Fitness Test

Unit- IV Sports Skill Tests

- Lockhart and McPherson badminton test
- Johnson basketball test
- McDonald soccer test
- S.A.I volleyball test
- S.A.I Hockey test

References:

Bangsbo, J. (1994). *Fitness training in football: A scientific approach*. Bagsvaerd, Denmark: Ho+Storm.

Barron, H. M., &Mchee, R. (1997). *A practical approach to measurement in physical education*. Philadelphia: Lea and Febiger.

Barron, H.M. &Mchee, R. (1997). A Practical approach to measurement in physical education. Philadelphia: Lea and Febiger.

Kansal, D.K. (1996). *Test and measurement in sports and physical education*. New Delhi: D.V.S. Publications.

Mathews, D.K., (1973). *Measurement in physical education*, Philadelphia: W.B.SoundersCompnay.

Pheasant, S. (1996). *Body space: anthropometry, ergonomics and design of work*. Taylor & Francis, New York.

Phillips, D. A., &Hornak, J. E. (1979). *Measurement and evaluation in physical education*. New York: John Willey and Sons.

Sodhi, H.S., & Sidhu, L.S. (1984). *Physique and selection of sports- a kinanthropometric study*. Patiala: Punjab Publishing House.

Semester – IV
Theory Courses

CC-402 KINESIOLOGY AND BIOMECHANICS

Unit – I Introduction to Kinesiology and Sports Biomechanics

- Meaning and Definition of Kinesiology and Sports Biomechanics
- Importance of Kinesiology and Sports Biomechanics to Physical Education Teacher, Athletes and Sports Coaches.
- Terminology of Fundamental Movements
- Fundamental concepts of following terms – Axes and Planes, Centre of Gravity, Equilibrium, Line of Gravity

Unit – II Fundamental Concept of Anatomy and Physiology

- Classification of Joints and Muscles
- Types of Muscle Contractions
- Posture – Meaning, Types and Importance of good posture.
- Fundamental concepts of following terms- Angle of Pull, All or None Law, Reciprocal Innovation

Unit – III Mechanical Concepts

- Force - Meaning, definition, types and its application to sports activities
- Lever - Meaning, definition, types and its application to human body.
- Newton's Laws of Motion – Meaning, definition and its application to sports activities.
- Projectile – Factors influencing projectile trajectory.

Unit – IV Kinematics and Kinetics of Human Movement

- Linear Kinematics – Distance and Displacement, speed and velocity, Acceleration
- Angular kinematics – Angular Distance and Displacement, Angular Speed and velocity, Angular Acceleration.
- Linear Kinetics – Inertia, Mass, Momentum, Friction.
- Angular Kinetics – Moment of inertia ,Couple, Stability.

Reference:

Bunn, J. W. (1972).*Scientific principles of coaching.* Englewood Cliffs, N.J.: Prentice Hall Inc.

Hay, J. G. & Reid, J. G.(1982).*The anatomical and mechanical basis of human motion.* Englewood Cliffs, N.J.: prentice Hall Inc.

Hay, J. G. & Reid, J. G.(1988).*Anatomy, mechanics and human motion.* Englewood Cliffs, N.J.: prentice Hall Inc.

Hay, J. G. (1970).*The biomechanics of sports techniques*. Englewood Cliffs, N.J.: Prentice Hall, Inc.

Simonian, C.(1911).*Fundamentalsof sport biomechanics.* Englewood Cliffs, N.J.: Prentice Hall Inc.

Semester – IV
Theory Courses
CC-403 RESEARCH AND STATISTICS IN PHYSICAL EDUCATION

Unit-I Introduction to Research

- Definition of Research
- Need and importance of Research in Physical Education and Sports.
- Scope of Research in Physical Education & Sports.
- Classification of Research
- Research Problem, Meaning of the term, Location and criteria of Selection of Problem, Formulation of a Research Problem, Limitations and Delimitations.

Unit-II Survey of Related Literature

- Need for surveying related literature.
- Literature Sources, Library Reading
- Research Proposal, Meaning and Significance of Research Proposal.
- Preparation of Research proposal / project.
- Research Report: A group project is to be undertaken by a small batch of students under the supervision of a teacher, wherein it is expected to survey school facilities of physical education, health assessment programme evaluation, fitness status of the students, staff and other stakeholders etc. and submit the report to the institution.

Unit-III Basics of Statistical Analysis

- Statistics: Meaning, Definition, Nature and Importance
- Class Intervals: Raw Score, Continuous and Discrete Series, Class Distribution, Construction of Tables
- Graphical Presentation of Class Distribution: Histogram, Frequency Polygon, Frequency Curve. Cumulative Frequency Polygon, Ogive, Pie Diagram

Unit- IVStatistical Models in Physical Education and Sports

- Measures of Central Tendency: Mean, Median and Mode-Meaning, Definition, Importance, Advantages, Disadvantages and Calculation from Group and Ungrouped data
- Measures of Variability: Meaning, importance, computing from group and ungroup data
- Percentiles and Quartiles: Meaning, importance, computing from group and ungroup data

References:

Best, J.W. (1963). *Research in education*. U.S.A.: Prentice Hall.

Bompa, T. O. &Haff, G. G. (2009). *Periodization: theory and methodology of training, 5th ed.* Champaign, IL: Human Kinetics.

Brown, L. E., &Ferrigno, V. A. (2005). Training for speed, agility and quickness, 2nd ed. Champaign, IL: Human Kinetics.

Brown, L.E. & Miller, J., (2005). *How the training work*. In: Training Speed, Agility, and Quickness. Brown, L.E. &Ferrigno, V.A &Ferrigno, V.A., eds. Champaign, IL: Human Kinetics.

Carl, E. K., & Daniel, D. A. (1969). Modern principles of athletes training. St. Louis: St. Louis's Mosby Company.

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Semester – IV
Theory Courses

EC-401 THEORY OF SPORTS AND GAMES (ELECTIVE)

UNIT-IINTRODUCTION

General Introduction of speciliazed games and sports–

- Athletics,
- Badminton,
- Basketball,
- Cricket,
- Football,
- Gymnastic,
- Hockey,
- Handball,
- Kabaddi,
- Kho-Kho,
- Tennis,
- Volleyball and
- Yoga.

Each game or sports to be dealt under the following heads

- History and development of the Game and Sports
- Ground preparation, dimensions and marking
- Standard equipment and their specifications
- Ethics of sports and sportsmanship

UNIT-II Scientific Principles of coaching: **(particular sports and game specific)**

- Motion – Types of motion and Displacement, Speed, Velocity, Acceleration, Distance and Newton's Law of motions.
- Force – Friction, Centripetal and Centrifugal force, Principles of force.
- Equilibrium and its types
- Lever and its types
- Sports Training – Aims, Principles and characteristics.
- Training load – Components, Principles of load, Over Load (causes and symptoms).

UNIT-III Physical fitness components: (particular sports and game specific)

- Speed and its types
- Strength and its types
- Endurance and its types
- Flexibility and its types
- Coordinative ability and its types

- Training methods: - Development of components of physical fitness and motor fitness through following training methods (continuous method, interval method, circuit method, fartlek /speed play and weight training)

UNIT-IV Conditioning exercises and warming up.

- Concept of Conditioning and warming up.
- Role of weight training in games and sports.
- Teaching of fundamental skill & their mastery (technique, tactic and different phases of skill acquisition).
- Recreational and Lead up games
- Strategy – Offence and defense, Principles of offence and defense.

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Dyson, G. H. (1963). *The mechanics of athletics*. London: University of London Press Ltd.

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Semester – IV

Theory Courses

EC-402 SPORTS MANAGEMENT

Unit-I

- Nature and Concept of Sports Management.
- Progressive concept of Sports management.
- The purpose and scope of Sports Management.
- Essential skills of Sports Management.
- Qualities and competencies required for the Sports Manager.
- Event Management in physical education and sports.

Unit-II

- Meaning and Definition of leadership
- Leadership style and method.
- Elements of leadership.
- Forms of Leadership.
    - Autocratic
    - Laissez-faire
    - Democratic
    - Benevolent Dictator
- Qualities of administrative leader.
- Preparation of administrative leader.
- Leadership and Organizational performance.

Unit-III

- Sports Management in Schools, colleges and Universities.
- Factors affecting planning
- Planning a school or college sports programme.
- Directing of school or college sports programme.
- Controlling a school, college and university sports programme.
    - Developing performance standard
    - Establishing a reporting system
    - Evaluation
    - The reward/punishment system

Unit-IV

- Financial management in Physical Education & sports in schools, Colleges and Universities.
- Budget – Importance, Criteria of good budget,
- Steps of Budget making
- Principles of budgeting

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Part – B
Practical Courses
Semester – I

PC - 101
Track and Field:

Running Event

- Starting techniques: Standing start, Crouch start and its variations, Proper use of blocks.
- Finishing Techniques: Run, Through, Forward lunging, Shoulder Shrug
- Ground Marking, Rules and Officiating
- Hurdles:
    - Fundamental Skills- Starting, Clearance and Landing Techniques.
    - Types of Hurdles
    - Ground Marking and Officiating.

Relays: Fundamental Skills

- Various patterns of Baton Exchange
- Understanding of Relay Zones
- Ground Marking
- Interpretation of Rules and Officiating.

PC 102

Gymnastics: Floor Exercise

- Forward Roll, Backward Roll, Sideward Roll, different kinds of scales, Leg Split, Bridge, Dancing steps, Head stand, Jumps-leap, scissors leap.
- Vaulting Horse
- Approach Run, Take off from the beat board, Cat Vault, Squat Vault.

PC – 102

Swimming: Fundamental Skills

- Entry into the pool.
- Developing water balance and confidence
- Water fear removing drills.
- Floating-Mushroom and Jelly fish etc.
- Gliding with and without kickboard.
- Introduction of various strokes
- Body Position, Leg, Kick, Arm pull, Breathing and Co ordination.
- Start and turns of the concerned strokes.
- Introduction of Various Strokes.
- Water Treading and Simple Jumping.

- Starts and turns of concerned strokes.
- Rules of Competitive swimming-officials and their duties, pool specifications, seeding heats and finals, Rules of the races.

PC – 102

Shooting Fundamental Skills

- Basic stance, grip, Holding rifle/ Pistol, aiming target
- Safety issues related to rifle shooting
- Rules and their interpretations and duties of officials

(Any one out of three)

PC – 103 Indigenous sports:

Kabaddi: Fundamental Skills

- Skills in Raiding-Touching with hand, various kicks, crossing of baulk line, Crossing of Bonus line, luring the opponent to catch, Pursuing.
- Skills of Holding the Raider-Various formations, Catching from particular position, Different catches, Luring the raider to take particular position so as to facilitate catching, catching formations and techniques.
- Additional skills in raiding-Bringing the antis in to particular position, Escaping from various holds, Techniques of escaping from chain formation, Combined formations in offence and defense.
- Ground Marking, Rules and Officiating

PC – 103

Malkhambh and Light Apparatus:

- Lathi-Two counts exercises, Four Count exercises, eight count exercises, sixteen count exercises.
- GhatiLezuim-AathAawaaz, Bethakawaaz, AagePaon, Aagekadam, Do pherawaaz, Chau pherawaaz, Kadamtaal, Pavitra, Uchhakpavitra, Kadampavitra.
- Mass P.T. Exercises-Two count, four count and eight count exercises.
- Hindustani Lezuim-Char Awaaz, EkJagah, AantiLagaav, Pavitra, Do Rukh, Chau Rukh, Chau rukhbethak, Momiya.
- Drill and Marching
- Malkhamb-Salaami, Hold, Saadiudi, Bagaludi, Dashrangudi, Bagliudi, Veludi, Soydoro, Phirki, Padmasana, T.Balance, Pataka, Landing.
- Rope Malkhamb-Salaami, PadmasanaChadh, Katibandh1-2, Sadiadhi, Rikebpakkad, Rikebpagniadhi, Kamaradhi, Nakkikasadhi, Kamaradhi, Nakkikasadhi, Urubandhtedhi, Sadibagli, Do hatibagli, Kamarbandhbagli, nakkikasbagli, Dashrang, Hanuman pakad, Gurupakkad, various padmasana, Landing.

PC - 104

Kho Kho:

- General skills of the game-Running, chasing, Dodging, Faking etc.
- Skills in chasing-Correct Kho, Moving on the lanes, Pursuing the runner, Tapping the inactive runner, Tapping the runner on heels, Tapping on the pole, Diving, Judgement in giving Kho, Rectification of Foul.
- Skills in Running-Zig zag running, Single and double chain, Ring play, Rolling in the sides, Dodging while facing and on the back, fakes on the pole, fake legs, body arm etc, Combination of different skills.
- Ground Marking
- Rules and their interpretations and duties of officials.

PC – 104

Dumbells/ Wands/ Hoop/ Umbrella/ Tipri: Fundamentals skills

- Apparatus/ Light apparatus Grip
- Attention with apparatus/ Light apparatus
- Stand – at – ease with apparatus/ ligfht apparatus
- Exrcise with verbal command,drum, whistle and music – Two count, Four count, Eight count and Sixteen count.
- Standing Exercise
- Jumping Exercise
- Moving Exercise
- Combination of above all

Semester – II

PC – 201

Track and Field

Athletics: Jumping Events

- High Jump (Straddle Roll)
- Approach Run,
- Take off
- Clearance over the bar.
- Landing

PC – 202

Gymnastics:

- Parallel Bar:
- Mount from one bar
- Straddle walking on parallel bars.
- Single and double step walk
- Perfect swing
- Shoulder stand on one bar and roll forward.
- Roll side
- Shoulder stand
- Front on back vault to the side(dismount)
- Horizontal /Single Bar:
- Grip
- Swings
- Fundamental Elements
- Dismount
- Uneven Parallal Bar:
- Grip
- Swings
- Fundamental Elements
- Dismount

PC – 202

Yoga:

- Surya Namaskara,
- Pranayams
- Corrective Asanas
- Kriyas
- Asanas
  - Sitting
  - Standing
  - Laying Prone Position,
  - Laying Spine Position

PC – 202

Swimming:

Introduction of water polo game

- Fundamental skills
- Swimm with the ball
- Passing
- Catching
- Shooting
- Goal keeping
- Rules of the games and responsibility of officials

Introduction of Diving sports.

- Basic Diving Skills from spring boards
- Basic Diving Skills from platform

PC – 202

Aerobics: Introduction of Aerobics

- Rhythmic Aerobics - dance
- Low impact aerobics
- High impact aerobics
- Aerobics kick boxing
- Postures – Warm up and cool down
- THR Zone – Being successful in exercise and adaptation to aerobic workout.

PC - 203

Badminton: Fundamental Skills

- Racket parts, Racket grips, Shuttle Grips.
- The basic stances.
- The basic strokes-Serves, Forehand-overhead and underarm, Backhand-overhead and underarm
- Drills and lead up games
- Types of games-Singles, doubles, including mixed doubles.
- Rules and their interpretations and duties of officials.

PC - 203

Table Tennis: Fundamental Skills

- The Grip-The Tennis Grip, Pen Holder Grip.
- Service-Forehand, Backhand, Side Spin, High Toss.
- Strokes-Push, Chop, Drive, Half Volley, Smash, Drop-shot, Balloon, Flick Shit, Loop Drive.
- Stance and Ready position and foot work.
- Rules and their interpretations and duties of officials.

PC – 203

Squash Fundamental Skills

- Service- Under hand and Over hand
- Service Reception
- Shot- Down the line, Cross Court
- Drop
- Half Volley
- Tactics – Defensive, attacking in game
- Rules and their interpretations and duties of officials.

PC – 203

Tennis: Fundamental Skills**.**

- Grips- Eastern Forehand grip and Backhand grip, Western grip, Continental grip, Chopper grip.
- Stance and Footwork.
- Basic Ground strokes-Forehand drive, Backhand drive.
- Basic service.
- Basic Volley.
- Over-head Volley.
- Chop
- Tactics – Defensive, attacking in game
- Rules and their interpretations and duties of officials.

Semester – III

PC – 301

Track and fields (Throwing Events)

- Discus Throw, Javelin, Hemmer throw, shot-put
- Basic Skills and techniques of the Throwing events
- Ground Marking / Sector Marking
- Interpretation of Rules and Officiating.
- Grip
- Stance
- Release
- Reserve/ (Follow through action)
- Rules and their interpretations and duties of officials

PC – 302

Boxing: Fundamental Skills

- Player stance
- Stance - Right hand stance, left hand stance.
- Footwork – Attack, defense.
- Punches – Jab, cross, hook, upper cut, combinations.
- Defense slip – bob and weave, parry/block, cover up, clinch, counter attack
- Tactics – Toe to toe, counter attack, fighting in close, feinting
- Rules and their interpretations and duties of officials.

PC – 302

Martial Arts/Karate: Fundamental Skills

- Player Stances – walking, hand positions, front-leaning, side-fighting.
- Hand Techniques - Punches (form of a punch, straight punch, and reverse punch), Blocks (eight basic).
- Leg Techniques - Snap kicks, stretching straight leg, thrust kicks, sidekicks, round house.
- Forms - The first cause Katas.
- Self Defense - against punches, grabs and strikes, against basic weapons (knife, club sticks).
- Sparring - One step for middle punch, high punch and groin punch. (Defended by appropriate block from eight basic blocks).
- Rules and their interpretations and duties of officials.

PC – 302

Taekwondo Fundamental Skills

- Player Stances – walking, extending walking, L stance, cat stance.
- Fundamental Skills – Sitting stance punch, single punch, double punch, triple punch.
- Punching Skill from sparring position – front-fist punch, rear fist punch, double punch, and four combination punch.
- Foot Tenchniques (Balgisul) – standing kick (soseochagi), Front kick (AP chagi), Arc kick (BandalChagi), Side kick, (YeopChagi), Turning kick (DollyoChagi), Back kick (Twit Chagi), Reverse turning kick (BandaeDollyoChagi), Jump kick (TwimyoChagi),
- Poomsae (Forms) – Jang, Yi Jang, Sam Jang, Sa Jang, O Jang, Yook Jang, Chil Jang, Pal Jang (Fundamental Movement – eye control, concentration of spirit, speed control, strength control, flexibility, balance, variety in techniques)
- Sparring (Kyorugi) – One Step Sparring (hand techniques, foot techniques, self defense techniques, combination kicks), Free Sparring.
- Board Breaking (Kyokpa) – eye control, balance, power control, speed, point of attack.
- Rules and their interpretations and duties of officials.

PC – 302

Judo: Fundamental skills

- Rei (Salutation)-Ritsurei(Salutation in standing position), Zarai (Salutation in the sitting position)
- Kumi kata (Methods of holding judo costume)
- Shisei (Posture in Judo)
- Kuzushi (Act of disturbing the opponent posture)
- Tsukuri and kake (Preparatory action for attack)
- Ukemi (Break Fall)-UrhiroUkemi (Rear break Fall), Yoko Ukemi (Side Break Fall), Mae Ukemi (Front Break Fall), Mae mawariUkemi (Front Rolling break fall)
- Shin Tai (Advance or retreat foot movement)-Suri-ashi (Gliding foot), Twugi-ashi (Following footsteps), Ayumi-ashi (Waling steps.
- Tai Sabaki (Management of the body)
- NageWaze (Throwing techniques)-HizaGuruma (Knee wheel), SesaeTwurikomi-ashi (Drawing ankle throw), De ashihari (Advance foot sweep), O Goshi (Major loinm), SeoiNage (Shoulder throw).
- Katamawaze(Grappling techniques)-Kesagatame (Scaff hold), Kata gatame (Shoulder hold), Kami shihogatama (Locking of upper four quarters), Method of escaping from each hold.

PC – 302

Wrestling: Fundamental Skills

- Take downs, Leg tackles, Arm drag.
- Counters for take downs, Cross face, Whizzer series.
- Escapes from under-sit-out turn in tripped.
- Counters for escapes from under-Basic control back drop, Counters for stand up.
- Pinning combination-Nelson series(Half Nelson, Half Nelson and Bar arm), Leg lift series, Leg cradle series, Reverse double bar arm, chicken wing and half Nelson.
- Escapes from pining: Wing lock series, Dopuble arm lock roll, Cridge.
- Standing Wrestling-Head under arm series, whizzer series
- Referees positions.

PC – 302

Fencing: Fundamental Skill

- Basic Stance - on-guard position (feet and legs)
- Footwork – advance, retire, lunge, Step-lunge
- Grip – hold a foil correctly, Etiquette – salute and handshake to coaches and partners
- Hit a target (glove, mask, person) at riposte distance
- Lunge from an on-guard position.
- Attack - simple attacks from sixte – direct, disengage, doublé attack, compound attacks high line – one-two and cut-over disengage, Cut-over attack, Low line attacks
- Semi circular parries – octave and septime
- Understand the layout of a piste.
- Compound or successive parries.
- Lateral parry and direct riposte
- Fence a bout – judges etc. salutes and handshakes
- Rules and their interpretations and duties of officials.

PC 303 Team Games

PC 303

Base Ball Fundamental Skills

- Player Stances – walking, extending walking, L stance, cat stance.
- Grip – standard grip, choke grip,
- Batting – swing and bunt.
- Pitching –

- Baseball : slider, fast pitch, curve ball, drop ball, rise ball, change up, knuckle ball, screw ball,
- Softball: windmill, sling shot,
- starting position: wind up, set.
- Fielding –
    - Catching: basics to catch fly hits, rolling hits,
    - Throwing: over arm, side arm.

- Base running –
    - Base running: single, double, triple, home run,
    - Sliding: bent leg slide, hook slide, head first slide.

- Rules and their interpretations and duties of officials.

PC 303

Netball: Fundamental Skills

- Catching: one handed, two handed, with feet grounded, in flight.
- Throwing (different passes and their uses): one handed passes (shoulder, high shoulder, underarm, bounce, lob); two handed passes (push, overhead, bounce).
- Footwork: landing on one foot; landing on two feet; pivot; running pass.
- Shooting: one hand; two hands; forward step shot; backward step shot.
- Techniques of getting free: dodge and sprint; sudden sprint; sprint and stop; sprinting with change of speed.
- Defending: marking the player; marking the ball; blocking; inside the circle; outside the circle (that is, defending the circle edge against the pass in).
- Intercepting: pass; shot.
- The toss-up.
- Role of individual players
- Rules and their interpretations and duties of officials.

PC – 303

Cricket: Fundamental Skills

- Batting-Forward and backward defensive stroke
- Bowling-Simple bowling techniques
- Fielding-Defensive and offensive fielding
- Catching-High catching and Slip catching
- Stopping and throwing techniques
- Wicket keeping techniques

PC 303

Football: Fundamental Skills

- Kicks-Inside kick, Instep kick, Outer instep kick, lofted kick
- Trapping-trapping rolling the ball, trapping bouncing ball with sole
- Dribbling-With instep, inside and outer instep of the foot.
- Heading-From standing, running and jumping.
- Throw in
- Feinting-With the lower limb and upper part of the body.
- Tackling-Simple tackling, Slide tackling.
- Goal Keeping-Collection of balls, Ball clearance-kicking, throwing and deflecting.

PC 303

Hockey: Fundamental Skills

- Player stance & Grip
- Rolling the ball
- Dribbling
- Push
- Stopping
- Hit
- Flick
- Scoop
- Passing – Forward pass, square pass, triangular pass, diagonal pass, return pass,
- Reverse hit
- Dodging
- Goal keeping – Hand defence, foot defence
- Positional play in attack and defense.
- Rules and their interpretations and duties of officials.
- Rules and their interpretations and duties of officials.
- Ground Marking.

PC – 303

Softball Fundamental Skills

- Catching: one handed, two handed, with feet grounded, in flight.
- Throwing (different passes and their uses): one handed passes (shoulder, high shoulder, underarm, bounce, lob); two handed passes (push, overhead, bounce).
- Footwork: landing on one foot; landing on two feet; pivot; running pass.
- Shooting: one hand; two hands; forward step shot; backward step shot.

- Techniques of getting free: dodge and sprint; sudden sprint; sprint and stop; sprinting with change of speed.
- Defending: marking the player; marking the ball; blocking; inside the circle; outside the circle (that is, defending the circle edge against the pass in).
- Intercepting: pass; shot.
- The toss-up.
- Role of individual players
- Rules and their interpretations and duties of officials.

PC 303

Volleyball: Fundamental Skills

- Players Stance-Receiving the ball and passing to the team mates,
- The Volley (Over head pass),
- The Dig(Under hand pass).
- Service-Under Arm Service, Side Arm Service, Tennis Service, Round Arm Service.
- Rules and their interpretations and duties of officials.

PC - 303

Hand Ball:

- Fundamental Skills-Catching, Throwing, Ball Control, Goal Throws-Jump Shot, Centre Shot, Dive Shot, Reverse Shot, Dribbling-High and Low, Attack and Counter Attack, Simple Counter Attack, Counter Attack from two wings and centre, Blocking, Goal keeping, Defense.
- Rules and their interpretations and duties of officials.

PC – 303

Basket ball: Fundamental Skills

- Player stance and ball handling
- Passing-Two Hand chest pass, Two hand Bounce Pass, One Hand Base ball pass, Side Arm Pass, Over Head pass, Hook Pass.
- Receiving-Two Hand receiving, One hand receiving, Receiving in stationary position, Receiving while jumping, Receiving while running.
- Dribbling-How to start dribble, How to drop dribble, High dribble, Low dribble, Reverse dribble, Rolling dribble.
- Shooting-Layup shot and its variations, one hand set shot, One hand jump shot, Hook shot, Free throw.
- Rebounding-Defensive rebound, Offensive rebound, Knock out, Rebound Organization.
- Individual Defensive-Guarding the man with the ball and without the ball.
- Pivoting.
- Rules and their interpretations and duties of the officials.

TP – 201 Teaching practices:

10 teaching practice lessons out of which 5 lessons in class-room situation and 5 lessons for out-door activities within premises on the students of B.P.Ed course.

TP – 301 Teaching practices:

10 teaching lesson plans for Racket Sport/ Team Games/ Indigeneous Sports out of which 5 lessons internal and 5 lessons external at school.

TP – 401 **Sports Specialization: Track and field / Gymnastics / Swimming**

(4 internal lesson at prcticing school and 1 final external lesson on the students of practicing school as a sports specialization of any discipline mentioned above.)

TP- 402 **Games Specialization: Kabaddi, Kho-kho, Base ball, cricket, Football, Hockey, Softball Volleyball, Handball, Basketball, Netball, Badminton, Table Tennis, Squash, Tennis**

(4 internal lesson at prcticing school and 1 final external lesson on the students of practicing school as a games specialization of any discipline mentioned above.)

Note: Where ever details of any activities are not mentioned, it is expected to elaborate skills by the competent bodies of local Universities.

Table – 1: Semester wise distribution of hours per week

Semester	***Theory***	***Practicum***	***Teaching practice***	***Total***
I	*16*	*24*	*00*	*40*
II	*16*	*18*	*6*	*40*
III	*16*	*18*	*6*	*40*
IV	*16*	*12*	*12*	*40*
Total	*64*	*72*	*24*	*160*
Minimum of 36 teaching hours per week is required in five or six days in a week				

Table – 2: Number of credits per semester

Semester	***Theory***	***Practicum***	***Teaching practice***	***Total***
I	*16*	*16*	*00*	*32*
II	*16*	*12*	*04*	*32*
III	*16*	*12*	*04*	*32*
IV	*16*	*08*	*08*	*32*
Total	*64*	*48*	*16*	*128*
Minimum of 36 teaching hours per week is required in five or six days in a week				

DEPARTMENT OF PHYSICS

COURSE STRUCTURE

for

B.Sc. (Hons.) (PHYSICS)

Eight Semesters (Four Years)

Programme

Based on

Choice Based Credit System (CBCS)

(As per ordinance-14)

AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

PROGRAMME OUTCOMES (POs)

PO #	PROGRAMME OUTCOME
PO 1	**Critical Thinking**: Take informed actions after identifying the assumptions that frame our thinking and actions, check out the degree to which these assumptions are accurate and valid, and look at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.
PO 2	**Effective Communication**: Speak, read, write and listen clearly in personand through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas,books, media and technology.
PO 3	**Social Interaction**: Elicit views of others, mediate disagreements and help reach conclusions in group settings.
PO 4	**Effective Citizenship**: Demonstrate empathetic social concern and equity-centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
PO 5	**Ethics**: Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.
PO 6	**Environment and Sustainability**: Understand the issues of environmental contexts and sustainable development.
PO 7	**Self-directed and Life-long Learning**: Acquire the ability to engage in independent and life-long learning in the broadest context of socio-technological changes.

PROGRAMME SPECIFIC OUT COMES (PSOs) (B.Sc. (Hons)Physics)

PSO #	PROGRAMME SPECIFIC OUTCOME
PSO 1	To gain a functional knowledge of theoretical concepts and experimental aspects of Physics and their applications in the day-to-day life.
PSO 2	To integrate the gained knowledge with various contemporary and evolving areas in physical sciences like physical, analytical, synthetic, instrumental etc.
PSO 3	To understand, analyze, plan and implement qualitative as well as quantitative analytical synthetic and phenomenon-based problems in physical sciences.
PSO 4	Provide opportunities to excel in academics, research or Industry.
PSO 5	To gain opportunities to excel in scientific, research and national / International level scientific knowledge.

AWADHESH PRATAP SINGH UNIVERSITY

REWA

ACCREDIATED GRADE "B" BY NAAC

FACULTY OF SCIENCES

Syllabus for

B.Sc. (Hons.) PHYSICS

Choice Based Credit System

With Effect From 2022-23

DEPARTMENT OF PHYSICS

AWADHESH PRATAP SINGH UNIVERSITY REWA (M.P.)

Program- Structure (4 years) Semester System

B.Sc. (Hons.) Physics

UGC-CBCS System as per ordinance 14 (A)

2022-23

(First year)

Semester-I					
Course Code And Name	**Course Type**	**Theory Paper**	**Internal Assessment**	**Maximum Marks**	**Credit**
101: Mechanics	Major Core	60	40 (Practical)	100	(4+2)
102: Mathematics- I	Minor core	60	40	100	6
103: Digital System and Applications	GE	60	40	100	4
104: English	AEC	60	40	100	4
SEMESTER TOTAL				400	20
CUMULATIVE TOTAL				400	20

Semester-II					
Course Code And Name	**Course Type**	**Theory Paper**	**Internal Assessment**	**Maximum Marks**	**Credit**
201: Electricity and Magnetism	Major Core	60	40 (Practical)	100	(4+2)
202: Mathematics- II	Minor core	60	40	100	6
203: Analog System and Applications	GE	60	40	100	4
204: Environmental Science	AEC	60	40	100	4
SEMESTER TOTAL				400	20
CUMULATIVE TOTAL				400	20

GE: Generic Elective

AEC: Ability Enhancement Course

DEPARTMENT OF PHYSICS

AWADHESH PRATAP SINGH UNIVERSITY REWA (M.P.)

Program- Structure (4 years) Semester System

B.Sc. (Hons.) Physics

UGC-CBCS System as per ordinance 14 (A)

2022-23

(Second year)

Semester-III					
Course Code And Name	**Course Type**	**Theory Paper**	**Internal Assessment**	**Maximum Marks**	**Credit**
301: Waves and Optics	Major Core	60	40 (Practical)	100	(4+2)
302: Mathematics- III	Minor core	60	40	100	6
303: Basic of Computer and Information Technology	GE	60	40	100	4
304: Computational Physics	SEC	60	40	100	4
SEMESTER TOTAL				400	20
CUMULATIVE TOTAL				400	20

Semester-IV					
Course Code And Name	**Course Type**	**Theory Paper**	**Internal Assessment**	**Maximum Marks**	**Credit**
401: Modern Physics	Major Core	60	40 (Practical)	100	(4+2)
402: Operating Systems	Minor core	60	40	100	6
403: Statistical and Thermal Physics	GE	60	40	100	4
404: Introduction to PC software	SEC	60	40	100	4
SEMESTER TOTAL				400	20
CUMULATIVE TOTAL				400	20

GE: Generic Elective

SEC: Skill Enhancement Course

DEPARTMENT OF PHYSICS

AWADHESH PRATAP SINGH UNIVERSITY REWA (M.P.)

Program- Structure (4 years) Semester System

B.Sc. (Hons.) Physics

UGC-CBCS System as per ordinance 14 (A)

2022-23

(Third year)

Semester-V					
Course Code And Name	**Course Type**	**Theory Paper**	**Internal Assessment**	**Maximum Marks**	**Credit**
501: Solid State Physics	Major Core	60	40 (Practical)	100	(4+2)
502: Quantum Mechanics- I	DSE	60	40	100	4
503: Computer Programming Methodology	SEC	60	40	100	4
504: Project/Internship				100	6
SEMESTER TOTAL				400	20
CUMULATIVE TOTAL				400	20

Semester-VI					
Course Code And Name	**Course Type**	**Theory Paper**	**Internal Assessment**	**Maximum Marks**	**Credit**
601: Electromagnetic theory	Major Core	60	40 (Practical)	100	(4+2)
602: Quantum Mechanics- II	DSE (1)	60	40	100	4
603: Laser Physics	DSE (2)	60	40	100	4
604: Project/Internship				100	6
SEMESTER TOTAL				400	20
CUMULATIVE TOTAL				400	20

DSE: Discipline Specific Elective

SEC: Skill Enhancement Course

DEPARTMENT OF PHYSICS

AWADHESH PRATAP SINGH UNIVERSITY REWA (M.P.)

Program- Structure (4 years) Semester System

B.Sc. (Hons.) Physics

UGC-CBCS System as per ordinance 14 (A)

2022-23

(Fourth year)

Semester-VII					
Course Code And Name	**Course Type**	**Theory Paper**	**Internal Assessment**	**Maximum Marks**	**Credit**
701: Communication System	Major Core	60	40 (Practical)	100	(4+2)
702: Research Methodology	Minor Core	60	40	100	4
703: Nanomaterials	DSE	60	40	100	4
704: Project/Internship				100	6
SEMESTER TOTAL				400	20
CUMULATIVE TOTAL				400	20

Semester-VIII					
Course Code And Name	**Course Type**	**Theory Paper**	**Internal Assessment**	**Maximum Marks**	**Credit**
801: Nuclear and Particle Physics	Major Core	60	40 (Tutorial)	100	(5+1)
802:Advanced Experimental Techniques	Minor Core	60	40	100	4
803: Project/Internship				200	10
SEMESTER TOTAL				400	20
CUMULATIVE TOTAL				400	20

DEPARTMENT OF PHYSICS

AWADHESH PRATAP SINGH UNIVERSITY REWA (M.P.)

B.Sc. (Hons.) Physics I SEM.

101: MECHANICS (Major Core)

Learning Outcomes:

The emphasis of this course is to enhance the understanding of the basic of a mechanics. The course begins with the review of Newton's Laws of motion and ends with the Special Theory of Relativity.

SYLLABUS

A. Theory

Unit I: Fundamentals of Dynamics:

Inertial frames, Review of Newton's laws of motion, Momentum of variable mass system, motion of rocket, Dynamic of a system of particles, principal of conservation of momentum, Impulse Determination of centre of mass of discrete and continuous objects having cylindrical and spherical symmetry (1-D, 2-D & 3-D).

Work and Energy: Work and Kinetic Energy Theorems, Conservative and Non-conservative forces, Potential Energy, Energy diagram, Stable, Unstable and neutral equilibrium, force as gradient of potential energy, work & potential energy, Law of conservation of energy. Elastic (1-D & 2-D) and inelastic collisions centre of Mass and Laboratory frames.

Unit II: Rotational Dynamics

Angular momentum of a particle and systems of particles, Torque, Principle of conservation of angular momentum, Rotation about a fixed axis, Moment of inertia, theorems of parallel and perpendicular axes (statements only). Determination of moment of inertia of 1-D, 2-D & 3-D (rectangular, cylindrical and spherical) objects, kinetic energy of rotation.

Non Inertial System: Reference frames, Galilean transformations, Galilean invariance, Inertial and Non-inertial frames and fictitious forces, uniformly rotating frame, centrifugal force, Coriolis force and its applications.

Unit III: Gravitation and Motion under a Central force field

Law of gravitation, gravitational potential energy, inertial and gravitational mass, potential and field due to spherical shell and solid sphere.

Two body problem, its reduction to a one body problem and its solution, Kepler's laws, satellite in circular orbit and escape velocities, Geosynchronous orbits.

Unit IV: Oscillation:

Simple Harmonic Motion, Differential Equation of SHM and its solution, Kinetic Energy, potential energy, total energy and their time-average values, compound pendulum, Damped oscillations, Forced oscillations, Transient and steady states, sharpness of resonance and quality factor (Q-factor)

Unit V: Special Theory of Relativity: Outcomes of Michelson-Morley Experiment, Postulates of special theory of Relativity, Lorentz Transformations, simultaneity, Length contraction, Time dilation, Relativistic transformation of velocity and acceleration, variation of mass with velocity Mass-energy equivalence, Relativistic Doppler effect. Transformation of energy and Momentum.

Text and Reference Books:

1. Mechanics, D.S. Mathur, S. Chand (2012).
2. Mechanics Berkeley Physics Course (Vol. 1) Charles Kittle, TMH (2007).
3. Physics, Resnick, Halliday & Walker (9^{th} Edn.) Wiley (2010).
4. Engineering Mechanics, Basudeb Bhattacharya (2^{nd} edn.), Oxford University Press (2015).
5. Mechanics, J.C. Upadhyay.

B. Experiments [Practicals]

1. To determine the moment of inertia of a fly wheel.
2. To determine the value of g using Bar pendulum.
3. To determine the value of g using Kater's pendulum.
4. To determine the elastic constants of a wire by Searle's method.
5. To determine Young's Modulars of a wire by optical lever method.
6. To study the motion of a spring and calculate (a) spring constant and (b) g.
7. Measurement of length (or diameter) using Vernier calliper, screw-gauge and travelling microscope.
8. Half Adder and full adder.
9. Half sabtractor and Full sabtractor
10. 4-bit binary Adder.
11. To build Flip-Flops (RS, clocked RS, D type and JK) circuits using NAND gates.
12. To build JK Master-Slave flip-flop using flip-flop IC's
13. To build a 4-bit counter using D-type/ JK flip flop IC's and study timing diagram.
14. To make a 4-bit shift register (serial and parallel) using D-type/ JK flip flop IC's.
15. To design a combinational logic system for a specific Truth table.
16. (a) To convert Boolean expressions units logic circuit and design it using logic gate ICs.

    (b) To minimize a give logic circuit.

DEPARTMENT OF PHYSICS

AWADHESH PRATAP SINGH UNIVERSITY REWA (M.P.)

B.Sc. (Hons.) Physics I SEM.

102: MATHEMATICS -I (Minor Core)

Learning Outcomes:

The emphasis of courses is on applications in solving problems of interest to physicists. The students are to be examined entirely on the basis of problem.

SYLLABUS

A. Theory

Unit I: Calculus:

Plotting of functions, Approximation: Taylor and Binomial series (statement only). First order Differential Equation (variable separable, homogeneous, non- homogeneous) extract and inexact differential equation and integrating factor.

Unit II: Differential Equation:

Basic Differentiation & interaction homogeneous equations with constant coefficients, Wronskian and general solution, particular integral, method of undetermined coefficients and variation method of parameters. Euler differential equation and simultaneous differential equation of first and second order.

Unit III: Vector Algebra

Properties of vector, scale product and vector product, scalar triple product and their interpretation in terms of area and volume respectively. Scalar and vector fields.

Unit IV: Vector calculus:

Vector differentiation, directional derivations and normal derivative, gradient of a scalar field and its geometrical interpretation, Divergence and curl of a vector identities, partial differentiation.

Unit V: Ordinary integrals of vectors, Double and Triple integrals, change of order of integration, Jacobian, line, surface and volume elements, line, surface and volume integrals of vector fields, flux of a vector field, Gauss divergence theorem, Green's and Stoke's theorems.

Text and Reference books:

1. Mathematical method for physicists, G.B. Arfken and H.J. Weber
2. Mathematical method for physicists, Murrary R. Spiegel.
3. Mathematics for physicists and Engineers Pipes and Harvill.
4. Advance Engineering Mathematics, Erwin Kreyzig, Wiley (India).
5. Mathematical Physics; A.K. Saxena (Narosa)
6. Mathematical Physics; Goswami (1st Edition) Cengage learning.

DEPARTMENT OF PHYSICS

AWADHESH PRATAP SINGH UNIVERSITY REWA (M.P.)

B.Sc. (Hons.) Physics I SEM.
103: DIGITAL SYSTEM AND APPLICATIONS (Generic Elective)

Learning Outcomes:

This course introduces the concept of Boolean Algebra and the basic digital electronics. In this course students will be able to understand the working principle of CRO, data processing circuits, arithmetic circuits, sequential circuits like registers, counters etc., based on flip flops. In addition, students will get an overview of Intel 8085 microprocessor.

SYLLABUS

Unit-I: Introduction to CRO:

Block diagram of CRO. Electron Gun. deflection system and Time Base, Deflection Sensitivity, Applications of CRO (1) study of waveform, (2) Measurement of voltage, current, frequency and phase difference.

Digital circuit: Difference between Analog and Digital circuits. Examples of linear and digital ICs. Binary numbers, Decimal to Binary and Binary to Decimal conversion. BCD octal and Hexadecimal numbers AND, OR and NOT gates (realization using Diodes and Transistors) NAND and NOR gates as Universal Gates. XOR and XNOR gates and applications as Parity Checkers

Unit II: Boolean Algebra:

De Morgan's Theorems, Boolean Laws, simplification of logic circuit using Boolean Algebra, Fundamental products, Idea of Minterms and Maxterms. Conversions of Truth Table into Equivalent logic circuit by (1) Sum of products method and (2) Karnaugh Map.

Unit III: Data Processing circuits: Multiplexers, De-Multiplexers, Decoders, Encoders.

Arithmetic Circuit: Binary Addition, Binary Subtraction using 2's complements. Half and Full Adders, half and full Subtractors, 4-bit binary adder/subtractor.

Sequential Circuits: SR, D and JK Flip Flops, Clocked (Level and Edge Triggered) flip-flops, preset and clear operations, Race-around conditions in JK flip-flop. M/S JK flip-flop.

Timer: IC 555: block diagram and applications, Astable and Monostable multivibrators.

Unit IV: Shift registers: Serial-in-Serial-out, Serial-in-Parallel out, Parallel-in-Serial out, and Parallel-in-Parallel-out shift registers (only upto 4 bits).

Counters (4-bits): Ring counter, Asynchronous counters, Decade counter, synchronous Counter.

Unit V: Computer Organization:

Input/ Output devices. Data storage (idea of RAM and ROM). Computer memory. Memory organization and addressing, Memory interfacing, Memory MAP.

Intel 8085 Microprocessor Architecture: Main features of 8085. Block diagram. Components. Pin-out diagram. Buses. Registers, ALU, Memory Stack memory, Timing and Control circuitary, timing states, instruction cycle. Timing diagram of MOV and MVI.

Introduction to Assembly Languages: 1 byte, 2 byte and 3 byte instructions.

Text and Reference books:

1. Digital principles and Applications, A.P. Malvino, D.P. Leach and Saha, TMH (7th Ed. 2011).
2. Digital Electronics, A.K. Saxena, CBS.

3. Fundamental of Digital circuits, Anand Kumar PHI (2nd Ed. 2009).

4. Logic Circuit Design, P. Shimon Vingron Springer (2012).

5. Microprocessor Architecture Programming & Application with 8085, R.S. Gaonkar PHI (2002)

6. Digital circuit and systems, Venugopal, TMH (2011)

104 (FC)/AEC: English :

The course-content will be adopted from that used in the other departments of the science faculty.

DEPARTMENT OF PHYSICS

AWADHESH PRATAP SINGH UNIVERSITY REWA (M.P.)

B.Sc. (Hons.) Physics II SEM.
201: ELECTRICITY AND MAGNETISM (Major Core)

Learning Outcomes:

The course covers static and dynamic electric and magnetic field, and the principles of electromagnetic introduction. It also includes analysis of electrical circuits and introduction of network theorems. By the end of the course student should be able to appreciate Maxwell's equations and analyze electrical circuits using network theorems.

SYLLABUS

Unit I: Electric Field and Electric Potential

Electric field lines, Electric flux, Gauss' Law with applications to charge distributions with spherical, cylindrical and planar symmetry, conservative nature of electrostatic field, Electrostatic potential, Laplace's and Poisson equations, the Uniqueness Theorem, Potential and Electric field of a dipole Force and Torque on a dipole.

Electrostatic energy of a system of charges, Electrostatic energy of a charged sphere, Conductors in an electrostatic field, Surface charge and force on a conductor, Capacitance of a system of charged conductors, Parallel-plate capacitor, capacitance of an isolated conductor, Method of images and its applications to : (1) Plane infinite sheet and (2) Sphere.

Unit II: Magnetic field :

Magnetic force between current elements and definitions of magnetic field $\vec{B}$, Biot-Savart's law, it's simple applications: straight wire and circular loops, current loop as a Magnetic Dipole and its Dipole moment (Analogy with electric dipole) Ampere's circuital law and its application to (1) Solenoid and (2) Toroid, Properties of $\vec{B}$: curl and divergence. Vector Potential, Magnetic Force on (1)

point charge (2) current carrying wire (3) between current elements, Torque on a current loop in a uniform magnetic field.

Unit III: (a) Dielectric Properties of Matter:

Electric field in matter, polarization, polarization charges, Electric susceptibility and dielectric constant, capacitor (parallel-plate spherical, cylindrical) filled with dielectric Displacement vector $\vec{D}$, Relations between $\vec{E}$, $\vec{P}$ and $\vec{D}$.

(b) Magnetic Properties of Matter: Magnetization vector $\vec{M}$, and magnetic intensity $\vec{H}$, magnetic susceptibility and permeability, Relations between $\vec{B}$, $\vec{H}$, $\vec{M}$. Ferromagnetism, $\vec{B}$-$\vec{H}$ curve and hysterisis.

Unit IV: Electromagnetic Induction:

Faraday's law, Lenz's law, Self Inductance and Mutual Inductance, Reciprocity Theorem, Energy stored in a magnetic field, Maxwell's equations, charge conservation and displacement current.

Electrical Circuits: AC circuits; Kirchhoff's laws for AC circuits, Complex Reactance and Impedance. Series LCR circuit : (1) Resonance (2) Power dissipation and (3) Quality factor. Parallel LCR circuit.

Unit V: Network Theorems:

Ideal constant-voltage and constant current source Review of Kirchhoff's Current Law & and Kirchhoff's Voltage Law, Mesh and Node analysis, Thevenin's theorems, Norton theorem, Superposition Theorem, Reciprocity Theorem, Maximum Power transfer theorem. Applications to dc circuits.

Text and Reference books:

1. Fundamentals of Electricity and Magnetism, Arthur F. Kip, Mc Graw-Hill (2^{nd} Edn.) (1981).
2. Electricity and Magnetism, Edward M. Purcell, Mc Graw-Hill (1986).
3. Introduction to Electrodynamics, D.J. Griffiths, Benjamin, (3^{rd} Edn.) (1998).

4. Electricity and Magnetism, J.H. Fewkes & J. Yarwood. Vol. 1, Oxford University Press (1991)
5. Networks, Line and Fields, John D. Ryder, Pearson (2nd Edn. 2015)
6. Electromagnetic Theory and Applications, A.K. Saxena, Narosa (2nd Edn.)
7. Schaum's Outline of Electric circuits, J. Edminister, Mc Graw-Hill (1995)

B. Practical (Experiments)

1. To determine an unknown low resistance using a potentiometer.
2. To determine an unknown low resistance using Carey Foster Bridge.
3. To compare capacitances using De Sauty's Bridge.
4. To determine self inductance of a coil by Rayleigh's method.
5. To determine self inductance of a coil by Anderson's Bridge.
6. Measurement of field strength B and its variations in a solenoid (dB/dx).
7. To verify the Thevenin and Norton Theorems.
8. To study response curve of a series LCR circuit and determine its (a) Resonant frequency, (b) Impedance at resonance, (c) Quality factor Q and (d) Band width.
9. To study the V-I characteristics of a Zener diode and its use as voltage regulator.
10. Study of V-I & power curve of solar cells and find maximum power point efficiency.
11. To study the characteristics of a Bipolar Junction Transistor in CE configuration.
12. To study the various biasing configuration of BJT for normal class A operation.
13. To study the frequency response of voltage gain of a two stage RC transistor amplifier.
14. To investigate the use of an OP Amp as an (1) Integrator (2) Differentiator.

B.Sc. (Hons.) Physics II SEM.

202: MATHEMATICS - II (Minor Core)

***Learning Outcomes*:**

The emphasis of course is on applications in solving problems of interest to physicists. The students are to be examined entirely on the basis of problems.

SYLLABUS

A. Theory

Unit I: Complex Analysis (1)

(1) Brief review of Complex numbers and their graphical representation formula, Euler's formula, De Moivres theorems, Roots of Complex Numbers, functions of complex variables, Analyticity and Cauchy-Riemann Conditions.

Unit II: Complex Analysis (2) Example of analytic functions, singular functions, poles and branch points, order of singularity, branch cuts, integration of a function of a complex variable, Cauchy's inequality, Cauchy's integral formula, Simply and Multiply connected Regions, Laurent and Taylor's expansion, Residues and Residue theorem.

Unit III: Fourier Series:

Periodic functions Orthogonality of Sine and Cosine functions, Dirich let conditions (statement only), Expansion of periodic functions in a series of sine and Cosine functions and determinations of Fourier coefficients, Event and Odd functions and their Fourier expansion, Parseval's Identity and its applications to summation of infinite series.

Unit IV: Orthogonal Curvilinear Coordinates:

Orthogonal Curvilinear Coordinates. Derivation of Gradient, Divergence, Curl and Laplacian in Cartesian, Spherical and Cylindrical coordinate System.

Unit V: Some Special integrals:

Beta and Gamma functions and Relations between them, Expression of integrals in terms of Gamma functions.

Dirac delta functions: Definitions and properties, Representation of Dirac delta functions as a Fourier integral, Fourier Transform of Dirac delta functions.

DEPARTMENT OF PHYSICS

AWADHESH PRATAP SINGH UNIVERSITY REWA (M.P.)

B.Sc. (Hons.) Physics II SEM.

203: ANALOG SYSTEMS AND APPLICATIONS (Generic Elective)

***Learning Outcomes*:**

This is one of the core papers in physics curriculum where students will get to learn about the physics of semiconductor p-n junction and devices such as rectifier diodes, zener diode, photodiode etc. and bipolar junction transistors. Transistor biasing and stabilization circuits are explained. The concept of feedback is discussed in amplifiers and the oscillator circuits are also studied. By the end of the syllabus, students will also have an understanding of operational amplifiers and their applications.

SYLLABUS

A. Theory

Unit I: Semiconductor Diodes:

P and N type semiconductors, Energy level diagram, Conductivity and Mobility, concept of Drift velocity, PN Junction Fabrication (simple idea) Barrier Formation in a PN Junction Diode Derivation for Barrier Potential, Barrier width and current for abrupt Junction. Equation of continuity, Current flow mechanism in Forward and Reverse biased diode.

Unit II: Two-terminal Devices and their Applications:

(1) Rectifier Diode: Half-wave Rectifiers, Bridge Full-wave Rectifiers, calculation of ripple factor and rectification efficiency, C-filter, (2) Zener Diode and voltage Regulation principle, structure and characteristics of (1) LED (2) Photodiode and (3) Solar cell, Schottky diode and Tunnel diode.

Bipolar Junction Transistors: npn and pnp transistors, I-V characteristics of CB and CE configuration, Active, Cut off and Saturation regions, current gains α and β. Relations between α and β. Load line analysis of Transistors, DC load line and Q-point, Physical Mechanism of Current Flow.

Unit III: Amplifiers:

Transistors Biasing and stabilization circuits. Fixed Bias and voltage Divider Bias. Transistor as 2-port Network, h-parameter equivalent circuit, Analysis of a single-stage CE amplifier using Hybrid model. Input and Output impedance. Current, Voltage and power gains. Classification of class A, B & C Amplifiers Two stage RC-coupled amplifier and its frequency response.

Unit IV: Feedback in Amplifiers:

Positive and Negative feedback. Effect of negative feedback on input Impedance, output Impedance Gain, Stability.

Sinusoidal Oscillators**:** Barkhausen Criterion for self-sustained Oscillations, RC phase-shift oscillator, Hartley and Colpitt oscillators.

Unit V: Operational Amplifiers:

Characteristics of an ideal and practical op- Amp. (IC741). open-loop and closed-loop gain. Frequency Response CMRR Slew Rate and concept of Virtual ground.

Applications of Op-Amp: (1) Inverting and non-inverting amplifiers, (2) Adder, (3) Subtractor, (4) Differentiator, (5) Integrator (6) Log amplifier, (7) Comparator, () Wien bridge oscillator.

Conversion: D/A Resistive networks (weighted and R-2R ladder). Accuracy and Resolution.

Text and Reference books:

1. Integrated Electronics, J. Millman and C.C. Halkias, Tata Mc Graw Hill (1991)
2. Solid State Electronic Drives, B.G. Streetman & S.K. Banerjee, PHI (6^{th} Edn. 2009).
3. Electronics Fundamentals and Applications, J.D. Ryder, Prentice Hall (2004)
4. Op-Amps. and Linear Integrated Circuit, R.A. Gayakwad, Prentice Hall (4^{th} Edn. 2000)
5. Microelectronic Circuits, A.S. Sedra, K.C. Smith, A.N. Chandorkar, Oxford University Press (6^{th} Edn. 2014)
6. Semiconductor Devices % Physics and Technology, S.M. Sze, Wiley India (2^{nd} Edn 2002).
7. An Introduction to Electronics, A.K. Saxena, Narosa.
8. Hand Book of Electronics, Gupta and Kumar.

204 (FC)/AEC: Environmental Science

The course content will be adopted from that used in the other departments of the science faculty.

DEPARTMENT OF PHYSICS

AWADHESH PRATAP SINGH UNIVERSITY REWA (M.P.)

B.Sc. (Hons.) Physics III SEM.
301: WAVES AND OPTICS (Major Core)

Learning Outcomes:

This is one of the core courses in Physics curriculum that begins with explaining ideas of superposition of harmonic oscillations leading to physics of travelling and standing waves. The course also provides an in depth understanding of wave phenomena of light viz. interference and diffraction with emphasis on practical applications of the same.

SYLLABUS

A. Theory

Unit I: Superposition of Harmonic Oscillations:

Simple Harmonic Motion (SHM), Linearity and Superposition Principle, Superposition of two collinear oscillation having (1) equal frequencies and (2) different frequencies (Beats) Superposition of N collinear Harmonic oscillations with (1) equal phase differences and (2) equal frequency differences.

Unit II:

Superposition of two perpendicular Harmonic oscillations, Lissajous Figures with equal and unequal frequencies and their uses.

Wave Motion: Plane and spherical waves, Longitudinal and Transverse waves, plane progressive (Travelling) waves. Wave equation, Particle and wave velocities, intensity of wave.

Unit III: Superposition of two Harmonic waves:

Standing (stationary) waves in a string: Fixed and free ends, analytical treatment, phase and group velocities, Energy of vibrating string, Transfer of Energy. Normal modes of stretched strings.

Longitudinal standing waves and Normal Modes, Superposition of N harmonic waves.

Wave Optics**:** Electromagnetic nature of light. Definitions and properties of wave front. Huygen's principle, Temporal and spatial coherence.

Unit IV: Interference:

Divisions of amplitude and wave front, Young's double slit experiment, Fresnel's biprism, phase change on Reflection, stokes treatment. Interference in Thin Films; parallel and wedge-shaped films. Fringes of equal inclination (Haidinger Fringes); Fringes of equal thickness (Fizeau Fringes). Newton's Rings: Measurement of wavelength and refractive index.

Michelson Interferometer: (1) Idea of form of fringes (No theory required) (2) Determination of wavelength, (3) Refractive index (4) Visibility of Fringes. Fabry-Perot interferometer.

Unit V: Diffraction:

Fraunhoffer diffraction; single slit, Rectangular and circular aperture, Resolving power of a Telescope, Double slit, Multiple slits, Diffraction grating. Resolving power of grating

Fresnel Diffraction: Assumptions, Half-Period Zones for plane wave. Explanation of Rectilinear Propagation of Light. Theory of a Jone plate: Multiple Foci of a Zone Plate. Fresnel's Integral, Cornu's spiral and its applications, straight edge and a slit.

Text and Reference Book:

1. Vibrations and Waves, A.P. French, CRC Press (Ist Edition, 2003).

2. Fundamental of Optics, F.A. Jenkins and H.E. White, Mc Graw Hill (2008).

3. Optics, Ajoy Ghatak, TMH (2008).

4. Optics, Brij Lal and Subrahmanyam, S. Chand.

5. Waves, Berkeley Physics Course, F. Crawford, TMH, Vol. 3, (2007).

6. The Physics of a Vibrations and Waves, H.J. Pain, John Wiley (2013).

7. Optics, Eugene Hecht, Pearson education (4^{th} Edn. 2014)

B. Practical (Experiments)

1. To determine the frequency of an electric tuning fork by Melde's experiment and verify λ^2-T law.

2. To study Lissajous Figure.

3. Familiarization with Schuster's focusing; determinations of angle of prism.

4. To determine refractive index of the Material of a prism using sodium source.

5. To determine the dispersive power and Cauchy constants of the material of a prism using mercury source.

6. To determine the wavelength of sodium source using Michelson's interferometer.

7. To determine wavelength of sodium light using Fresnel Biprism.

8. To determine wavelength of sodium light using Newton's rings.

9. To determine wavelength of (1) Na source and (2) spectral lines of Hg source using plane diffraction grating.

10. To determine dispersive power and resolving power of a plane diffraction grating.

DEPARTMENT OF PHYSICS

AWADHESH PRATAP SINGH UNIVERSITY REWA (M.P.)

B.Sc. (Hons.) Physics III SEM.
302: MATHEMATICS - III (Minor Core)

Learning Outcomes:

The emphasis of the course is on applications in solving problems of interest to physicists. Students are to be examined on the basis of problems, seen and unseen.

SYLLABUS

Unit I: Special Functions and Equations:

Legendre, Bessel, Hermite and Laguerre Differential Equations, Properties of Legendre Polynomials, Rodrigues Formula, Generating Function, Orthogonality, simple recurrence relations, Expansion of function in a series of Legendre polynomials, Bessel Functions of the first kind, Generating function, simple recurrence relations, zeros of Bessel Functions (J_0 (x) and J_1(x)) and orthogonality.

Unit II: Partial Differential Equations:

Solutions to partial differential equations using separation of variables: Laplace's Equation in problems of rectangular geometry, solution of wave equation for vibrational modes of a stretched string rectangular and circular membranes, solution of one-dimensional heat flow equation (equation not to be derived)

Unit III: Fourier Transforms:

Fourier Integral theorem (Statement only). Fourier Transform. Fourier sine and cosine transform, Examples. Fourier transform of single pulse, trigonometric, exponential and Gaussianfunctions.

Unit IV:

Fourier transform of derivatives, Inverse Fourier transform, Convolution theorem. Properties of Fourier transforms (translation, change of scale, complex conjugation, etc.). One dimensional Wave Equations.

Unit V: Laplace Transforms:

Laplace Transform (LT) of Elementary functions. Properties of LTs: Change of Scale Toeorem, Shifting Theorem. LTs of 1^{st} and 2^{nd} order Derivatives and Integrals of Functions, Derivatives and Integrals of LTs. LT of Unit Step function, Periodic Functions. Convolution Theorem. Inverse LT. Application of Laplace Transforms to 2nd order Differential Equations: Coupled differential equations of 1^{st} order.

Text and Reference Books

1. Mathematical Methods for Physicists, Arfken and Weber (2005) Elsevier

2. Fourier Analysis by M.K. spiegel (2004) (TMH).

3. Mathematical Physics, A.K. Saxena (Narosa).

4. Differential Equations, George F. simmons (2006) TMH

5. Mathematical Physics, Pipes and Harvill.

6. Mathematical Physics, Satya Prakash.

DEPARTMENT OF PHYSICS

AWADHESH PRATAP SINGH UNIVERSITY REWA (M.P.)

B.Sc. (Hons.) Physics III SEM.

303: BASICS OF COMPUTER AND INFORMATION TECHNOLOGY

(Generic Elective)

Learning Outcomes:

This course will develop the understanding about basic of computer anatomy and operations. This will familiarise the students about Windows and PC software.

SYLLABUS

Unit I:

History, Generation of Computers Characteristics, Capabilities and Limitations, Classification of Computers and types of Digital computes. Hardware, Software, Types of software, Generations of Computer, Languages: High and low level languages, Types of Translators, Component of Computer System

Unit- II:

Introduction of various input/ output devices: Keyboard, mouse, MICR, OCR, OMR, Bar Code, Scanner, VDU, Plotter, Impact and Nonimpact printers, storage units: Bits and Bytes ; Primary and secondary Memories.

Unit- III: Windows:

Introduction, windows desktop, start button, taskbar, switching between programs and windows, managing files, folders and objects, windows explorer, creating shortcuts, control panel; windows accessories: paintbrush, word pad, customizing windows, Internet Explorer.

Unit- IV: MS Word:

Working with Headers, Footers, Endnotes, Footnotes, tabs, tables, sorting, Working with graphics: Importing graphics, Drawing objects, Text in Drawings (Word Art), Pictures using Drawing objects, Rotating and Flipping Objects, Spelling and Grammar Checker, Auto Correct, Auto Text, Creating Tables, Mail Merge.

Unit- V: MS Powerpoint:

Creating presentations, Auto content wizard, editing slides, Working with Text in Power Point, Formatting and Aligning Text; Working with graphics in Power Point; Importing images from the outside and drawing in power point, creating organizational charts, inserting clip arts & picture/photos in Power Point Presentation, Excel Charts in Power Point, Inserting Table from Word.

Text and Reference Book:

1. Sinha, P.K.: Computer Fundamentals, BPB Publ.

2. Rapidex Computer Courses

3. Jain, Satish: Introduction to Computer Science, BPB Publ.

4. Mansfield R.: The Compact guide to MS- OFFICE, BPB

DEPARTMENT OF PHYSICS

AWADHESH PRATAP SINGH UNIVERSITY REWA (M.P.)

B.Sc. (Hons.) Physics III SEM.

304: COMPUTATIONAL PHYSICS (SEC)

Learning Outcomes:

.The aim of this course is not just to teach computer programming and numerical analysis but to emphasize its role in solving problems in Physics and Science. this course highlights the use of computational methods to solve physical problems, and use of computer language as a tool in solving physics/science problems.

SYLLABUS

Unit I: Algorithms and Flowcharts:

Algorithm: Definition, properties and development. Flowchart: Concept of flowchart, symbols, guidelines, types. Examples: Cartesian to Spherical Polar Coordinates, Roots of Quadratic Equation, Sum of two matrices, Sum and Product of a finite series, calculation of sin (x) as a series, algorithm for plotting (1) Lissajous figures and (2) trajectory of a projectile thrown at an angle with the horizontal

Unit II: Scientific Programming:

Some fundamental Linux Commands (Internal and External commands). Development of FORTRAN, Basic elements of FORTRAN: Character Set, Constants and their types Variables and their types, Keywords, Variable Declaration and concept of instruction and program, Operators: Arithmetic, Relational, Logical and Assignment Operators, Expressions: Arithmetic, Relational, Logical, Character and Assignment Expressions. Fortran Statements: I/O Statements (unformatted/formatted), Executable and Non-Executable Statements, Layout of Fortran Program, Format of writing Program and concept

of coding, Initialization and Replacement Logic. Examples from physics problems.

Unit III: Control Statements:

Types of Logic (Sequential Selection, Repetition), Branching Statements (Logical IF, Arithmetic IF, Block IF, Nested Block IF, SELECT CASE and ELSE IF Ladder statements), Looping Statements (DO-CONTINUE, DO-ENDDO, DO WHILE, Implied and Nested DO Loops), Jumping Statements (Unconditional GOTO, Computed GOTO, Assigned GOTO) Subscripted Variables (Arrays: Types of Arrays, DIMENSION Statement, Reading and Writing Arrays), Functions and Subroutines (Arithmetic Statement Function, Function Subprogram and Subroutine), RETURN, CALL, COMMON and EQUIVALENCE Statements),

Unit- IV: Scientific word processing: Introduction to LaTeX:

TeX/LaTeX word processor, preparing a basic LaTeX file, Document classes, Preparing an input file for LaTeX, Compiling LaTeX File, LaTeX tags for creating different environments, Defining LaTeX commands and environments, Changing the type style, Symbols from other languages.

Unit- V: Equation representation:

Formulae and equations, Figures and other floating bodies, Lining in columns- Tabbing and tabular environment, Generating table of contents, bibliography and citatión, Making an index and glossary, List making environments, Fonts, Picture environment and colors, errors.

Visualization: Introduction to graphical analysis and its limitations. Introduction to Gnuplot importance of visualization of computational and computational data, basic Gnuplot commands: simple plots, plotting data from a file, saving and exporting, multiple data sets per file, physics with Gnuplot (equations, building

functions, user defined variables and functions), Understanding data with Gnuplot .

Text and Reference Books:

1. Introduction to Numerical Analysis, S.S. Sastry, 5th Edn., 2012, PHI Learning Pvt. Ltd.
2. Computer Programming in Fortran 77 ". V. Rajaraman (Publisher: PHI).
3. LaTeX-A Document Preparation System", Leslie Lamport (Second Edition, Addison-Wesley, 1994).
4. Gnuplot in action: understanding data with graphs, Philip K Janert, (Manning 2010)
5. Schaum's Outline of Theory and Problems of Programming with Fortran, S Lipsdutz and A Poe, 1986 Mc-Graw Hill Book Co.
6. Computational Physics: An Introduction, R.C. Verma, etal New Age International Publishers, New Delhi (1999)
7. Elementary Numerical Analysis, K.E. Atkinson, 3rd Edn., 2007, Wiley India Edition

DEPARTMENT OF PHYSICS

AWADHESH PRATAP SINGH UNIVERSITY REWA (M.P.)

B.Sc. (Hons.) Physics IV SEM.
401: MODERN PHYSICS (Major Core)

Learning Outcomes:

This course introduces modern development in Physics. Starting from Radiations Laws, it develops the idea of De Broglie matter waves, probability interpretation and uncertainty principle. It also introduces basic concepts of nuclear physics and elementary particles.

SYLLABUS

A. Theory

Unit I: Theory of Radiation:

Black body radiation, Kirchhoff's law, Stefen Boltzmann law, Wien's Displacement Law, Rayleigh Jean's Law, ultraviolet catastrophe, Planck's Radiation Law, Wien's Law and Rayleigh Jeams law as special cases of Planck's law, Deduction of Wien's law and Stefan's law from Planck's Formula.

Unit II: Light :

Waves vs Particle and wave function, Planck's quantum, light as wave versus particle, quantum theory of light, Photoelectric effect and Compton scattering, De Broglie matter waves, Davisson-Germer experiment, wave description of particles by wave-packets, group and phase velocity, Two slit experiment with electrons, Probability and wave function, physical interpretation of wave function, Heisenberg's uncertainty principle.

Unit III: Basic Nuclear Concepts:

Size and structure of atomic nucleus, and its relation with atomic weight, Impossibility of an electron being the nucleus as a consequence of uncertainty

principle, Nature of nuclear force, NZ graph, Liquid Drop model, semiempirical mass formula and binding energy.

Fission and fusion-mass defect, relativity and generation of energy Liquid drop model of the nucleus, Fission, Fusion and thermonuclear reactions producing stellar energy.

Unit IV: Radioactivity :

Stability of the nucleus, Laws of Radioactivity decay, Mean life and half life, Alpha decay, Beta decay-energy released, spectrum and Pauli's prediction of neutrino, Gamma ray emission, energy-momentum conservation, electron-positron pair creation by Gamma photons.

Unit V: Elementary Particles:

Fundamental particles; Discovery of Elementary particles, classifications of elementary particle (Photons, Leptons and Hadrons) strange particles, Quantum Numbers of Elementary Particles, Gell Mann-Nishijima Formula The τ-θ Puzzle. Particles and Antiparticles, Concept of Quarks, Quark structure of proton neutron and Pion.

Text and Reference book

1. Concepts of Modern Physics, Arthur Beiser, Mc Graw-Hill (2002)
2. Principle of Modern Physics, A.K. Saxena, Narosa (4^{th} Edn. 2014)
3. Introduction to Modern Physics, Ritch Meyer, Kennard and Cooper, Tata Mc Graw Hill (2002)
4. Theory and Problems of Modern Physics, Schaums outline, R. Gantreau & W. Savin, Tata Mc Graw-Hill (2^{nd} Edn.)
5. Perspectives of Modern Physics, Arthur Beiser.

B. Practical (Experiment):

1. Measurement of Planck's Constant using black body radiation and photo-detector.
2. To determine work function of material of filament of directly heated vacuum diode.
3. Photo-electric effect: photo current versus intensity and wavelength of light; maximum energy of a photo-electrons versus frequency of light.
4. To determine ionization potential of Mercury (Hg)
5. To determine the wavelength of H_α emission line of Hydrogen atom.
6. To determine the value of e/m by (a) Magnetic focusing or (b) Bar magnet.
7. To show the tunneling effect of tunnel diode using I-V characteristics.
8. To determine the Planck's constant using LEDs of at least 4 different colours.
9. To determine the wavelength of laser source using diffraction of single slit.

DEPARTMENT OF PHYSICS

AWADHESH PRATAP SINGH UNIVERSITY REWA (M.P.)

B.Sc. (Hons.) Physics IV SEM.
402: OPERATING SYSTEMS (Minor Core)

Learning Outcomes:

This course provide information regarding operating systems and their structure for communicating with Input-Output systems and standard case studies about design of peripherals.

SYLLABUS

Unit I: Operating Systems Overview:

Introduction to operating systems: Computer system organization, architecture: Operating system structure, operations: Process, memory, storage management Protection and security Distributed systems, Computing Environments, Open-source operating systems, OS services: User operating-system interface, System calls, System programs, OS structure: OS generation, System Boot: Process concept, scheduling: Operations on processes, Cooperating processes, Inter-process communication, Examples: Multithreading models, Thread Libraries, Threading issues, OS examples.

Unit II: Process Management:

Basic concepts: Scheduling criteria, Scheduling algorithms, Thread scheduling, Multiple processor scheduling, Algorithm Evaluation: The critical section problem Peterson's solution, Synchronization hardware, Semaphores, Classic problems of synchronization Critical regions, Monitors, Synchronization examples, Deadlocks, System model, Deadlock characterization, Methods for handling deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock detection, Recovery from deadlock.

Unit III: Storage Management:

Memory Management: Swapping, Contiguous memory allocation, Paging, Segmentation Example: The Intel Pentium, Virtual Memory: Background,

Demand paging, Copy on write, Page replacement, Allocation of frames, Thrashing.

Unit IV: I/O Systems:

File concept, Access methods, Directory structure, File- system mounting, Protection Directory implementation, Allocation methods, Free-space management, Disk scheduling Disk management, Swap-space management- Protection.

Unit V: Case Study :

The Linux System: History, Design Principles, Kernel Modules, Process Management Scheduling, Memory management, File systems, Input and Output, Inter- process Communication, Network Structure, Security, Windows 7: History, Design Principles, System Components, Terminal Services and Fast User, File system, Networking.

Text and Reference Books:

1. Abraham Silberschatz, Peter B. Galvin, Greg Gagne, "Operating System Concepts Essentials", John Wiley & Sons Inc., 2010. 50
2. Andrew S. Tanenbaum, "Modern Operating Systems", Second Edition, Addison Wesley, 2001.
3. D M Dhamdhere, "Operating Systems: A Concept-based Approach", Second Edition, Tata McGraw-Hill Education, 2007.
4. William Stallings, "Operating Systems: Internals and Design Principles", Seventh Edition, Prentice Hall, 2011. CS8452 S

DEPARTMENT OF PHYSICS

AWADHESH PRATAP SINGH UNIVERSITY REWA (M.P.)

B.Sc. (Hons.) Physics IV SEM.

403: STATISTICAL AND THERMAL PHYSICS (General Elective)

Learning Outcomes:

The primary goal of thermal physics is to understand the fundamental laws of thermodynamics and its applications to various thermo-dynamical systems and processes. It also given exposure to students about the Kinetic theory of gases, phase transitions and behaviour of real gases.

The statistical mechanics deals with the derivation of the macroscopic parameters (internal energy, pressure, specific heat etc.) of a physical system consisting of a large number of particles (solid, liquid or gas) from knowledge of the understanding microscopic behaviour of atoms and molecules that comprise it. The main objective is to introduce the techniques of statistical mechanics which has applications in various fields such as Astrophysics, semiconductors, plasma physics, chemistry and many others directions.

SYLLABUS

Unit I: Zeroth and First Law of thermodynamics:

Extensive and intensive variables, Thermodynamic Equilibrium, Zeroth law of Thermodynamics & concept of Temperature, concept of work and Heat, State functions, First Law of Thermodynamics and its differential form, Internal Energy, Applications of First Law : General relation between C_p and C_v, work done during Isothermal and Adiabatic processes,

Second Law of Thermodynamics**:** Reversible and Irreversible process with examples. Conversions of work into Heat and Heat into work, Heat Engines. Carnot's cycle, Carnot engine & efficiency. Refrigerator & coefficient of performance, 2^{nd} Law of Thermodynamics : Kelvin Planck and Clausius statements of their Equivalence. Carnot's theorem. Applications of Second law of

thermodynamics. Thermodynamics scale of Temperature and its Equivalence to perfect Gas scale.

<u>Unit II:</u> Entropy:

Concept of Entropy, Clausius Theorem, Clausius Inequality, Second Law of Thermodynamics in terms of Entropy, Entropy of a perfect gas. Principle of Increase of Entropy. Entropy changes in Reversible and in Irreversible process with examples. Entropy of the universe. Temperature-Entropy diagrams for Carnot's cycle. Third Law of Thermodynamics Unattainability of Absolute zero.

Thermodynamics Potentials**:** Thermodynamics Potentials, Internal Energy, Entropy, Helmholtz Free Energy, Gibb's Free Energy, their definitions, properties and Applications. Magnetic Work; Cooling due to adiabatic demagnetization; First and second order phase transmissions with examples, Clausius Clapeyron Equation and Ehrenfest equations.

Maxwell's Thermodynamic Relations: Derivation of Maxwell's thermodynamic Relations and their applications. Maxwell's Relations : (1) Clausius Clapeyron equation, (2) Valve of C_p-C_v, (3) Tds Equation, (4) Energy equations.

<u>Unit III:</u> Kinetic Theory of Gases:

Distribution of Velocities : Maxwell-Boltzmann Law of distribution of velocities in an ideal gas and its Experimental verification. Mean, RMS and Most probable speeds. Degrees of Freedom. Law of Equipartition of energy (No proof required). Specific Heat of Gases.

Real Gases: Behaviour of Real Gases; Deviation from the Ideal Gas Equation. Virial Andrews Experiments on CO_2 gas. Virial equation. Critical constants. Continuity of Liquid and gaseous state. Vapour and Gas. Boyle temperature. Vander Waal's Equation of state for real Gases. Values of critical constants. Law of corresponding states. Comparison with Experimental curves. p-V diagrams.

Free Adiabatic Expansion of a perfect Gas, Joule-Thomson Porous Plug Experiment. Joule-Thomson Effect for real and Vander Waals Gases, Temperature of Inversion.

Unit- IV: Classical statistics:

Macrostate and Microstate, Phase space, Elementary concept of Ensemble, Entropy, Linear Harmonic Oscillator as an Example of phase space, The phase space and Quantum states. Microcanonical, Canomical and Gandcanonical Ensembles, The Thermodynamic probability and Expression for Thermodynamic probability, Intensive and Extensive parameters, Boltzmann Theorm and statistical interpretation of Entropy, Maxwell-Boltzmann distribution Law, partition function. Entropy of a perfect Gas in Microcanonical Ensemble, Gibbs paradox, Sackur Tetrode equation.

Unit V: Statistics:

B-E distributions law, Thermodynamics functions of a strongly Degenerated Bose Gas, Bose-Einstein condensation, Black Body Radiation (Photon Gas), Derivation of Planck's Radiation Law.

Fermi-Dirac Distributions Law. Thermodynamics Functions of a strongly Degenerate Fermi-Gas, Fermi Energy, Electron Gas in a Metal Richardson-Dushmanm Equation for Thermionic Emission, Pauli Paramagnetism.

Text and Reference book:

1. Heat Thermodynamics & Statistical Physics, Brij Lal and Subrahmanyan, S. Chand (1st Edn. 2008)

2. Heat and Thermodynamics, A.K. Saxena and C.M. Tiwari, Narosa

3. Heat and Thermodynamics, M.W. Zemansky Mc Graw-Hill (1981)

4. Thermodynamics, Kinetic Theory & Statistical Thermodynamics, Sears & Salinger, Narosa (1998).

5. An Introduction to Thermodynamics and Statistical Mechanics, A.K. Saxena, Narosa (2010)

6. A treatise on Heat, M.N. Saha and B.N. Srivastava.

7. Statistical Mechanics, R.K. Pathria, Butterworth Heinemann, Oxford University Press (2^{nd} Edn. 1996).

8. Statistical Physics, Reif

9. Statistical Physics, F. Mandl, Wiley (2^{nd} Edn. 2003)

DEPARTMENT OF PHYSICS

AWADHESH PRATAP SINGH UNIVERSITY REWA (M.P.)

B.Sc. (Hons.) Physics IV SEM.
404: INTRODUCTION TO COMPUTER AND PC SOFTWARE
(General Elective)

Learning Outcomes:

The aims of this course is to make students aware about computer anatomy and characteristics of peripheral devices with operating systems and use of PC package in Physics/ science and communicate with internet

SYLLABUS

Unit I: Introduction to Computers:

Computer system characteristics and capabilities, types of computers, Introduction to IBM PC, Input Devices, Keyboard, Scanner and Mouse, Output Devices Impact and nonimpact printers, DMP, inkjet, Laser Printers, Storage Devices, Floppy Disks, Hard disk, CD-ROM, Introduction to Windows XP. Control Panel & Accessories.

Unit II: Windows-Operating System:

Operating system and operating environment, Graphic user interface, Documents, Drives, My Computer, Setting: Control Panel & control switches, taskbar & printers, Display properties: Background and screensaver; Recycle bin, Icon & icon creation. Shortcut to programs, basic of folder and files, concept of CUT, COPY, PASTE; Clipboard, Window Explorer, Paint and word pad facility.

Unit III: MS-Word:

Introduction to MS- OFFICE & MS- WORD, Concept of File Toolbar & active window, formatted output: Font & Font size, page setup, alignment, bold, italic & underline, Paint and word pad facility.

Unit IV: MS Excel:

Introduction to MS Excel, concept of file, charts, macros, forms, spreadsheet, cell toolbar and active window, row, column, Expressions and formulas, Data manipulation, filtering of data, use of financials and statistical functions.

Unit V: Power Point:

Elementary idea of Power Point, Presentation in Power Point, Presentation type, output, presentation style, presentation option, On Screen presentation, view Slides, Rehearse Timing, different types of slides and Slides making, setup shows.

Internet: Introduction of Internet, History, Advantages & Disadvantages, Uses, Browsers, Search Engine, Using Internet.

Text and Reference book:

1. Fundamental computer : Nitin K. Naik.
2. V.K. Jain : Fundamental of Computer.
3. Raj Kamal, internet & Web Design, Tata Mc Graw hill
5. PC-Software : R.K. Taxali.

DEPARTMENT OF PHYSICS

AWADHESH PRATAP SINGH UNIVERSITY REWA (M.P.)

B.Sc. (Hons.) Physics V SEM.
501: SOLID STATE PHYSICS (Major Core)

Learning Outcomes:

The syllabus gives an introduction to the basic phenomena in Solid State Physics. This aims to provide a general introduction to theoretical and experimental topics in solid state physics. On successful completion of the module, students should be able to elucidate the main features of crystal lattices and phonons, understand the elementary lattice dynamics and its influence on the properties of materials, describe the main features of the physics of electrons in solids; explain the dielectric, ferroelectric and magnetic properties of solids and understanding the basic concepts in superconductivity.

SYLLABUS

A. Theory

Unit I: Crystal structure of solids:

Amorphous and crystalline materials, Lattice Translation vector, Lattice with a Basis, unit cell, primitive cell, symmetry elements in crystals, simple cubic, BCC and FCC structures NaCl, CsCl and diamond structures, Miller Indices, reciprocal Lattice Wigner Seitz cell and Brillouin Zone, Diffraction of X Rays properties of reciprocal Lattice, Braggs law, Braggs Law in Reciprocal Lattice, Laue condition, Atomic Scattering Factor, Geometrical structure factor.

Unit II: Elementary Lattice Dynamics:

Lattice vibrations and phonons, Linear Monoatomic and Diatomic chains (Acrostic and Optics Branches) Dulong and Petits Law. Einstein and Debye theories of specific heat of solid, T^3 Law.

Unit III: Electrons in Solids:

Electronics in metals, Drude Model, Density of states, Fermi Energy and Fermi level, Elementary Band Theory, Energy Bands in Diamond Bloch Theorem Kronig Penney model, Effective Mass, Hall effect in metals and mobility, concept of Holes, Hall effect in semiconductors.

Unit IV: Magnetic and Didectric Properties:

Dia-, Para-, Ferri- and Ferromagnetic materials, classical Langevin theory of dia- and para- magnetism, Quantum mechanical treatment of Paramagnetism, Curie- and Weiss law, Weiss theory of Ferromagnetism, Ferromagnetic Domains, B-H curve & Hysteresis. Antiferromagnetism.

Polarization, Macroscopic Dielectric constant, Molecular Polarizability Mechanism of polarization, The static Electronic polarizability of Atoms, Ionic and Dipolar Polarizability, Depolarization Field, Molecular Field in a Dielectric, Clausius-Mossotti Equation, permanent polarization and Ferro-electricity, Ferroelectric dominants. Antiferroelectricity, Piezoelectricity, Debye Equations.

Unit V: Superconductivity:

experimental results of K, Onnes, critical Temperature, Isotope Effect. Critical Magnetic Field, Meissner Effect. Specific Heat Density of States and Energy Gap. London equations and Penetration Depth, Coherence Length, Type I and Type II superconductors. The Mixed State in Type II superconductor. Gnzberg-Landau Theory, The Bardeen-Cooper Schrieffer Theory (Qualitative Ideas only) DC- and AC- Josephson Effects, Applications of superconductivity.

Text and Reference book:

1. Introduction to Solid State Physics, Charles Kittel, Wiley India Pvt. Ltd. (8^{th} edition 2004)
2. Introduction to Solids, Leomid V. Azaroff TMH (2004).
3. Solid State Physics, Ashcroft and Mermin, Cengage Learning (1976).
4. Solid State Physics, Ajay Kumar Saxena, Trinity Press (Laxmi Publication) (3^{rd} Edn. 2014)

Practical (Experiments):

1. Measurement of susceptibility of paramagnetic solutions (Quincks Tube Method)
2. To measure the Dielectric constant of a dielectric material with frequency.
3. To determine the Half coefficient of a semiconductor sample.
4. To measure the resistivity of a semiconductor (Ge) with temperature by two probe method and to determine its band gap.
5. To study the PE Hysterisis lop of a Ferroelectric crystal.
6. To draw the BH curve of Fe using Solenoid and determine energy loss from Hysterisis.
7. To determine the refractive index of a dielectric using SPR technique. (Surface Plasmon Resonance).
8. To determine the coupling coefficient of a piezoelectric crystal.
9. Measurement of change in resistance of a semiconductor with magnetic field.

DEPARTMENT OF PHYSICS

AWADHESH PRATAP SINGH UNIVERSITY REWA (M.P.)

B.Sc. (Hons.) Physics V SEM.
502: QUANTUM MECHANIS-I (DSE)

Learning Outcomes:

In continuation with modern physics, this course is an application of Schrodinger equation to various quantum mechanical problems. This gives fair idea of formulation of eigenvalues and enginfunctions, operator formalism, and atoms in electric and magnetic fields.

SYLLABUS

Unit I: Time dependent Schrodinger Equation:

The wave Function and Necessity to associate a wave function with a particle, conditions to be satisfied by a wave function, Normalization, Time dependent Schrodinger Equation, Position Momentum and Energy operators, Eigenvalues and Eigenfunctions, expectation values, probability current density, wave function of a Free Particle.

Unit II: Time Independent Schrodinger Equation & Wave Packets:

Hamiltoman, stationary states and energy Eigenvalues expansion of an arbitrary wave function as a linear combination of energy eigenfunctions. Fourier transform of a wave functions (no derivation required) a localized wave packet, Group velocity of a wave packet, constructions of a wave packet, the Gaussian wave packet.

Solution of Schrodinger Time Independent Equation for some Bound States:

(1) A free particle in a Box

(2) Practical in a Box : Momentum Quantization

(3) Infinite square potential well

(4) A Potential step

(5) Potential Barrier (Tunnelling)

(6) The Harmonic Oscillators Ehrenfest Theorem, Schwartz Inequality and Derivation of Uncertainty Principle

Unit III: Quantum Theory of Hydrogen-like Atoms:

Schrodinger Equation in spherical co-ordinate (no derivation) solution by separation of Variables (Radial and Angular Parts), The ground state of the H-atom. Discussion of Hydrogen-Like Radical Functions, The Four Quantum Numbers, The Radial Motion of the Electron and orbital quantum number.

Unit IV: Operator Formalism:.

What is an operator?, Basic properties of operators, Linear operators, Operator Postulate; simple operators in Quantum Mechanics (Position, Momentum, Angular Momentum and Energy), Commentator, Adjoint operators, Hermitian operator, self adjoint operator, Orthogonality and orthonormality, Dirac Notation, Need for a Dual space. Solution of simple Harmonic Oscillator problems using Raising and Lowering operators.

Unit V: Atoms in Electric and Magnetic Fields:

Stern Gerlach Experimental and Spin Electron angular momentum and spin Angular Momentum, Larmor theorem, spin magnetic moment, normal Zeeman Effect.

Many Electron Atoms**:** Symmetrical and Anti-symmetric wave Functions, spin-orbit coupling spectral Notations for Atomic States, Total Angular Momentum, L-S and J-J coupling spin-orbit coupling in atoms.

Text and Reference Book :

1. Quantum Mechanics, L.I. Schiff, Tata Mc Graw Hill (3rd Edn. 2010)
2. A Text Book of Quantum Mechanics P.M. Mathews and K. Venkatesan, Mc Grew Hill, (2nd Edn 2010).
3. Introduction to Quantum Mechanics, D.J. Girffith, Pearson (2nd Edn.2005)
4. Text Book of Quantum Mechanics, A.K. Saxena, CBS, Delhi.
5. Quantum Mechanics: Concepts and Applications, A.K. Saxena, IK international.

DEPARTMENT OF PHYSICS

AWADHESH PRATAP SINGH UNIVERSITY REWA (M.P.)

B.Sc. (Hons.) Physics V SEM.

503: COMPUTER PROGRAMMING METHODOLOGY (SEC)

Learning Outcomes:

This course will enable the students:

1. Learn to develop simple algorithms and flow charts to solve a problem.
2. Write programs to learn the use of strings and string handling operations.
3. Learn problems which can effectively demonstrate use of Arrays, structures and Union.
4. Write programs using pointers
5. Write programs to use files for data input and output
6. Write Programs to t implement search algorithms.

SYLLABUS

UNIT I:

Introduction to Programming Program Concept, Characteristics of Programming, Stages in Program Development, Conceptual Framework of programming languages, Algorithms, Notations, Design, Flowcharts, Types of Programming Methodologies, Introduction to C++ Programming-, Basic Program Structure In C++, Variables and Assignments, Input and Output, Selection and Repetition Statements.

UNIT II:

Top-Down Design, Predefined Functions, Programmer-defined Function, Local Variable, Function Overloading, Functions with Default Arguments, Call-By- Value and Call- By- Reference Parameters, Recursion. control statements, string and String handling functions.

UNIT III:

Introduction to Arrays, Declaration and Referring Arrays, Arrays in Memory, Initializing Arrays, Arrays in Functions, Multi- Dimensional Arrays.

UNIT IV:

Structure Member Accessing, Pointers to Structures, Structures and Functions, Arrays of Structures, Unions.

UNIT V:

Declaration and Initialization, Reading and Writing Strings, Arrays of Strings, String and Function, Strings and Structure, Standard String Library Functions, Searching Algorithms- Linear Search, Binary Search, Use of files for data input and output, merging and copy files.

Text and References books:

1. Problem solving and Program design in C, J.R. Hanly and E.B. Koffman, Pearson, 2015

2. Programming and problem solving with C++: brief edition, N. Dale and C. Weems. Jones & Bartlett Learning, 2010.

504 : Project or internship

DEPARTMENT OF PHYSICS

AWADHESH PRATAP SINGH UNIVERSITY REWA (M.P.)

B.Sc. (Hons.) Physics VI SEM.

601: ELECTROMAGNETIC THEORY (Major Core)

Learning Outcomes:

This is a core course in B.Sc (Honours) physics curriculum. The course covers Maxwell's equations, propagation of electromagnetic (e.m.) waves in different homogeneous-isotropic as well as anisotropic unbounded and bounded media, production and detection of different type of polarized em waves, general information of wave guides and fibre optics.

SYLLABUS

A. Theory

Unit I: Maxwell Equations:

Review of Maxwell's equations Displacement current, Vector and scalar potentials, Gauge Transformations : Lorentz and Coulomb Gauge, Wave Equations; Plane Waves in Dielectric Media. Poynting Theorem and Poynting Vector, Electromagnetic Energy Density; Physical Concept of Electromagnetic Field, Energy Density; Momentum Density.

Unit II: EM Wave Propagation in Unbounded Media:

Plane EM Wave thought vacuum and isotropic dielectric medium, transverse nature of plane EM Wave, refractive index and dielectric constant, wave impedance, Propagation through conducting media relaxation time, skin depth. Wave propagation thorugh dilute plasma, electrical conductivity of ionized gases, plasma frequency, refractive index, skin depth, application to propagation through ionosphere.

Unit III: EM Waves in Bounded Media:

Boundary conditions at a plane interface between two media. Reflection and Refraction of plane waves at plane inference between two dielectric media-Laws of Reflection and Refraction. Fresnel's formulae for perpendicular &

parallel polarization cases, Brewster's law, Reflection & Transmission coefficients. Total internal reflection, Metallic reflection (normal internal).

Unit IV: Polarization of Electromagnetic Waves:

Description of Linear, Circular and Elliptical Polarization, Propagation of EM waves in Anisotropic media. Fresnel's formula, Uniaxial and Biaxial crystals; Light propagation in uniaxial crystal, Double Refraction, Polarization by Double Refraction. Nicol Prism. Ordinary & extraordinary refractive indices. Production & detection of Plane, Circularly, and Elliptically Polarized Light. Phase Retardation plates (Quarter-Wave and Half-Wave Plates). Babinet compensator and its uses Analysis of Polarized Light.

Rotary Polarization**:** Optical Rotation, Biot's Laws for Rotary Polarization. Fresnel's Theory of optical rotation. Experimental verification of Fresnel's theory, specific rotation Laurent's half- shade Polorimetre.

Unit V: Wave Guides:

Type of Propagation : TM, TE and TEM Modes, Mathematical Analysis of Rectangular wave-guide, propagation of TM waves in Rectangular wave-guide, propagation, properties and cut off frequencies. Field distribution; TE waves, lmpossibility of TEM waves in Hollow Rectangular Wave Guide. Cut off wavelength and wave lmpedance.

Optical Fibres**:** Advantage of Optical Fibre over wire system, Basic structure of an optical fibre and propagation of light waves through it, stepped index and Graded index Fibre, Ray propagation in an optical fibre. Waveguide Equations for an optical fibre.

Text and Reference Book:

1. Introduction to Electrodynamics, D.J. Griffiths, Benjamin Cummings (3^{rd} Edn. 1998).
2. Classical Electrodynamics, J.D. Jackson, Wiley (3^{rd} Edition 2010).
3. Principle of Optics, M. Born and E. Wolf, Pergamon Press, (6^{th} Edition 1980).

4. Electromagnetic Theory and Applications, A.K. Saxena Narosa (2009)
5. Engineering Electro-magnetics, William H. Hayt, Mc Graw Hill (8^{th} Edition 2012)
6. Fundamental of Electromagnetics, M.A. Wajed Miah, Tata Mc Graw Hill (1982)
7. Electromagnetics, J.A. Edminster, Schaum Series, Tata Mc Graw Hill (2006)

Practicals (Experiments):

1. To verify the law of Malus for plane polarized light.
2. To determine the specific rotation of sugar solution using polarimeter.
3. To study the reflection, refraction of microwaves.
4. To determine the refractive index of (1) glass and (2) a liquid by total internal reflection using a Gaussian eyepiece.
5. To study the polarization of light by reflection and determine the polarizing angle for air-glass interface.
6. To verify the Stefan's law of radiation and determine Stefan's constant.
7. To analyze elliptically polarized light by using a Babinet's compensator.
8. To determine the refractive index of liquid by total internal reflection using Wollaston's air-film.
9. To determine Boltzmann constant using V-I characteristics of PN junction diode.
10. To verify Brewster's law and to find the Brewster's angle.

DEPARTMENT OF PHYSICS

AWADHESH PRATAP SINGH UNIVERSITY REWA (M.P.)

B.Sc. (Hons.) Physics VI SEM.
602: QUANTUM MECHANICS-II (DSE)

Learning Outcomes:

This syllabus is in continuation of quantum mechanics-I and is an advanced course in quantum mechanics which presents the students approximation methods, (where problems cannot be solved exactly by directly using the Schrodinger's equation), such as time independent and time dependent perturbation theory, variation method, and WKB method. The syllabus also deals with the theory of scattering, the relativistic theory (where we have to consider the effect of speeds approaching that of light (c)) and the Aharonov Bohm effect, which shows that (for local effects), in presence of em fields, it is the electromagnetic and not the fields that are of importance in quantum mechanics.

SYLLABUS

Unit I:

Approximation method for bound states, Rayleigh-Schrodinger Perturbation theory of non-degenerate and degenerate levels and their application to perturbation of an oscillator normal helium atom and first order Stark effect in hydrogen, W K B Approximation method, connection formulae, ideas on potential barrier with applications to theory of alpha decay.

Unit II:

Time dependant perturbation theory: Methods of variation of constants and transition probability, adiabatic and sudden approximation, wave equation for a system of charged particles under the influence of external electromagnetic field, absorption and induced emission, Einstein's A and B coefficients and transition probability.

Unit III:

Theory of Scattering, Physical concepts, scattering amplitude, scattering cross section. Born Approximation and partial waves, scattering by perfectly rigid sphere, complex potential and absorption, scattering by spherically symmetric potential.

Unit IV:

Schrodinger's relativistic equation (Klein- Gordon equation), Probability and current density, Klein-Gordon equation in presence of electromagnetic field, hydrogen atom, short comings of Klein-Gordon equation, Dirac's relativistic equation for free electron, Dirac's Matrices. Dirac's relativistic equation in electromagnetic field, negative energy states and their interpretation.

Unit V:

Aharonov-Bohm experiment, variational method. Applcation to H-atom and H_2^+ ion, Hydrogen molecule, Partial waves, Determination of phase-shifts, Hard sphere scattering, Low energy scattering,

Text and Reference Books:

1. LI Schiff, Quantum Mechanics
2. S. Gasiorowicz , Quantum Physics
3. B. Craseman and J J Powell, Quantum Mechanies (Addison Wessley)
4. A. Messiah, Quantum Mechanics
5. J.J. Sakurai, Modern Quantum Mechanics
6. Mathews and Venkatesan, Quantum Mechanics
7. A.K. Ghatak and Loknathan, Quantum Mechanics
8. A.K. Saxena Textbook of Quantum Mechanics (CBS)
9. Quantum Mechanics, Concepts and Applications, A.K. Saxena, IK International.

DEPARTMENT OF PHYSICS

AWADHESH PRATAP SINGH UNIVERSITY REWA (M.P.)

B.Sc. (Hons.) Physics VI SEM.

603: LASER PHYSICS (DSE)

Learning Outcomes:

Student shall understand through this course about concepts of laser and their application in development of lasing systems. Also, students shall learn about basic concept of non-linear optics for laser technology.

SYLLABUS

Unit I: Basic principles of laser:

Introduction to laser, spontaneous and stimulated emission, Einstein coefficients. Idea of light amplification. Population inversion, laser pumping schemes for two and three level system with threshold condition for laser oscillation.

Unit II: Properties of Laser Beams and Resonators:

Properties of Laser Temporal coherence, spatial coherence, directionality and monochromatic of laser beam, resonators, vibrational mode of resonators, laser amplification, open resonator.

Unit III: Types of lasers:

Solid state lasers i.e. Ruby Laser, Nd- Yag Laser, Semiconductor laser, Gas laser i.e. Carbon dioxide Laser, He- Ne Laser, Basic idea about liquid laser, Dye laser and chemical laser i.e. HCl and HF lasers.

Unit IV: Application of Lasers:

Holography and its principle, theory of holograms, reconstruction of image, characteristics of Holographs, Application of lasers in chemistry and optics, laser

in Industry i.e. laser welding. Hole drilling, laser cutting, applications of lasers in medicine.

Unit V: Basic idea about non-linear optics:

Harmonic generation, second and third harmonic generation, phase matching, optical mixing, parametric generation of light, self- focusing of light.

Text and References Books:

1. Laser-Swelto
2. Optical electronics- Yarive
3. Laser spectroscopy Demtroder
4. Laser spectroscopy and Instrumentation Demotroder
5. Molecular spectroscopy- King
6. Non linear optics by B.B. Laud

604: Project/ Internship

DEPARTMENT OF PHYSICS

AWADHESH PRATAP SINGH UNIVERSITY REWA (M.P.)

B.Sc. (Hons.) Physics VII SEM.

701: COMMUNICATION SYSTEM (Major Core)

Learning Outcomes:

This paper aims to describe the concepts of electronics in communication. Communication techniques based on Analog Modulation, Analog and digital Pulse Modulation including PAM, PWM, PPM, ASK, PSK, FSK are described in detail. Communication and Navigation systems such as GPS and mobile telephony system are introduced.

SYLLABUS

A. Theory

Unit-I: Electronic communication:

Introduction to communication-means and modes. Need for modulation. Block diagram of an electronic communication system. Brief idea of frequency allocation for radio communication system in India (TRAI). Electromagnetic communication spectrum, band designations and usage, Channels and base-band signals.

Unit-II: Analog Modulation:

Amplitude Modulation, modulation index and frequency spectrum. Generation of AM (Emitter Modulation), Amplitude Demodulation (diode detector), Concept of Single Side Band generation and detection, Frequency Moltulation (FM) and Phase Modulation (PM), modulation index and frequency spectrum, equivalence between FM and PM, Generation of FM using VCO, FM detector (slope detector), Qualitative idea of Super heterodyne receiver.

Unit-III: Analog Pulse Modulation:

Channel capacity, Sampling theorem, Basic Principles-PAM, PWM, PPM, modulation and detection technique for PAM only, Multiplexing.

Digital Pulse Modulation: Need for digital transmission, Pulse Code Modulation, Digital Carrier Modulation Techniques, Sampling, Quantization and Encoding. Concept of Amplitude Shift Keying (ASK), Frequency Shift Keying (FSK), Phase Shift Keying (PSK), and Binary Phase Shift Keying (BPSK).

Unit-IV: Introduction to Communication and Navigation systems: Satellite Communication

Introduction, need, Geosynchronous satellite orbits, geostationary satellite advantages of geostationary satellites. Satellite visibility, transponders (C-Band), path loss, ground station, simplified block diagram of earthstation. Uplink and downlink.

Unit-V: Mobile Telephony System

Basic concept of mobile communication, frequency bands used in mobile communication, concept of cell sectoring and cell splitting. SIM number, IMEI number, need for data encryption, Architecture (block diagram) of mobile communication network, idea of GSM, CDMA, TDMA and FDMA technologies, simplified block diagram of mobile phone handset, 2G, 3G and 4G concepts (qualitative only), GPS navigation system (qualitative idea only).

Text and Reference Books:

1. Electronic Communications, D. Roddy and J. Conlen, Pearson Education India.
2. Advanced Electronics Communication Systems Tomasi, 6th edition, Prentice Hall.
3. Modern Digital and Analog Communication Systems, B.P. Lathi 4th Edition, 2011 Oxford University Press.

4. Electronic Communication systems, G. Kennedy, 3rd Edn, 1999, Tata McCaw Hill.

5. Principles of Electronic communication systems- Frenzel, 3rd edition, McGraw Hill.

6. Communication Systems, S. Haykin, 2006, Wiley India

7. Electronic Communication system, Blake, Cengage, 5th edition

8. Wireless communications, Andrea Goldsmith, 2015, Cambridge University Pres

B. Practicals (Experiments):

1. To design an Amplitude Modulator using Transistor

2. To study envelope detector for demodulation of AM signal

3. To study FM- Generator and Detector circuit

4. To study AM Transmitter and Receiver

5. To study FM Transmitter and Receiver

6. To study Time Division Multiplexing (TDM)

7. To study Pulse Amplitude Modulation (PAM)

8. To study Pulse Width Modulation (PWM)

9. To study Pulse Position Modulation (PPM)

10. To study ASK, PSK and FSK modulators

Text and Reference Books:

1. Electronic Communication systems, G. Kennedy, 1999, Tata McGraw Hill.

2. Electronic Communication Blake, Cengage 5th Edn.

DEPARTMENT OF PHYSICS

AWADHESH PRATAP SINGH UNIVERSITY REWA (M.P.)

B.Sc. (Hons.) Physics VII SEM.

702: RESEARCH METHODOLOGY (Minor Core)

Learning Outcomes:

This paper aims to describe the concept of Research in Physics based on the different Mathematical, Statistical and Theoretical modelling methods including XRD, SEM, NMR etc. Ground based and Satellite observations and Simulation techniques related to general physics problem.

SYLLABUS

Unit I: Concepts in Research:

Definition and Objective, Research Approach & Types of Research, Criteria of Good Research, Defining Research Problems. Research Design: Features of Good Research Design, Research Design with reference to Physics, Basic Principles of Experimental Research Designs. Structure and components of scientific presentations, Research reports/ paper etc.

Unit II:

Nature and Purpose of Mathematical Statistics, Tabulation and Statistical Inference, Tabular and Graphical Representation of Data, Mean, Median, Mode & Variance, Co-relation and Regression, Random Sampling, X^2-Test, Method of Least squares curve, Fitting of Straight Lines & Polynomials, Data analysis using Fourier Techniques and applications.

Unit III:

Theoretical Modelling Methods: Bisection Method, General Idea of Mathematical Modelling and Simulation- Random Walk Problem, Newton Raphson Method, Least Square Fitting of Linear and Exponential Functions, Numerical Differentiations & Integration. Simpson's Rule, Runga Kutta Method.

Unit IV:

General Idea of Preparation of Materials: Solid State Reaction Method and Wet Chemical Method, Electro Deposition Methods (Basics only), Elementary Idea of Vacuum Coating Methods, Basic Principles & Applications of XRD, SEM, and NMR. Methodology of Space Research Ground Based & Satellite Observations, Nuclear Detectors, Methods of Extracting Scientific Information from Space Data.

Unit V:

Simulation techniques related to general physics. Physics of a body that falls freely in viscous medium, physics of two dimensional motions: Projectiles objects thrown horizontally, Physics of motion of a satellite, Physics of oscillatory motion. Ideal simple harmonic oscillator damped oscillator forced oscillations, nuclear Radioactivity: simulation of Radioactivity.

Text and Reference Books:

1. Research Methodology: Methods & Techniques: C.R. Kothari, New Age International Publisher, N. Delhi (2009).
2. How to Write and Publish: R.A. Dayand, B. Gastel, Cambridge University Press.
3. How to Research: L., Blaxter, C. Hughes and M. Tight Viva Books.
4. A Student Guide to Methodology: P. Clough &, C. Mutbrown, Sage Publications.
5. Fundamentals of Computers: V. Rajaraman (PHI)
6. Probability & Statistics For Engineers & Scientists: Shelder Ren Elsevier Academic Press.
7. Principles of Instrumental Analysis: Skoog & Leary.
8. Astronomy: Baker
9. Phydser through C- programming: S. Palaniswamy.

DEPARTMENT OF PHYSICS

AWADHESH PRATAP SINGH UNIVERSITY REWA (M.P.)

B.Sc. (Hons.) Physics VII SEM.
703: NANOMATERIALS (DSE)

Learning Outcomes:

This course introduces the essence of nano materials, their synthesis, and characterization. On successful completion of the module, students should also be able to understand the optical properties and electron transport phenomenon in nanostructures. It also covers few important applications of nano materials used in this technological era.

SYLLABUS

Unit I: Nanoscale Systems:

Density of states (1-D, 2-D, 3-D). Length scales in physics, Nanostructures: ID, 2D and 3D nanostructures (nanodots, thin films, nanowires, nanorods), Band structure and density of states of materials at nanoscale, Size Effects in nano systems, Applications of Schrodinger equation-Infinite potential well, potential step, potential box, quantum confinement of carriers in 3D, 2D, ID nanostructures and its consequences.

Unit II: Synthesis of Nanostructure Materials:

Metals, Metal Oxide, Carbon based nanomaterials CNT, C_{60}. graphene. Top down and Bottom up approach, Photolithography. Ball milling. Gas phase condensation. Vacuum deposition. Physical vapor deposition (PVD): Thermal evaporation, Chemical vapor deposition (CVD).Sol- Gel. Spray pyrolysis. Hydrothermal synthesis. Preparation through colloidal methods, MBE growth of quantum dots.

Characterization:

X- Ray Diffraction. Optical Microscopy. Scanning Electron Microscopy. Transmission Electron Microscopy, Atomic Force Microscopy. Scanning Tunneling Microscopy.

Unit III: Optical Properties:

Concept of dielectric constant for nanostructures and charging of nanostructure. Quasi- particles and excitons. Excitons in direct and indirect band gap semiconductor nanocrystals. Quantitative treatment of quasi- particles and excitons, charging effects. Radiative processes: General formalization-absorption, emission and luminescence. Optical properties of heterostretures and nanostructures.

Unit IV: Electron Transport:

Carrier transport in nanostructures, Coulomb blockade effect, thermionic emission, tunneling and hopping conductivity. Defects and impurities: Deep level and surface defects.

Unit V: Applications:

Applications of nanoparticles, quantum dots, nanowires and thin films for photonic devices (LED, solar cells). Single electron transfer devices (no derivation). CNT based transistors. Nanomaterial Devices: Quantum dots heterostructure lasers, optical switching and optical data storage. Magnetic quantum well; magnetic dots-magnetic data storage. Micro Electromechanical Systems (MEMS), Nano Electromechanical Systems (NEMS).

Text and Reference Books:

1. C.P. Poole, Jr. Frank J. Owens Introduction to Nanotechnology (Wiley, India)
2. S.K. Kulkarni, Nanotechnology, Principles & Practices (Capital Publishing company)
3. K.K. Chattopadhyay and A.N. Banerjie Introduction to Nanoscience and Technology (PHI Learning)
4. Richard Booker, Earl Boysen, Nanotechnology (John Wiley)

704: Project/Internship

DEPARTMENT OF PHYSICS

AWADHESH PRATAP SINGH UNIVERSITY REWA (M.P.)

B.Sc. (Hons.) Physics VIII SEM.

801: NUCLEAR AND PARTICLE PHYSICS (Major Core)

Learning Outcomes:

1. *Understand the basic nuclear properties and phenomena.*
2. *Understand the nuclear transformations.*
3. *Understand the nuclear reactions mechanism.*
4. *Understand about the elementary particles and their quantum number.*
5. *Understand accelerator technology applied to high energy physics*.

A. SYLLABUS

Unit I: Nuclear Interaction and Nuclear reaction:

Nuclear forces, exchange and tensor forces, meson theory of nuclear forces, Low-energy n-p scattering and spin dependence of n-p forces. Direct and compound nuclear reaction mechanism, reciprocity theorem.

Unit II: Accelerators of charged particles:

Study of cyclotron, phase stability, frequency modulated cyclotron (synchorocyclotron) magnetic induction accelerator (Betatron), Electron synchrotron and linear accelerator (Linac),

Unit III: Nuclear models:

Liquid drop model, Bohr-Wheeler's theory of nuclear fission, shell model, spin orbit interaction, magic number, spin and angular momenta of nuclear ground state, nuclear quadrupole moment.

Unit IV: Nuclear decay and elementary particles:

β Decay, general features of β ray spectrum, Fermi theory of β decay, selection rules, parity in β decay, multipole radiation, internal conversion, nuclear isomerism.

Unit V: Elementary particles:

Classification of elementary particles, fundamental interaction, parameters of elementary particles. Symmetry and conservation laws, symmetry schemes of elementary particles SU (3).

B. TUTORIALS:

Text & Reference Books:

1. Introduction to Nuclear physics: H.A. Enge
2. Nuclear radiation detectors: S.S. Kapoor and V.S. Ramamurthy
3. Atomic and Nuclear Physics: S.N. Ghoshal
4. Nuclear and Particle Physics: D.C. Tayal
5. Nuclear Physics: R.C. Sharma
6. Introduction to Nuclear Physics: Krane
7. Nuclear physics Principles & Application: Lilley

DEPARTMENT OF PHYSICS

AWADHESH PRATAP SINGH UNIVERSITY REWA (M.P.)

B.Sc. (Hons.) Physics VIII SEM.

802: ADVANCED EXPERIMENTAL TECHNIQUES (Minor Core)

Learning Outcomes:

1. *Capability of students in experiments as tools for research activities shall be developed.*

2. *Various types of analylitical techniques would be learned by the students like, nuclear techniques, Condensed matter techniques and spectroscopic techniques.*

SYLLABUS

Unit I:

Radiation sources, Radiation interactions, Radiation detectors-gas filled detectors-scintillation detectors-semiconductor detectors

Unit II:

Introduction to production of X-ray & X-ray spectra, Instrumentation, X-ray generation, collimators, filters, detectors, X-ray absorption methods, X-ray fluorescence methods, XF-Spectrometer (XFS), Electron spectroscopy for chemical analysis (ESCA)

Unit III:

Nuclear Magnetic Resonance (NMR) spectroscopy, basic principles, nuclear magnetic energy levels, magnetic resonance, NMR Spectrometer Electron Spin Resonance spectroscopy, ESR spectrometer, ESR spectra, Hyperfine interactions.

Unit IV:

Mass spectroscopy-principle, spectrometer, and its operation, resolution, Mass spectrum, applications Infrared Spectroscopy, correlation of IR spectra with molecular structure, Instrumentation

Unit V:

Mossbauer Spectroscopy-Mossbauer effect, spectrometer, 57 Fe Mossbauer spectroscopy, nuclear hyperfine interactions Neutron diffraction, neutron diffractometer (position sensitive diffractometer)

Text and Reference Books:

1. Instrumentation Methods of analysis: VII Edition, Willard Meritt, Dean, Settle, CBS publishers & distributors.
2. Mossbauer Spectroscopy: Leopold May, Plenum Press, N.Y.
3. Neutron Diffraction: G.C. Becon.
4. X-Ray diffraction: B.D. Culity, Edison Weseley.
5. Radiation Detection & Measurement: Glenn F. Knoll, McGraw Hill

803: Project/Internship

DEPARTMENT OF PHYSICS

COURSE STRUCTURE

for

M.Sc. (PHYSICS)

Four Semesters (Two Years)

Programme

Based on

Choice Based Credit System (CBCS)

(As per ordinance-14)

I & II Semester 2020-21

III & IV Semester 2021-22

AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

Semester Course of M.Sc. Physics Based on CBCS

Vision of the University:

To be the premier institution that offers teaching and learning programmes of the best quality, graduate students who excel and become leaders in the chosen profession contributing to the community, the nation and the world, and prepares individuals of the highest moral fibre. The vision of university is:

To create an ideal society and an intellectual environment that initiates, nourishes and perpetuates values of co-existence and to fulfil and achieve excellence.

The university, under the dynamic leadership of our honorable Vice-chancellor is working on quite a few ambitious plans. The idea is to develop the university as a knowledge city.

About the Department:

The department came into existence in 1982 with its initial name physics. The foundation stone of the building where the department came intoexistence was laid by the. Initially Prof. S.P. Agrawal.

The Department runs M.Sc., M.Phil. and Ph.D. programs in Physics. Currently around one hundred fifty students are studying in the department. The department has made notable research contributions in the areas of space physics and materials science. Researchers of the department have been visiting and interacting with various research institutions of the country. More than 200 research papers and articles have been published by the faculty of the department in National/International journals. The research papers of the faculty members are also cited in reference books and journals of high impact factor. Since the inception of the department, more than 50 students have been awarded Ph. D. degree and over 250 students have obtained M. Phil. degree.

The Department has organized Invited Talks, Workshops, Seminar and tutorials to improve theknowledge of students regarding the latest developments in the field of Space physics and materials science.

Faculty:

1. Prof. A.K. Saxena — Professor and Head
2. Dr. C.M. Tiwari — Full Time Faculty
3. Dr. B.K. Tiwari — Full Time Faculty

Aims:

1. Developing the Physics Skills among the students and preparing them to take up a career in research.
2. Create more interest in the subject and motivate students for self-learning.
3. Strengthening the logical reasoning which is the main ingredient to understand Physical concepts.

Objectives:

1. To develop deep understanding of the fundamental scientific /concepts in Physics and capability of developing ideas based on them.
2. To encourage students for research studies in Physics and related fields.
3. To enable the students in being life-long learner and enable them to independently expand theirphysics expertise when needed.

Programme: **M.Sc. Physics**

Programme Code: **016**

Duration: **4 Semesters (Two Year)**

Number of Seats: **72**

Eligibility:

B.Sc. with Physics as a subject.

Age Limit: No age limit.

Admission Procedure:

The admission is done as per merit of qualifying examinations.

PROGRAMME OUTCOMES (POs)

PO #	PROGRAMME OUTCOME
PO 1	**Critical Thinking**: Take informed actions after identifying the assumptions that frame our thinking and actions, check out the degree to which these assumptions are accurate and valid, and look at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.
PO 2	**Effective Communication**: Speak, read, write and listen clearly in personand through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media and technology.
PO 3	**Social Interaction**: Elicit views of others, mediate disagreements and help reach conclusions in group settings.
PO 4	**Effective Citizenship**: Demonstrate empathetic social concern and equity-centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
PO 5	**Ethics**: Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.
PO 6	**Environment and Sustainability**: Understand the issues of environmental contexts and sustainable development.
PO 7	**Self-directed and Life-long Learning**: Acquire the ability to engage in independent and life-long learning in the broadest context of socio-technological changes.

PROGRAMME SPECIFIC OUT COMES (PSOs) (M.Sc. Physics)

PSO #	PROGRAMME SPECIFIC OUTCOME
PSO 1	To gain a functional knowledge of theoretical concepts and experimental aspects of Physics and their applications in the day-to-day life.
PSO 2	To integrate the gained knowledge with various contemporary and evolving areas in physical sciences like physical, analytical, synthetic, instrumental etc.
PSO 3	To understand, analyze, plan and implement qualitative as well as quantitative analytical synthetic and phenomenon-based problems in physical sciences.
PSO 4	Provide opportunities to excel in academics, research or Industry.

COURSE STRUCTURE FOR M.Sc. PHYSICS AT A GLANCE

Semester-I

Semester-I

Course code & Name of Paper	Course Type	Theory paper	Internal Assessment	Maximum Marks	Credits
C-1;Classical Mechanics	Core	60	40	100	04
C-2;Quantum Mechanics-I	Core	60	40	100	04
C-3;Electronic Devices	Core	60	40	100	04
*GE-1; Mathematical Physics	Generic Elective	60	40	100	04
CV-1;Comprehensive Viva Voce				100	04
PL-1;Practicals-General				100	02
PL-2;Practicals-Electronics				100	02
Semester Total				700	24

Semester-II

Course code & Name of Paper	Course Type	Theory paper	Internal Assessment	Maximum Marks	Credits
C-4; Quantum Mechanics-II	Core	60	40	100	04
C-5;Statistical Mechanics	Core	60	40	100	04
C-6; Electrodynamics & Plasma Physics	Core	60	40	100	04
*GE-2;Atomic & Molecular Physics	Generic Elective	60	40	100	04
CV-2 ; Comprehensive Viva Voce				100	04
PL-3;Practicals-General				100	02
PL-4;Practicals-Electronics				100	02
Semester Total				700	24

Semester-III

Course code & Name of Paper	Course Type	Theory paper	Internal Assessment	Maximum Marks	Credits
C-7; Nuclear & Particle Physics	Core	60	40	100	04
C-8;Condensed Matter Physics	Core	60	40	100	04
^DCE-1; Digital Electronics or ^DCE-2;Energy Physics or ^DCE-3;Space Technology Or ^DCE-4;Remote Sensing & Applications	Discipline Centric Elective	60	40	100	04
*GE-3; Informatics	Generic Elective	60	40	100	04
CV-3; Comprehensive Viva Voce				100	04
PL-5;Practicals-General				100	02
PL-6;Practicals-Electronics				100	02
Semester Total				700	24

Semester-IV

Course code & Name of Paper	Course Type	Theory paper	Internal Assessment	Maximum Marks	Credits
C-9; Laser Physics	Core	60	40	100	04
C-10;Modern Experimental Techniques	Core	60	40	100	04
^DCE-5; Advance Electronics or ^DCE-6;Astrophysics or ^DCE-7;Environmental Physics Or ^DCE-8;Physics of Nanomaterials	Discipline Centric Elective	60	40	100	04
*GE-4; Atmospheric Science	Generic Elective	60	40	100	04
CV-4; Comprehensive Viva Voce				100	04
PL-7;Practicals-General				100	02
PL-8;Practicals-Electronics				100	02
Semester Total				700	24
Total Semester (I+II+III+IV)				2800	

Programme Administration

Evaluation:

1. Each course will be assessed for 100 marks, out of which 60 marks will be for end-semester examination and 40 marks will be for Continuous Evaluation. The duration of end-semester examination for each course shall be of three hours.
2. The question paper of end-semester examination of each course will consist of two sectionsA & B. Section A will consist of short answer type questions each carrying 6 marks and section B of long answer type questions each carrying 10 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.
3. During the semester, a teacher offering the course will do the continuous evaluation of the student at three points of time by conducting three tests of 20 marks each. Of these, two must be written tests and third may be written test/Quiz/Seminar/Assignment. Marks obtained in two best tests out of three will be awarded to the student.
4. Total of Marks obtained in end-semester examination and best two tests under continuous evaluation will decide the grade in the course.

COURSE STRUCTURE

Under CBCS

M.Sc. PHYSICS

SEMESTER-I

Semester-I

Course code & Name of Paper	Course Type	Theory paper	Internal Assessment	Maximum Marks	Credits
C-1;Classical Mechanics	Core	60	40	100	04
C-2;Quantum Mechanics-I	Core	60	40	100	04
C-3;Electronic Devices	Core	60	40	100	04
*GE-1; Mathematical Physics	Generic Elective	60	40	100	04
CV-1;Comprehensive Viva Voce				100	04
PL-1;Practicals-General				100	02
PL-2;Practicals-Electronics				100	02
Semester Total				700	24

Semester-II

Course code & Name of Paper	Course Type	Theory paper	Internal Assessment	Maximum Marks	Credits
C-4; Quantum Mechanics-II	Core	60	40	100	04
C-5;Statistical Mechanics	Core	60	40	100	04
C-6; Electrodynamics & Plasma Physics	Core	60	40	100	04
*GE-2;Atomic & Molecular Physics	Generic Elective	60	40	100	04
CV-2 ; Comprehensive Viva Voce				100	04
PL-3;Practicals-General				100	02
PL-4;Practicals-Electronics				100	02
Semester Total				700	24

Semester-III

Course code & Name of Paper	Course Type	Theory paper	Internal Assessment	Maximum Marks	Credits
C-7; Nuclear & Particle Physics	Core	60	40	100	04
C-8;Condensed Matter Physics	Core	60	40	100	04
^DCE-1; Digital Electronics or ^DCE-2;Energy Physics or ^DCE-3;Space Technology Or ^DCE-4;Remote Sensing & Applications	Discipline Centric Elective	60	40	100	04
*GE-3; Informatics	Generic Elective	60	40	100	04
CV-3; Comprehensive Viva Voce				100	04
PL-5;Practicals-General				100	02
PL-6;Practicals-Electronics				100	02
Semester Total				700	24

Semester-IV

Course code & Name of Paper	Course Type	Theory paper	Internal Assessment	Maximum Marks	Credits
C-9; Laser Physics	Core	60	40	100	04
C-10;Modern Experimental Techniques	Core	60	40	100	04
^DCE-5; Advance Electronics or ^DCE-6;Astrophysics or ^DCE-7;Environmental Physics Or ^DCE-8;Physics of Nanomaterials	Discipline Centric Elective	60	40	100	04
*GE-4; Atmospheric Science	Generic Elective	60	40	100	04
CV-4; Comprehensive Viva Voce				100	04
PL-7;Practicals-General				100	02
PL-8;Practicals-Electronics				100	02
Semester Total				700	24
Total Semester (I+II+III+IV)				2800	

M.Sc.(Physics) Semester-I

Choice Based Credit System

Core Paper C-1 : **CLASSICAL MECHANICS**

Paper - I

Max.Marks. 60

Time Duration - 3 Hours Min. Marks. 21

Course Objectives: The objective of this course is to study the concepts of Normal series, Composition series, Zessenhaus lemma, Solvable groups, Nilpotent groups and fields in detail with a focus on Galois theory which provides a link between group theory and roots of polynomials.

Instruction to Examiners

Paper shall consist of Two sections A & B. Paper Setter is required to set **ONE** short answer type question from each unit having internal choice in section A. Section B will consist of **FIVE** long answer type questions with **ONE** from each unit and student will answer any **THREE** questions. Each short answer questions shall be of 6 marks and long answer type question shall be of 10 marks.

Unit I

Newtonian mechanics of one and many particle system: Conservation laws, Constraints and their classification, Principle of virtual work: D'Almbert's principle in generalized coordinates, Lagrange's equation from D'Almbert's principle. Configuration space, Hamilton's principle deduction from D'Almberts principle, Generalized momenta and Lagrangian formulation of the conservation theorems, Reduction to the equivalent one body problem: Equation of motion and first integrals, differential equation for the orbit.

Unit II

The equations of canonical transformation and generating functions; The Hamilton Jacobi Action and Angel variables. Poisson's brackets; simple algebraic properties of Poisson's brackets. The equation of motion in Poisson's Brackets notation. Poisson theorem; principle of least action. The Kepler problem, Inverse central force field, Rutherford scattering.

Unit III

Theory of small oscillations, Equations of motion, Eigen frequencies and general equation of motion, normal modes and coordinates, Applications to coupled pendulum and linear bistable molecule. Rotating co-ordinate systems. Acceleration in rotating frames. Coriolis force and its terrestrial astronomical applications, Elementary treatment of Eulerian co-ordinates and transformation matrices. Angular momentum inertia tensor. Eular equations of motion for a rigid body. Torque free motion for a rigid body.

Unit IV

Symmetries of space and time. Invariance under galilion transformation, Covariant four dimensional formulation, 4-Vectors and 4-scalers. Relativistic generalization of Newton's laws, 4-

momentum and 4-force, variance under Lorentz transformation relativistic mechanics. Covariant Lagrangian, covariant Hamiltonian, equations.

Unit V

The principle of equivalence, Relativistic theory of gravitation. Einstein's elevator, principle of general covariance, nature of the gravitational field. Energy momentum tensor. Einstein's field equations. The Schwarchild exterior solution of field equations, the experimental tests of the general theory relativity: The advance of the perihelion of Mercury, the deflection of light in a Schawarz child field, the gravitational shift of spectral lines.

Books Recommended:

1.	H.Goldstein (Addison Wesley)	Classical Mechanics
2.	N.C.Rana & P.S.Jog	Classical Mechanics
3.	Landau & Lifshitz (Pergamon Press)	Classical Mechanics
4.	A.Sommarfield (Academic Press)	Classical Mechanics
5.	R.G.Takwale & P.S.Puranik	Introduction to Classical Mechanics

Classical Mechanics

Course outcome:

Co1: This course will enable students to understand the concepts of classical theory with references to Newtonian mechanics.

Co2: Ability achieved to apply canonical transformation and Hamilton Jacobi problems.

Co3: It shall developed the ability to use different classical mechanics concepts related to astronomical and scattering applications.

Co4: In depth knowledge in pseudo forces and coriolis forces etc and their existence due to rotation of earth and related phenomena observed on earth would be understood by students.

M.Sc.(Physics) Semester-I

Choice Based Credit System

Core Paper C-2 :**QUANTUM MECHANICS-I**
Paper -II

Max.Marks. 60
Time Duration - 3 Hours Min. Marks. 21

Course Objectives: The objective of this course is to study the concepts of Normal series, Composition series, Zessenhaus lemma, Solvable groups, Nilpotent groups and fields in detail with a focus on Galois theory which provides a link between group theory and roots of polynomials.

Instruction to Examiners

Paper shall consist of Two sections A & B. Paper Setter is required to set **ONE** short answer type question from each unit having internal choice in section A. Section B will consist of **FIVE** long answer type questions with **ONE** from each unit and student will answer any **THREE** questions. Each short answer questions shall be of 6 marks and long answer type question shall be of 10 marks.

Unit I

Basic Postulates of quantum Mechanics, equation of continuity, Normality, orthogonality and closure properties of eigen functions, expectation values and Ethrentest theorems, solution of Schrodinger equation for one dimensional (a) Potential well (b) Potential step and (c) Potential barrier.

Unit II

Linear vector space, concept of Hibert space, bra and ket notation for state vector, representation of state vectors and dynamical variables by matrices and unitary transformation (Translation and rotation), creation and annihilation operators, matrices for x and p. Heisenberg uncertainty relation through operator (Schwartz Inequality).

Unit III

Solution of Schrodinger equation for (a) linear harmonic oscillator (b) hydrogen - line atom (c) square well potential and their respective application to atomic spectra, molecular spectra and low energy nuclear states (deutorn).

Unit IV

Angular momentum in quantum mechanics, Eigen values and Eigen function of L2 and L in term of spherical harmonics, commutation relation. Time independent perturbation theory. Non-degenerate and degenerate cases.

Unit V

Space time symmetries : Displacement in space, conservation of Linear momentum, Displacement in time : Conservation of energy, Rotation in space : conservation of angular momentum, space inversion parity, Time reversal Invariance, change of wave function under a gauge transformation, wave function in a field free region.

Books Recommended:

1.	L.I.Schiff	Quantum Mechanics
2.	S.Gasiorovvicz	Quantum Physics
3.	B.Craseman and J.D. Powell	Quantum Mechanics
4.	A.P.Messiah	Quantum Mechanics
5.	J.J. Sakurai	Modern Quantum Mechanics
6.	Mathews and Venkatesan	Quantum Mechanics

Quantum Mechanics – I

Course outcome:

CO1: Create ability to develop one and three dimensional harmonic oscillator differential equations by power series method in understanding hydrogen spectrum.

CO2: Ability to derive angular momentum operators and spherical harmonics with polar diagrams.

CO3: Ability to derive the time independent and time dependent perturbation equations and apply to explain different phenomenon.

CO4: Ability to apply approximation methods to understand various phenomenon, estimate ground state energy, etc.

M.Sc.(Physics) Semester-I
Choice Based Credit System

Core Paper C-3 : **ELECTRONIC DEVICES**
Paper -III

Max.Marks. 60
Time Duration - 3 Hours Min. Marks. 21

Course Objectives: The objective of this course is to study the concepts of Normal series, Composition series, Zessenhaus lemma, Solvable groups, Nilpotent groups and fields in detail with a focus on Galois theory which provides a link between group theory and roots of polynomials.

Instruction to Examiners

Paper shall consist of Two sections A & B. Paper Setter is required to set **ONE** short answer type question from each unit having internal choice in section A. Section B will consist of **FIVE** long answer type questions with **ONE** from each unit and student will answer any **THREE** questions. Each short answer questions shall be of 6 marks and long answer type question shall be of 10 marks.

Unit I

Unipolar Transistors : JFET,MOSFET and MESFET; structure derivations of the equations for I-V characteristics under different conditions. Charge Transfer Devices;CCD-structure,performance and applications. Unijunction Transistors & Programmable Unijunction Transistors(PUT)-Operation and IV characteristics. pnpn diodes,Silicon Controlled Rectifier(SCR),DIAC,TRIAC-structure, operation and characteristics.

Unit II

Photonic devices: radiative and non-radiative transitions, optical absorption, bulk and thin film photo conductive device (LDR), diode Photo detectors, Solar cell (open circuit voltage and short circuit current, fill actor), LED (high frequency limit, effect of surface and indirect recombination current, operation of LED), semi-conductors; diode lasers (conditions for population inversion in active region, light confinement factor, optical gain and threshold current for lasing.

Unit III

Microwave Devices,Tunnel Diodes-operation mechanism and I-V characteristics.Transferred Electron Devices: Gunn diodes-Structure ,formation and drift of space charge domains,operation and I-V characteristics. Avalanche transits time devices :READ, IMPATT and TRAPATT diodes-operation and characteristics.

Unit IV

Memory Devices: Read Only Memory (ROM) and Random Access Memory (RAM). Types of ROM: PROM, EPROM, EEPROM and EAPROM, Static and dynamic RAMs (SRAM & DRAM), characteristics of SRAM and DRAM. Hybrid Memories : CMOS and NMOS memories, Nonvolatile RAM, ferro-electric memories, charge coupled devices (CCD), storage devices : Geometry and organization of magnetic (FDD & HDD) and Optical (CD-ROM, CD-R, CD-R/W, DVD) Storage devices.

Unit V

Electro-optics, Magneto-optic and Acousto-optic effects, materials properties related to get these effect, important ferro electric, liquid crystal and polymeric materials for these devices, piezoelectric, electrostrictive and magnetostrictive effects. Important materials for these properties and their applicat6ions in sensors and actuator devices, acoustic delay lines, piezoelectric resonators and filters, high frequency piezoelectric devices-surface, acoustic wave devices.

Books Recommended:

1. SM Sze Wiley (1985) Semiconductors devices-physics technology
2. M.S.Tyagi Introduction to semiconductors devices
3. M Sayer and A Mani Singh Measurement instrumentation and experimental design in physics and engineering
4. Ajoy Ghatak and Thyagrajam Optical Electronics
5. R P Jain Modern Digital Design

Electronic Devices

Course outcome:

CO1: Detailed information regarding various electronic devices and their applications shall enable students develop Electronic circuits for electronic applications.

CO2: Develop ability to understand different photonic and Microwave devices for photonic and microwave applications.

CO3: Shall provide concepts of memory devices and electro- optics devices and their Applications and thus enable students to understand electronic devices and computer system.

M.Sc.(Physics) Semester-I
Choice Based Credit System

Generic Elective Paper GE-1 : **MATHEMATICAL PHYSICS**
Paper IV Max.Marks. 60
Time Duration - 3 Hours Min. Marks. 21

Course Objectives: The objective of this course is to study the concepts of Normal series, Composition series, Zessenhaus lemma, Solvable groups, Nilpotent groups and fields in detail with a focus on Galois theory which provides a link between group theory and roots of polynomials.

Instruction to Examiners
Paper shall consist of Two sections A & B. Paper Setter is required to set **ONE** short answer type question from each unit having internal choice in section A. Section B will consist of **FIVE** long answer type questions with **ONE** from each unit and student will answer any **THREE** questions. Each short answer questions shall be of 6 marks and long answer type question shall be of 10 marks.

Unit I
Differential equations : Recurrence relation, generating functions and orthogonality of Bessel functions of first and second kind, Hermite, Legendre, Associate Legendre and Laguerre Polynomials. Curvilinear co-ordinate system with specific cases of Cartesian, Cylinderical and Spherical coordinate systems.

Unit II
Integral transforms. Fourier integral. Fourier transform and inverse Fourier transforms. Fourier transform of derivatives. Convolution theorem. Elementary Laplace transforms. Laplace transform of derivatives. Application to a damped harmonic oscillator.

Unit III
Green's functions : Non-homogenous boundary value problems, Green's function for one dimensional problems, eigen function expansion of Green's function, Fourier transform method of constructing Green's function, Green's function for electrostatic boundary value problems and quantum-mechanical scattering problem.

Unit IV

Complex variables: Analyticity of complex functions. Cauchy Riemann equations. Cauchy theorem. Cauchy integral formula. Taylors, Maclaurin, Laurent series & mapping. Theorem of residues. Simple cases of contour integration. Jordan's lemma Integrals involving multiple valued unctions (Branch points).

Unit V

Introduction to Tensors: n-dimensional space, coordinate transformations, Indicial and summation conventions, Kronecker delta symbol, tensors of higher rank. Algebric operations on tensors, Quotient law; symmetric and anti-symmetric tensors, line element, metric tensor, covariant, contravariant and mixed, fundamental tensor. Christoffel symbols and their transformation laws, geodesics and its equation, Riemann-Christoffel's tensor its properties, covariant curvature tensor and its properties, contraction of Riemann Chrostoffel tensor, Bianchi identities

Books Recommended:

1.	L.A.Pipes	Mathematics of Engineers and Physicists
2.	Arfken	Mathematical Methods for Physicists
3.	P.K.Chattopadhyay	Mathematical Physics
4.	H.K.Das	Mathematical Physics
5.	Ghatak, Goyal & Guha	Mathematical Physics
6.	M.R.Spiegel (Schaum Series)	Complex variable & Laplace Transform

Mathematical Physics

Course outcome:

CO1: Shall provide detailed information about various mathematical functions and thus shall develop ability to understand various basic concepts of Physics.

CO2: Ability developed to solve integral and inverse Fourier and Laplace transforms.

CO3: Develop ability to analysis complex functions and multivalued functions.

CO4: Shall provide concepts of Tensorial quantities.

M.Sc.(Physics) Semester-II
Choice Based Credit System

Core Paper C-4 : **QUANTUM MECHANICS-II**
Paper V

Max.Marks. 60
Time Duration - 3 Hours Min. Marks. 21

Course Objectives: The objective of this course is to study the concepts of Normal series, Composition series, Zessenhaus lemma, Solvable groups, Nilpotent groups and fields in detail with a focus on Galois theory which provides a link between group theory and roots of polynomials.

Instruction to Examiners
Paper shall consist of Two sections A & B. Paper Setter is required to set **ONE** short answer type question from each unit having internal choice in section A. Section B will consist of **FIVE** long answer type questions with **ONE** from each unit and student will answer any **THREE** questions. Each short answer questions shall be of 6 marks and long answer type question shall be of 10 marks.

Unit I
Approximation method for bound states : Rayleigh-Schrodinger Perturbation theory of non-degenerate and degenerate levels and their application to perturbation of an oscillator, normal helium atom and first order stark effect in hydrogen. Variation method and its application to ground state helium, W K B Approximation method, connection formulae ideas on potential barrier with applications to theory of alpha decay.

Unit II
Time dependant perturbation theory : Methods of variation of constants and transition probability, adiabatic and sudden approximation, wave equation for a system of charged particles under the influence of external electromagnetic field, absorption and induced emission, Einstein's A and B coefficients and transition probability.

Unit III
Theory of Scattering, Physical concepts, scattering amplitude, scattering cross section. Born Approximation and partial waves, scattering by perfectly rigid sphere, complex potential and absorption, scattering by spherically symmetric potential, identical particles with spin, Pauli's spin matrices.

Unit IV
Schrodinger's relativistic equation (Klein-Gordon equation), Probability and current density, Klein-Gordon equation in presence of electromagnetic field, hydrogen atom, short comings of Klein-Gordon equation, Dirac's relativistic equation for free electron, Dirac's Matrices. Dirac's relativistic equation in electromagnetic field, negative energy states and their interpretation hydrogen atom, hyperfine splitting.

Unit V

Theory of Aharonov-Bohm experiment, variational methods; Variational principle, Helium atom, Hydrogen molecule, Ion Scattering theory : Partial waves, Determination of phase - shifts, Hard sphere scattering, Low energy scattering, Resonances.

Books Recommended:

1. LI Schiff — Quantum Mechanics
2. S. Gasiorowicz — Quantum Physics
3. B.Craseman and J J Powell — Quantum Mechanics (Addison Wessley)
4. A.Messiah — Quantum Mechanics
5. J.J. Sakurai — Modern Quantum Mechanics
6. Mathews and Venkatesan — Quantum Mechanics
7. A.K. Ghatak and Loknathan — Quantum Mechanics

Quantum Mechanics – II

Course outcome:

CO1: Ability to apply Born approximation to different scattering problems, i.e., square well potential and Yukawa Potentials, etc.

CO2: Ability to use variational techniques to solve quantum mechanical problems.

CO3: Ability to understand scattering by Born approximation, Partial Wave analysis and solve problems.

M.Sc.(Physics) Semester-II
Choice Based Credit System

Core Paper C-5 : **STATISTICAL MECHANICS**
Paper VI

Max.Marks. 60
Time Duration - 3 Hours Min. Marks. 21

Course Objectives: The objective of this course is to study the concepts of Normal series, Composition series, Zessenhaus lemma, Solvable groups, Nilpotent groups and fields in detail with a focus on Galois theory which provides a link between group theory and roots of polynomials.

Instruction to Examiners

Paper shall consist of Two sections A & B. Paper Setter is required to set **ONE** short answer type question from each unit having internal choice in section A. Section B will consist of **FIVE** long answer type questions with **ONE** from each unit and student will answer any **THREE** questions. Each short answer questions shall be of 6 marks and long answer type question shall be of 10 marks.

Unit I

Foundation of statistical mechanics, specification of states of a system contact between statistics and thermodynamics, classical ideal gas entropy of mixing and Gibb's paradox. Microcanonical ensemble, phase space, trajectories and density of states, Liouville theorem, canonical and grand canonical ensembles, partition function, calculation of statistical quantities, energy and density fluctuations.

Unit II

Statistics of ensembles, statistics of indistinguishable particles, density matrix Maxwell - Boltzmann, Fermi Dirac and Bose - Einstein statistics, properties of ideal Bose gases, Bose - Einstein condensation, properties of ideal Fermi gas, electron gas in metals, Boltzman transport equation.

Unit III

Cluster expansion for a classical gas, virial equation of state, mean field theory of lsing model in 3,2 and 1 dimension. Exact solution in one-dimension.

Unit IV

Thermodynamics fluctuation spatial correlation Brownian motion, Langevin theory, fluctuation dissipation theorem, the Fokker-Planck equation, Onsager reciprocity relations.

Unit V

Phase transition: phase transition of first and second kind, critical exponent, Yang and Lee theory, Production of low temperature, Approach to absolute zero by adiabatic demagnetization, measurement of low temperature Landau's theory Critical exponents.Order parameter fluctuation in Gaussian approximation.Scale invariance.

Books Recommended
:

1.	F.Reif	Statistical and thermal Physics
2.	K Huang	Statistical Mechanics
3.	R.K.Pathria	Statistical Mechanics
4.	R Kubo	Statistical Mechanics
5.	Tandan	Statistical Physics

Statistical Mechanics

Course outcome:

CO1: Understanding the concepts of various ensembles in classical and quantum statistics and applicability

CO2: Understanding the concepts of various ensembles in classical and quantum statistics and applicability.

C03: Supper fluid nature of liquid helium and understanding of various phenomena.

M.Sc.(Physics) Semester-II
Choice Based Credit System

Core Paper C-6 : **ELECTRODYNAMICS & PLASMA PHYSICS**

Paper-VII

Max.Marks. 60

Time Duration - 3 Hours Min. Marks. 21

Course Objectives: The objective of this course is to study the concepts of Normal series, Composition series, Zessenhaus lemma, Solvable groups, Nilpotent groups and fields in detail with a focus on Galois theory which provides a link between group theory and roots of polynomials.

Instruction to Examiners

Paper shall consist of Two sections A & B. Paper Setter is required to set **ONE** short answer type question from each unit having internal choice in section A. Section B will consist of **FIVE** long answer type questions with **ONE** from each unit and student will answer any **THREE** questions. Each short answer questions shall be of 6 marks and long answer type question shall be of 10 marks.

Unit I

Field & potential due to quadrupole, Poisson and Laplace equations, field between two coaxial cylinders, multipole expansion of a charge distribution, uniqueness theorem, method of images, point source in front of infinite conducting plane, point source within two intersecting planes, Inversion in a sphere (grounded sphere, sphere not grounded), Laplace in spherical coordinates, Dielectric polarization, Gauss law in presence of dielectric, Clausius Mossotti equation.

Unit II

Biot-Savart's law, Ampere's circuital law and application to simple problems (circular loop and straight parallel conductors) magnetic vector potential, field from a circular loop using vector potential, concept of guage and gauge transformations, the magnetic dipole, Faradaya law of electromagnetic induction, Maxwell displacement current, Maxwells equations (integral and differential forms). Power/energy flow, plane waves, Helmholtz equation, Poynting vector, wave propagation in free space dielectric and conducting media.

Unit III

Plane waves in a non-conducting medium, linear and circular polarization, reflection and refraction of e.m.waves at the interface of a non-conducting media. Total internal reflection, waves in conducting medium electric dipole field and radiation, magnetic dipole field. retarded potential, Lenard Wiechert potential and field for a moving point charge, Larmor's radiation formula.

Unit IV

Elementary concept of occurrence of plasma. Gaseous and solid state plasma. Production of gaseous and solid state plasma. Plasma parameters. Plasma confinement pinch effect instability in

a pinched-plasma column. Electrical neutrality in a plasma. Debye screening distance. Plasma oscillations: Transverse oscillations and longitudinal oscillations.

Unit V

Domain of Magnetohydrodynamics and plasma Physics : Magneto-nydrodynamic equations, magnetic hydro-static pressure hydrodynamic waves : Magneto-sonic and Alfven waves, particle orbits and drift motion in a plasmas, Experimental study of Plasma, the theory of single and double probes.

Books Recommended:

1. Bitteneerort — Plasma Physics
2. Chen — Plasma Physics
3. Gupta, Kumar, Singh — Electrodynamics
4. Sen — Plasma State and matter
5. Jackson — Classical electrodynamics
6. Pamolsky & Philips — Classical electricity and Magnetism

Electrodynamics and Plasma Physics

Course outcome:

CO1: Electrodynamics and plasma physics belong to basic research disciplines that have many different areas of applications; students will be well acquainted with fundamental and applied aspects

CO2: A student shall be equipped with strong foundations of electrodynamics and plasma physics which will help to understand theories of communication electronics, dielectrics, radio wave propagation and various properties of plasma.

M.Sc.(Physics) Semester-II
Choice Based Credit System

Generic Elective: Paper GE-2 : **ATOMIC & MOLECULAR PHYSICS-I**
Paper-VIII

Max.Marks. 60
Time Duration - 3 Hours Min. Marks. 21

Course Objectives: The objective of this course is to study the concepts of Normal series, Composition series, Zessenhaus lemma, Solvable groups, Nilpotent groups and fields in detail with a focus on Galois theory which provides a link between group theory and roots of polynomials.

Paper shall consist of Two sections A & B. Paper Setter is required to set **ONE** short answer type question from each unit having internal choice in section A. Section B will consist of **FIVE** long answer type questions with **ONE** from each unit and student will answer any **THREE** questions. Each short answer questions shall be of 6 marks and long answer type question shall be of 10 marks.

Unit I

Quantum states of one electron atom. Atomic orbital. Hydrogen spectrum, Paulis principle, Spectra of alkali elements, Spin orbit interaction and line structure of alkali Spectra. Methods of molecular quantum mechanics, Thomas Fermi statistical model, Hartree and Hartree fock method, Two electron system. Interaction energy in L-S and J-J coupling, hyperfine structure (qualitative), line broadening mechanisms (general ideas).

Unit II

Types of molecules. Diatomic linear. Symmetric top, asymmetric top and spherical top molecules. Rotational spectra of diatomic molecules as a rigid rotator, Energy level and Spectra of non-rigid rotator, intensity of rotational lines.

Unit III

Vibrational energy of diatomic molecule, diatomic molecule as a simple harmonic oscillator, Energy levels and spectrum, Morse potential energy curve, Molecules as vibrating rotator, Vibration spectrum of diatomic molecule PQR branches, IR spectrometer (qualitative).

Unit IV

Introduction to ultraviolet, visible and infra-red spectroscopy, Raman spectroscopy; Introduction, pure rotational and vibrational spectra, Techniques and instrumentation, Photo electron spectroscopy, elementary idea about photoacoustic spectroscopy and Mossbauer spectroscopy (principle).

Unit V

Group Theory - concept of group, symmetry groups of square, multiplication table of C_{4v} representation theory of finite groups. Properties of representation of a group, reducibility of a

representation, Theorem on representation. Irreducible representation. Schur's Lemma 1 & 2 and orthogonality theorem, characters of a representation, orthogonality of characters, the character table of C_{2V}, C_{3V}, & C_{4V} Point groups, Application of group theory to molecular vibration.

Books Recommended:

1.	H.E. White	Introduction to atomic spectra
2.	C.B. Banwell	Fundamental of molecular spectroscopy
3.	Walker and Strnghem	Spectroscopy Vol. I, II and III
4.	G.M. Barrow	Introduction to molecular spectroscopy
5.	Herzberg	Spectra of diatomic molecules
6.	Jeanne L and McHale	Molecular Spectroscopy
7.	J.M.Brown	Molecular Spectroscopy
8.	P.F. Bemath	Spectra of atoms and molecules
9.	J.M.Halian	Modern Spectroscopy

Atomic and Molecular Physics

Course outcome:

CO1: To understand the basic mechanism taking place inside the atom and molecule.

CO2: To understand the spectrum of Hydrogen like atoms, molecular structure and Spectroscopy.

CO3: To distribute electrons in elements and to analyze/interpret rotational and vibrational spectra.

CO4: Shall provide concepts of spectroscopy and their applications.

M.Sc.(Physics) Semester-III
Choice Based Credit System

Core Paper C-7 : **NUCLEAR AND PARTICLE PHYSICS**

Paper-IX Max.Marks. 60

Time Duration - 3 Hours Min. Marks. 21

Course Objectives: The objective of this course is to study the concepts of Normal series, Composition series, Zessenhaus lemma, Solvable groups, Nilpotent groups and fields in detail with a focus on Galois theory which provides a link between group theory and roots of polynomials.

Instruction to Examiners

Paper shall consist of Two sections A & B. Paper Setter is required to set **ONE** short answer type question from each unit having internal choice in section A. Section B will consist of **FIVE** long answer type questions with **ONE** from each unit and student will answer any **THREE** questions. Each short answer questions shall be of 6 marks and long answer type question shall be of 10 marks.

Unit I

Nuclear Interaction and Nuclear reaction:

Nuclear forces, exchange and tensor forces, meson theory of nuclear forces, Low-energy n-p scattering and spin dependence of n-p forces. Direct and compound nuclear reaction mechanism, reciprocity theorem.

Unit II

Accelerators of charged particles:

Study of cyclotron, phase stability, frequency modulated cyclotron (synchorocyclotron) magnetic induction accelerator (Betatron), Electron synchrotron and linear accelerator (Linac).

Unit III

Nuclear models:

Liquid drop model, Bohr-wheeler's theory of nuclear fission, shell model, spin orbit interaction, magic number, spin and angular momenta of nuclear ground state, nuclear quadrupole moment.

Unit IV

Nuclear decay and elementary particles:

β Decay, general features of β ray spectrum, Fermi theory of β decay, selection rules, parity in β decay, multipole radiation, internal conversion, nuclear isomerism.

Unit V

Elementary particles:

Classification of elementary particles, fundamental interaction, parameters of elementary particles. Symmetry and conservation laws, symmetry schemes of elementary particles SU(3).

Books Recommended:

1. Introduction to Nuclear physics : H.A. Enge
2. Nuclear radiation detectors : S.S.Kapoor and V.S.Ramamurthy
3. Atomic and Nuclear Physics : S.N.Ghoshal
4. Nuclear and Particle Physics : D.C. Tayal
5. Nuclear Physics : R.C. Sharma
6. Introduction to Nuclear Physics : Krane
7. Nuclear physics Principles & Application : Lilley

Nuclear and Particle Physics

Course outcome:

CO1: Understand the basic nuclear properties and phenomena.

CO2: Understand the nuclear transformations.

CO3: Understand the nuclear reactions mechanism.

CO4: Understand about the elementary particles and their quantum number.

CO5: Understand accelerator technology applied to high energy physics.

M.Sc.(Physics) Semester-III Paper-IX
Choice Based Credit System

Core Paper C-8 : **CONDENSED MATTER PHYSICS**
Paper-X Max.Marks. 60
Time Duration - 3 Hours Min. Marks. 21

Course Objectives: The objective of this course is to study the concepts of Normal series, Composition series, Zessenhaus lemma, Solvable groups, Nilpotent groups and fields in detail with a focus on Galois theory which provides a link between group theory and roots of polynomials.

Instruction to Examiners

Paper shall consist of Two sections A & B. Paper Setter is required to set **ONE** short answer type question from each unit having internal choice in section A. Section B will consist of **FIVE** long answer type questions with **ONE** from each unit and student will answer any **THREE** questions. Each short answer questions shall be of 6 marks and long answer type question shall be of 10 marks.

Unit I

Crystal Structure : Bravais lattice in two and three dimension. Simple crystal structures: Hexagonal close packed structure, Diamond structure, zinc blende structure, chloride structure, cesium chloride structure.

Unit II

Crystal diffraction by X-Ray:
Reciprocal lattice, Reciprocal lattice of bcc and fcc lattice. Relation between crystal lattice axes and crystal reciprocal lattice axes. Bragg diffraction. Condition in term of reciprocal lattice vector. Brillouin zones.

Unit III

Elastic properties of solids:
Stress and strain components, elastic compliance and stiffness constants, elastic energy density, reduction of number of elastic constants, elastic stiffness constants for isotropic body, elastic constant for cubic isotropic bodies, elastic waves, waves in (100) direction, experimental determination of elastic constants.

Unit IV

Lattice vibration and phonons:
Lattice dynamic of a diatomic linear lattice. Lattice vibrational spectrum. The concept of phonons momentum of phonons. Inelastic scattering of photons by phonons. Inelastic scattering of neutrons by phonons. Inelastic scattering of X-Ray.

Unit V

Thermal properties and band theory of solids:

Anharmonicity, thermal expansion, thermal conductivity, equation of state of solids, gruneisen constant. Band theory, classification of solids, concepts of effective mass. Fermi surfaces, anomalous skin effect, De Hass van alphen, cyclotron resonance, magneto resistance.

Books Recommended:

1. Verma and Srivastava : Crystallography for solid State physics.
2. Azaroff: Elementary to Solids.
3. Omar: Introduction Solid State Physics
4. Kittle : Solids State Physics
5. Huang : Theoretical Solids State Physics
6. Weertman and weertman : Elementary Dislocation Theory
7. Buerger : Crystal Structure Physics.
8. Maudelung : Introduction to solid State Physics.

CONDENSED MATTER PHYSICS

Course outcome:

CO1: Knowledge and understanding of solid state materials for their basic properties and possible technological applications.

CO2: Shall enhance the knowledge of students regarding thermal properties and elastic properties.

CO3: The use of fundamental properties and other well developed mechanisms / theories of solid state materials for their better applications in various technological fields.

M.Sc.(Physics) Semester-III
Choice Based Credit System

Discipline Centric
Elective Paper DCE-1 :**DIGITAL ELECTRONICS**
Paper-XI(I) Max.Marks. 60
Time Duration - 3 Hours Min. Marks. 21

Course Objectives: The objective of this course is to study the concepts of Normal series, Composition series, Zessenhaus lemma, Solvable groups, Nilpotent groups and fields in detail with a focus on Galois theory which provides a link between group theory and roots of polynomials.

Instruction to Examiners

Paper shall consist of Two sections A & B. Paper Setter is required to set **ONE** short answer type question from each unit having internal choice in section A. Section B will consist of **FIVE** long answer type questions with **ONE** from each unit and student will answer any **THREE** questions. Each short answer questions shall be of 6 marks and long answer type question shall be of 10 marks.

Unit I

Codes : BCD, Gray, ASCII, EBCDIC, Demorgans theorem, Gates:OR, AND, NOT, NOR, OR, NAND, XOR, XNOR, Boolean algebra, Karnaugh map.

Unit II

Logic Family of gates, TTL circuits - TTL AND, OR, NOT, NAND AND NOR gates Totempole, open collector and Tristate Configuration Adder and Subtractor circuit Design. Multiplexers and Demultiplexers Encodes and decoders.

Unit III

Flip-Flops : R-S,D, J-k, J-k Master slave flip flop, race around condition registers, shift registers (left and right shift)

Unit IV

Counters-asynchronous (ripple) counter, synchronous (parallel) counter, MOD-5 counter and MOD-10 counter, BCE counter, Up-Down counter, Shift Register counter (Ring counter)

Unit V

Digital to analog conversion (Binary weighted register method, R-2R ladder network method, single slope, equal slope, successive approximation ADC)

Books Recommended:

1. A.P.Malvino and Donald P.Leach. Digital principles and applications Tata Mcgraw- Hill company, New Delhi, 1993
2. Ramesh S.Gaonkar Microprocessor Architecutre, Programming and Applications with 8085/8086 by, Wiley-Eastern Ltd. 1987.
3. Digital Electronics-S.N.Ali
4. Digital Electronics-Morris Mano
5. Microprocessor and Microcomputers-B.Ram-Dhanpat Rai publication V edition.

Digital electronic

Course Outcome:

CO1. This course shall will the capability the students to words the Hardware design and Software application of computer system.

CO2. Shall give the concepts of logic gates and various combinational logic circuits.

CO3. Ability to understand various sequential logic circuits including register and counter circuits among students.

CO4. It will give an idea of interfacing circuits of basic micro processing circuits.

M.Sc.(Physics) Semester-III
Choice Based Credit System

Discipline Centric
Elective Paper DCE-2 : **Energy Physics**
Paper-XI(II) Max.Marks. 60
Time Duration - 3 Hours Min. Marks. 21

Course Objectives: The objective of this course is to study the concepts of Normal series, Composition series, Zessenhaus lemma, Solvable groups, Nilpotent groups and fields in detail with a focus on Galois theory which provides a link between group theory and roots of polynomials.

Instruction to Examiners
Paper shall consist of Two sections A & B. Paper Setter is required to set **ONE** short answer type question from each unit having internal choice in section A. Section B will consist of **FIVE** long answer type questions with **ONE** from each unit and student will answer any **THREE** questions. Each short answer questions shall be of 6 marks and long answer type question shall be of 10 marks.

Unit I

Fossil fuels and Alternate Sources of Energy: Fossil fuels and nuclear energy, their limitation, need of renewable energy, non-conventional energy sources. An over view of developments in offshore wind energy, Tidal energy, Wave energy systems, Ocean Thermal energy conservation, Solar energy, biomass, biochemical conservation, biogas generation, geothermal energy, tidal energy, hydroelectricity.

Unit II

Biomass energy- classification-photosynthesis-biomass conversion process-gobar gas plants-wood gasification-ethanol from wood- advantages and disadvantages of biomass as energy source. **Geothermal energy**, Geothermal sources, Geothermal techniques, wind energy fundamental of wind energy, wind turbines and different electrical machines in wind turbines, Power electric interfaces and grid connection topologies. Ocean thermal energy conversion (OTEC)-energy from waves and tides (basic ideas, nature, applications, merits and demerits of these)., wave energy devices

Unit III

Solar energy: Solar energy ,its importance, storage of Solar energy, solar pond, non convective solar pond, application of solar pond and Solar energy, solar water heater, flat plate collector, solar distillation, solar cooker, solar green houses, solar cell, working principle and characterization, absorption air conditioning. Need and characteristics of photovoltaic (PV) systems,PV models and equivalent circuits, and sun tracking system.Carbon captured technologies, cell battries, power as consumption, environmental issues and Renewable sources of enegy, sustainability.

Unit IV

Hydro energy: Hydropower resources, Hydropower technologies, environmental impact of Hydropower sources.

Piezoelectric Energy harvesting: Introduction, Physics and characteristics of Piezoelectric effect, materials and mathematical description of Piezoelectricity, Piezoelectric parameter and modeling Piezoelectric generators, Piezoelectric energy harvesting applications, Human Power.

Unit V

Energy Storage and Impact of non-conventional energy: Conversion of energy-pattern of energy consumption in domestic ,industrial, transpotation, agricultural sectors- conservation principles in these sectors-energy crisis and possible solutions-energy options for the developing countries-energy storage and hydrogen as a fuel(basics)-impact due to non -conventional energy sources-global warming.

Books Recommended:

1. Solar energy G.D. Rai ,Ed. V. 1995.
2. Solar energy S.P.Sukhatme, Tata McGraw- Hill publishing company ,Ed.II,1997.
3. Non conventional Energy sources, G.D.rai,4th edition ,1997
4. Energy Technology S. Rao and Dr.B.B.Parulekar 2nd edition,1997
5. Power plant technology A.K.Wahil,1993
6. Renewable energy : Power for a sustainable future Godfery Boyle ,Alden Oess Ltd.,Oxford ,1996
7. Energy Model for 2000 and beyond Jyoti Parikh, , Tata McGraw- Hill publishing company , New Delhi,1997

Energy Physics

Course Outcome:

Co1: Provide knowledge of alternate sources of energy among students and enable their capability in building energy systems using such sources.

Co2: Shall give concepts of biomass and geothermal energy source.

Co3: This course shall make aware the students about solar energy and its application in developments of photo voltaic system.

Co4: Give knowledge about hydro energy and harvesting.

M.Sc.(Physics) Semester-III

Choice Based Credit System

Discipline Centric
Elective Paper DCE-3 : **Space Technology**
Paper-XI(III) Max.Marks. 60
Time Duration - 3 Hours Min. Marks. 21

Course Objectives: The objective of this course is to study the concepts of Normal series, Composition series, Zessenhaus lemma, Solvable groups, Nilpotent groups and fields in detail witha focus on Galois theory which provides a link between group theory and roots of polynomials.

Instruction to Examiners
Paper shall consist of Two sections A & B. Paper Setter is required to set **ONE** short answer type question from each unit having internal choice in section A. Section B will consist of **FIVE** long answer type questions with **ONE** from each unit and student will answer any **THREE** questions. Each short answer questions shall be of 6 marks and long answer type question shall be of 10 marks.

Unit 1

Basic Concepts of Earth's Atmosphere Atmospheric nomenclature, Hydrostatic equation scale height, Geopotential height, Exosphere and gaseous escape, Chemical concepts of atmosphere, Thermodynamic considerations, elementary chemical kinetics composition and chemistry of middle atmosphere and thermosphere. Thermal balance in the atmosphere, models of neutral atmosphere (CIRA, US Standard atmosphere)

Unit 2

Solar Radiation and its Effects on the Atmosphere Solar radiation at the top of the atmosphere, Attenuation of solar radiation in the atmosphere, radiative transfer, thermal effect of radiation, photochemical effects of radiation, Airglow Structure and Variability of Earth's Ionosphere Introduction to ionosphere, photochemical processes, Chapman's theory of photo ionization, production of ionospheric layers, loss mechanisms and chemistry of ionospheric regions, morphology of the ionosphere

Unit 3

Ionosphere Propagation and Measurement Techniques Effect of Ionosphere on radiowave propagation, Refraction, Dispersion and polarization, Magnetoionic theory, critical frequency and virtual height, Oblique propagation and maximum usable frequency, Ground based techniques: ionosondes, radars, scintillation and TEC, ionospheric absorption, rocket and satellite borne techniques: Langmuir probe, electric field probe mass spectrometer

Unit 4

Elements of Solar Physics Structure and composition of the Sun, sun as a source of radiation, sunspots an solar cycles, solar flares, coronal mass ejection Magnetosphere of Earth Solar wind and its characteristics, Interplanetary magnetic field and sector structure, Formation of geomagnetic cavity, magnetopause, magnetosheath and bow shock, polar cusp and magnetotail, Plasmasphere and Van Allen radiation belts

Unit 5

Concepts and Foundations of Remote Sensing Energy sources and Radiation principles, Energy interactions in the atmosphere, energy interactions with earth surface features, Data acquisition and Interpretations, Reference data, The Global Positioning System An ideal remote sensing system, Characteristics of real remote sensing system, Practical applications of remote sensing, Land and Geographic Information System

Books Recommended:

1. Physics of the Space Environment T.I. Gombosi, (CUP)

2. The Solar-Terrestrial Environment: JK. Hargreaves (CUP)

3. Remote Sensing and Image Interpretation: T.M. Lillesand and R.L. Kiefer, (John Wiley & Sons, 4th Edition)

Space Technology

Course Outcome:

CO1: Students will understand the basic laws of Physics governing the satellites in its orbits with their Applications.

CO2: How the power is generated in space? Powers storage devices and deep space requirements will be very interesting for them. Students will also learn about the ground and space based observation techniques.

CO3: Students will understand about the space technology and its application in Earths and space environments.

M.Sc.(Physics) Semester-III
Choice Based Credit System

Discipline Centric

Elective Paper DCE-4 : **Remote Sensing & Applications**

Paper-XI(IV) Max.Marks. 60

Time Duration - 3 Hours Min. Marks. 21

Course Objectives: The objective of this course is to study the concepts of Normal series, Composition series, Zessenhaus lemma, Solvable groups, Nilpotent groups and fields in detail with a focus on Galois theory which provides a link between group theory and roots of polynomials.

Instruction to Examiners

Paper shall consist of Two sections A & B. Paper Setter is required to set **ONE** short answer type question from each unit having internal choice in section A. Section B will consist of **FIVE** long answer type questions with **ONE** from each unit and student will answer any **THREE** questions. Each short answer questions shall be of 6 marks and long answer type question shall be of 10 marks.

Unit 1

Elements of Photographic Systems Early history of Aerial photography, Basic negative to positive photographic sequence, Film exposure, Film density and characteristic curves, structure & Spectral sensitivity of black and white, color and color infrared films, film resolution, Aerial cameras, filters, electronic imaging, multiband imaging

Unit 2

Principles of Photogrammetry Basic geometric characteristics of aerial photograph Photographic scale, Area measurement, Relief displacement of vertical features, image parallax, measurement of object height and ground coordinate, Mapping with aerial photographs

Unit 3

Visual Image Interpretation Fundamentals of visual image interpretation, Basic visual image interpretation equipment, Land use/land cover mapping, Geologic and soil mapping, Forestry mapping, water resources and wetland mapping

Unit 4

Multispectral and Thermal Scanning Across tack and along track scanning, Operating principles of multi spectral scanners, Across track thermal scanning, thermal radiation principles, interpreting thermal scanner imagery, Radiometric calibration of thermal scanners. Temperature mapping with thermal scanner data

Unit 5

Digital Image Processing Introduction, Image rectification and restoration, Image enhancement, contrast manipulation, spatial feature manipulation, image classification, different classification schemes, Classification accuracy assessment, Image transmission and compression Earth Resources Satellites Early history of space imaging Landsat 1-4 system, Landsat image interpretation, SPOT satellite program, IRS system, data and applications

Books Recommended:

1. Remote sensing and image interpretation. T.M. Lillesand and R.W. Kiefer (4th ed.) John Wiley and Sons, 2002

2. Fundamentals of Remote Sensing – George Joseph Univ. Press

Remote sensing and Applications

Course Outcome:

CO1: Students will have thorough idea about the various types of camera and sensors used in remote sensing.

CO2: They will also be able to understand the defects and its solutions in the space borne images.

CO3: Students will be able to interpret the remote sensing images for different aspects.

M.Sc.(Physics) Semester-III
Choice Based Credit System

Generic
Elective Paper GE-3 : **Informatics**
Paper-XII Max.Marks. 60
Time Duration - 3 Hours Min. Marks. 21

Course Objectives: The objective of this course is to study the concepts of Normal series, Composition series, Zessenhaus lemma, Solvable groups, Nilpotent groups and fields in detail with a focus on Galois theory which provides a link between group theory and roots of polynomials.

Instruction to Examiners
Paper shall consist of Two sections A & B. Paper Setter is required to set **ONE** short answer type question from each unit having internal choice in section A. Section B will consist of **FIVE** long answer type questions with **ONE** from each unit and student will answer any **THREE** questions. Each short answer questions shall be of 6 marks and long answer type question shall be of 10 marks.

Unit I

Concept of information and its unit, difference between data and information, features of information. Average Information and Information rate. Data transmission concept-characteristics of data transmission circuits. Concept of analogue and digital signal in data transmission. Coding to increase average information per bit/per word. Shannon's theorem and channel capacity. Coding efficiency, Shannon Fano and Huffman coding procedures. Error detecting and correcting codes-Block and convolution codes.

Unit II

The Sampling theorem, Pulse Code Modulation (PCM)-concept of quantisation, quantisation error, companding, time division multiplexing, PCM system and its band width. Delta Modulation, Phase shift keying, Differential phase shift keying, quadrature phase shift keying, optimum modulation system based on information theory Modems.

Unit III

Organisation of Digital computer, Brief overview of input and output devices, CPU-evolution of microprocessors, Semiconductor memories (RAM and ROM) : organisation and their

characteristics, Cache memory, CDROM, Magnetic disk, Software Concept : types of software and their features. System utility software. Role of software in information technology. Computer language : Features of low level and high level programming languages. Assemblers & compilers, generation of computer languages.

Unit IV

Concept of OS : basic functions and types of OS, Salient features of batch processing, on line processing, single use, multi user, time shared, multi tasking, multi programming and real time systems. Overview of UNIX concept of windows and their basic commands, elements of window NT, concept of booting, batch file, config, sys file, filtering, redirecting and piping.

Unit V

Introduction to communication network and their types, Elements of computer network and advantages. Design features of computer network (Line capacity allocation, routing procedure, flow control procedure). Classification of network-LAN, WAN and MAN. Network topologies-basic features of Bus, Hierarchical, Star Ring and Mesh topologies, Network protocols : seven layers of OSI reference model and its comparison with TCP/IP, History of internet and important features, basic services of internet-www, email, telnet, chat and news.

References

1. Information Technology-Satish Jain (BPB Publication)
2. Information Technology-V.P. Singh & M. Singh (Asian Publication)
3. Principles of Data communication – R.W. Lucky, J. Salz & E.J. Weldon Jr. (McGraw Hill Co.).
4. Principles of Communication Systems – H. Taub & D.L. Schilling (Tata McGraw Hill).
5. Communication Systems : Analog & Digital – R.P. Singh & S.D. Sapre (Tata McGraw Hill).
6. Modern Digital & Analog Communication Systems-B.P. Lathi (Oxford Univ. Press, N. Delhi).
7. Microprocessors and Microcomputers – B. Ram
8. Introduction to Microprocessors – A.P. Mathur
9. Computer Network : Protocol Standards and Interfaces – Uyless Black (PHI)

Informatics

Course Outcome:

Co1: Basic knowledge of various information systems and concepts of information transfer through remote methods will be provided.

Co2: It will provide information about computer anatomy.

Co3: Students shall learn concepts of O.S. and network technology

M.Sc.(Physics) Semester-IV
Choice Based Credit System

Core Paper C-9: **LASER PHYSICS**
Paper-XIII Max.Marks. 60
Time Duration External Examination - 3 Hours Min. Marks. 21

Course Objectives: The objective of this course is to study the concepts of Normal series, Composition series, Zessenhaus lemma, Solvable groups, Nilpotent groups and fields in detail with a focus on Galois theory which provides a link between group theory and roots of polynomials.

Instruction to Examiners

Paper shall consist of Two sections A & B. Paper Setter is required to set **ONE** short answer type question from each unit having internal choice in section A. Section B will consist of **FIVE** long answer type questions with **ONE** from each unit and student will answer any **THREE** questions. Each short answer questions shall be of 6 marks and long answer type question shall be of 10 marks.

Unit I

Basic principles of laser :

Introduction to laser, spontaneous and stimulated emission, Einstein coefficients. Idea of light amplification. Population invertion, laser pumping schemes for two and three level system with threshold condition for laser oscillation.

Unit II

Properties of Laser Beams and Resonators :

Properties of Laser Temporal coherence, spatial coherence, directionality and monochromatic of laser beam, resonators, vibrational mode of resonators, laser amplification, open resonator.

Unit III

Types of lasers :

Solid state lasers i.e.Ruby Laser, Nd-Yag Laser, Semiconductor laser, Gas laser i.e. Carbon dioxide Laser, He-Ne Laser, Basic idea about liquid laser, Dye laser and chemical laser i.e. HCL and HF lasers.

Unit IV

Application of Lasers :

Holography and its principle, theory of holograms, reconstruction of image, characteristics of Holographs, Application of lasers in chemistry and optics laser in Industry i.e.laser belding, Hole drilling, laser cutting, application of lasers in medicine.

Unit V

Basic idea about non-linear optics :

Harmonic generation, second and third harmonic generation, phase matching, optical mixing, parametric generation of light, self-focusing of light.

Books Recommended:

1. Laser-swelto
2. Optical electronics-Yarive
3. Laser spectra scopy-demtroder
4. Laser spectroscopy and Instrumentation Demotroder
5. Molecular spectra scopy - King
6. Non linear optics by B.B.Laud

LASER PHYSICS
Course Outcome:

Co1: Students shall understand through this course shall learn about concepts of lasers and its application in development of lasing system.

Co2: Students shall learn about basic concepts of non-linear optics for laser technology.

M.Sc.(Physics) Semester-IV
Choice Based Credit System

Core Paper C-10: Modern Experimental Techniques
Paper-XIV Max.Marks. 60
Time Duration External Examination - 3 Hours Min. Marks. 21

Course Objectives: The objective of this course is to study the concepts of Normal series, Composition series, Zessenhaus lemma, Solvable groups, Nilpotent groups and fields in detail with a focus on Galois theory which provides a link between group theory and roots of polynomials.

Instruction to Examiners

Paper shall consist of Two sections A & B. Paper Setter is required to set **ONE** short answer type question from each unit having internal choice in section A. Section B will consist of **FIVE** long answer type questions with **ONE** from each unit and student will answer any **THREE** questions. Each short answer questions shall be of 6 marks and long answer type question shall be of 10 marks.

Unit 1

Radiation sources, Radiation interactions, Radiation detectors – gas filled detectors – scintillation detectors – semiconductor detectors

Unit 2

Introduction to production of X-ray & X-ray spectra, Instrumentation, X-ray generation, collimators, filters, detectors, X-ray absorption methods, X-ray fluorescence methods, XF – Spectrometer (XFS), Electron spectroscopy for chemical analysis (ESCA)

Unit 3

Nuclear Magnetic Resonance (NMR) spectroscopy, basic principles, nuclear magnetic energy levels, magnetic resonance, NMR Spectrometer Electron Spin Resonance spectroscopy, ESR spectrometer, ESR spectra, Hyperfine interactions

Unit 4

Mass spectroscopy – principle, spectrometer, and its operation, resolution, Mass spectrum, applications Infrared Spectroscopy, correlation of IR spectra with molecular structure, Instrumentation

Unit 5

Mossbauer Spectroscopy – Mossbauer effect, spectrometer, 57 Fe Mossbauer spectroscopy, nuclear hyperfine interactions Neutron diffraction, neutron diffractometer (position sensitive diffractometer)

Books Recommended:

1. Instrumentation Methods of analysis: VIIth Edition, Willard Meritt, Dean, Settle, CBS publishers & distributors

2. Mossbauer Spectroscopy : Leopold May, Plenum Press, N.Y.

3. Neutron Diffraction: G.C. Becon

4. X-Ray diffraction: B.D. Culity, Edison Weisley

5. Radiation Detection & Measurement: Glenn F. Knoll, McGraw Hill

Modern Experimental Techniques

Course Outcome:

Co1: Capability of students in experiments as tools for research activities shall be developed.

Co2: Various types of analylitical techniques would be learned in the students like, nuclear techniques, Condensed matter techniques and spectroscopic techniques.

M.Sc.(Physics) Semester-IV
Choice Based Credit System

Discipline Centric

Elective Paper DCE-5 : **Advanced Electronics**

Paper-XV(I) Max.Marks. 60

Time Duration - 3 Hours Min. Marks. 21

Course Objectives: The objective of this course is to study the concepts of Normal series, Composition series, Zessenhaus lemma, Solvable groups, Nilpotent groups and fields in detail with a focus on Galois theory which provides a link between group theory and roots of polynomials.

Instruction to Examiners

Paper shall consist of Two sections A & B. Paper Setter is required to set **ONE** short answer type question from each unit having internal choice in section A. Section B will consist of **FIVE** long answer type questions with **ONE** from each unit and student will answer any **THREE** questions. Each short answer questions shall be of 6 marks and long answer type question shall be of 10 marks.

Unit I

OP-AMP :

Differential amplifier circuit configurations : dual input balanced output dual input, single input unbalanced output (ac analysis) only, block diagram of a typical op amp analysis, schematic symbol of an op-amp.

Unit II

OP-AMP Parameters : Ideal op-amp.; Op-amp parameters; input offset voltage, input offset current, input bias current, CMRR, SVRR, large signal voltage gain, Slew rate, Gain band width product, output resistance supply currents power consumption, inverting and non-inverting inputs.

Unit III

Application of OP-AMP :

Inverting and non-inverting amplifier, summing, scaling and averaging amplifier, integrator and differentiator. Oscillator Principles: oscillator types, frequency, stability response, the phase shift oscillator, Wein-bridge oscillator, L-C tunable oscillator, square wave generator.

Unit IV

Microprocessors and Micro Computers :

Microprocessor and Architecture : Intel 8086, Microprocessor architecture modes of memory addressing, 8086/8088 Hardware specification : Pin-outs and pin functions, clock generator (8284A) Bus buffering and latching, Bus timing, Ready and wait state, Minimum mode versus maximum mode.

Unit V

Programming the Microprocessors :

Addressing modes : Data addressing modes, program memory addressing modes, stack memory-addressing modes. Instruction set; data movement Instruction, Arithmetic and login instructions, program control instruction.

Books Recommended:

1. Digital Principles and Application : A.P.Malvino & D.P.Leech
2. Op-Amps & Linear Integrated circuits : R.A. Gayakwad
3. Electronics : D.S. Mathur
4. Digital Principles & Applications : Malvino & Leech
5. Microprocessor Architecture, Programming & Applications with 8085/8086 : R.S.Gaonker
6. Microprocessor & Digital Systems : D.V.Hall
7. Fundamental of Electronics : Borker

Advanced Electronics

Course Outcome:

Co1: Students shall gain knowledge about linear integrated circuits with emphasis to operational capabilities and their applications.

Co2: Micro processors concepts would be build among students.

Co3: Detailed H/W knowledge of 8086 ups and assembly language programming shall lead students to design dedicated / general purpose circuits

M.Sc.(Physics) Semester-IV
Choice Based Credit System

Discipline Centric

Elective Paper DCE-6 : **Astrophysics**

Paper-XV(II) Max.Marks. 60

Time Duration - 3 Hours Min. Marks. 21

Course Objectives: The objective of this course is to study the concepts of Normal series, Composition series, Zessenhaus lemma, Solvable groups, Nilpotent groups and fields in detail with a focus on Galois theory which provides a link between group theory and roots of polynomials.

Instruction to Examiners

Paper shall consist of Two sections A & B. Paper Setter is required to set **ONE** short answer type question from each unit having internal choice in section A. Section B will consist of **FIVE** long answer type questions with **ONE** from each unit and student will answer any **THREE** questions. Each short answer questions shall be of 6 marks and long answer type question shall be of 10 marks.

Unit I

Observational data : Astronomical coordinates, determination of mass, rating, luminosity, temperature and distance of a star, steller classification and its interpretation, H.R. diagram of clusters, empirical mass luminosity relation.

Unit II

Physical characteristics of the sun, basic data, solar relation and solar magnetic field. Quiet Sun : Photosphere, hydrogen convection zone and granulatin, chromosphere, spicules, corona. Active sun : development of centre of activity, sunspots, prominences and lares. Theory of the general solar magnetic field, sunspot and solar flares, solar wind, solar radiations, solar X – radiation.

Unit III

Stellar interior, Energy generation in stars, contraction hypothesis. Nuclear Processes, P-P and C-N Cycles, reaction rates. Evolution of stars premain sequence, main sequence and post-main sequence stages.

Unit IV

Dense stars, white dwarfs, internal structure, mass-radius relation, mass limit, sources of energy, neutron stars. Variable stars, Pulsating stars, velocity and light curves, classification, dynamics of steller pulsation, Novae and Super-Novae, Crab Nabula, optical, radio and X-ray emission.

Unit V

Galaxies, classification, Milky way, Rotation, Galactic cluster, Peculiar galaxies, Models of the Universe, Radio astronomy, Pulsars, Quasars, Microwave background radiation, X-ray sources.

Books Recommended:

1. Source Book of Space Physics - Glasstone
2. Space Science & Earth Environment – S.S. Degaonkar
3. Star and Planet – Abbeti
4. The Sun – Abbeti
5. Solar Terrestrial Physics-Akasofu and Chapman
6. Astronomy-D.H. Menzel
7. The State of Universe-Ed. By G. Bath
8. Astronomy-Baker
9. Articles from Journals, Space Science Reviews.

Astrophysics

Course Outcome:

Co1: To develop ideas about the evolution of with special emphasis on the sun & various associated phenomena.

Co2: To develop basic concepts of astronomical observations & idea about Galaxies, Universe & associated process.

M.Sc.(Physics) Semester-IV
Choice Based Credit System

Discipline Centric

Elective Paper DCE-7 : **Environmental Physics**

Paper-XV(III) Max.Marks. 60

Time Duration - 3 Hours Min. Marks. 21

Course Objectives: The objective of this course is to study the concepts of Normal series, Composition series, Zessenhaus lemma, Solvable groups, Nilpotent groups and fields in detail with a focus on Galois theory which provides a link between group theory and roots of polynomials.

Instruction to Examiners

Paper shall consist of Two sections A & B. Paper Setter is required to set **ONE** short answer type question from each unit having internal choice in section A. Section B will consist of **FIVE** long answer type questions with **ONE** from each unit and student will answer any **THREE** questions. Each short answer questions shall be of 6 marks and long answer type question shall be of 10 marks.

Unit I - **Essential of Environmental Physics**

Structures and thermodynamics of atmosphere. Composition of air. Green house effect. Transport of matter, energy and momentum in nature. Stratification and stability of atmosphere. Laws of motion, hydrostatic equilibrium .General circulation of Tropics. Elements of weather and climate of India.

Unit II **Solar and Terrestrial Radiation**

Physics of radiation. Interaction of light with matter .Rayleigh and Mie scattering. Laws of Radiation (Kirchhoff's law, Plank's law, Wien's displacement law, etc.)

Solar and Terrestrial spectra. UV radiation. Ozone depletion problem. IR absorption energy balance of the earth atmospheric system

Unit III - **Environmental Pollution and Degradation**

Elementary Fluid Dynamics .diffusion, Turbulence and turbulent diffusion. Factors governing air, water and noise pollution. Air water quality standards. Waste disposal .heat and Island effect .Land sea Breeze. Puffs and plumes. Gaseous and particulate matters .wet and dry deposition.

Unit IV – **Environmental changes Remote sensing**

Energy sources and combustion processes .Renewable sources of energy. Solar energy, wind energy, bio-energy, hydropower, fuel cells, nuclear energy. Forestry and bioenergy.

Unit V **Global and Regional Climate**

Elements of weather and climate .Stability and vertical motion of air. Horizontal motion of air and water .Pressure gradient forces .viscous forces .Reynold number .Enhance green house effect. Energy balance -a -zero- dimensional Green house model .Global climate models.

Books Recommended:

1.Egbert Booeker &Rienk van Groundelle, Envionmental Physics (John Wiley).
2.J.T.Houghton :The Physics of Atmosphere (Cambridge University Press ,1977).
3. J Twidell and J.weir : Renewable energy sources (ELBS 1988).
4. Sol wieder : An Introduction of Solar energy for Scientists and engineers(John iley 1982)
5. R,N,Keshav murthy and M. Shankar Rao: The Physics of Monsoons (Allied Publishers, 1992)
6. G.J.Haltiner R.T. Williams: Numerical Weather Prediction (John Wiley 1980)

Environmental Physics

Course Outcome:

Co1: To create awareness about the solar & terrestrial radiation & associated environmental changes

Co2: To develop the concepts of weather & climate in relation to near earth & space weather concept.

M.Sc.(Physics) Semester-IV
Choice Based Credit System

Discipline Centric
Elective Paper DCE-8 : **Physics of Nano Materials**
Paper-XV(IV) Max.Marks. 60
Time Duration - 3 Hours
Min. Marks. 21

Course Objectives: Tensors have their applications to Riemannian Geometry, Mechanics, Elasticity,Theory of Relativity, Electromagnetic Theory and many other disciplines of Science and Engineering. Theaim of this course is to study fundamental concepts of tensor and tensor analysis.

Instruction to Examiners
Paper shall consist of Two sections A & B. Paper Setter is required to set **ONE** short answer type question from each unit having internal choice in section A. Section B will consist of **FIVE** long answer type questions with **ONE** from each unit and student will answer any **THREE** questions. Each short answer questions shall be of 6 marks and long answer type question shall be of 10 marks.

Unit I

Length scales in Physics, Nanostructures: 1D, 2D and 3D nanostructure (nanodots, thin films, nanowires, nanorods), Band structure and density of states of materials at nanoscale, Size Effects in nano systems, Quantum confinement: Applications of Schrodinger equation – Infinite potential well, potential step potential box, quantum confinement of carries in 3D, 2D, 1D nanostructures and its consequences.

Unit II

Top-down & bottom-up approaches; Formation of nanostructure by ball milling, Chemical Vapor Deposition, Physical Vapor Deposition, Pulsed Laser Ablation technique, Chemical Route of Synthesis: Chemical Precipitation and Co-precipitation, Chemical Bath Depostion, Sol-Gel Synthesis, Micro Emulsion, Solvothermal Synthesis, Spray Pyrolysis and Combustion Technique.

Unit III

X Ray Powder & Single Crystal Diffraction (XRD), X-Ray Fluorescence (XRF), X-Ray Photoelectron Spectroscopy (XPS), Energy Dispersive X-Ray Analysis (EDAX), Nuclear Magnetic Resonance (NMR) & Raman Spectroscopy, Auger Electron Spectroscopy (AES),

Differential Scanning Calorimetry (DSC)-Principle of operation, Instrumentation and application of each.

Unit IV

Scanning Tunneling Microscopy (STM), Contact & Non-Contact Atomic Force Microscopy (AFM), Magnetic Force Microscopy (MFM), Scanning Electron Microscopy (SEM), Transmission Electron Microscopy (TEM), Fourier Transform Infrared (FTIR), Spectrophotometer, Photo Luminescence (PL), UV-visible Spectrophotometer, Electron Energy Loss Spectroscopy (EELS), Electron Probe Micro Analyzer (EPMA) – Principle of operation, Instrumentation and application of each.

Unit V

Quantum wells, Wires & Dots, Organic Semiconductors, Molecular Switches, Motor Molecules & Biometric Components, nano Robots and NEMS, Sensors & Actuators, Biomotors, Gas Sensors, Pollution Sensors, Biosensors, CNT based Fluid Velocity Sensors, Nanomaterials in Drug Deliver: Targeting Ligands, Cancer Treatment, nanonephrology, Nanosurgery.

References

1. Nanomaterials: Synthesis, properties, characterization and applications: A.S. Edelstein and R.C. Cammaratra
2. Nanoelectronics and Nanosystems: Karl Goser, Peter Glosekotter, Jan Diensthuhl, Springer, 2004
3. Handbook of Analytical Instruments, R.S. Khandpur
4. Elements of X-ray Diffraction, B.D. Cullity
5. Thermal Methods of Analysis: W.W. Wendlandt
6. Encyclopedia of nanotechnology, H.S. Nalwa
7. Nanomaterial System: Properties & Applications: A.S. Edelstein and R.S. Cammaratra

Course Outcome:

CO1: A student will have clear basic concepts of nano-structured materials.

CO2: It is expected to train the students for synthesis of various nano-materials and various characterization methods.

CO3: Students shall appreciate the importance of nano-materials in various technological application like medical technology in treatment of various diseases.

M.Sc.(Physics) Semester-IV
Choice Based Credit System

Generic
Elective Paper GE-4: **ATMOSPHERIC SCIENCE**
Paper-XVI Max.Marks. 60
Time Duration 3 Hours Min. Marks. 21

Course Objectives: Tensors have their applications to Riemannian Geometry, Mechanics, Elasticity, Theory of Relativity, Electromagnetic Theory and many other disciplines of Science and Engineering. The aim of this course is to study fundamental concepts of tensor and tensor analysis

Instruction to Examiners

Paper shall consist of Two sections A & B. Paper Setter is required to set **ONE** short answer type question from each unit having internal choice in section A. Section B will consist of **FIVE** long answer type questions with **ONE** from each unit and student will answer any **THREE** questions. Each short answer questions shall be of 6 marks and long answer type question shall be of 10 marks.

Unit I

General features of Earth's atmosphere :

Thermal structure of the Earth's Atmosphere, Ionosphere, Composition of atmosphere, Hydrostatic equation, Potential temperature, Atmospheric. Thermodynamics, Greenhouse effect and effective temperature of Earth, Local winds, monsoons, fogs, clouds, precipitation, Atmospheric boundary layer, Sea breeze and land breeze. Instruments for meteorological observations, including RS/RW, meteorological processes and different systems, fronts, Cyclones and anticyclones, thunderstorms.

Unit II

Atmospheric Dynamics :

Scale analysis, Fundamental forces, Basic conservation laws, The Vectorial form of the momentum equation in rotating coordinate system, scale analysis of equation of motion, Applications of the basic equations, Circulations and vorticity, Atmospheric oscillations, Quasi biennial oscillation, annual and semi-annual oscillations, Mesoscale circulations, The general circulations, Tropical dynamics.

Unit III

Atmospheric Waves :

Surface water waves, wave dispersion, acoustic waves, buoyancy waves, propagation of atmospheric gravity waves (AGWs) in a nonhomogeneous medium, Lamb wave, Rossby waves and its propagation in three dimensions and in shared flow, wave absorption, non-linear consideration.

Unit IV

Atmospheric Radar and Lidar :

Radar equation and return signal, Signal processing and detection, Various type of atmospheric radars, Application of radars to study atmospheric phenomena, Lidar and its applications, Application of Lidar to study atmospheric phenomenon. Data analysis tools and techniques.

Unit V

Atmospheric Aerosols :

Spectral distribution of the solar radiation, Classification and properties of aerosols, Production and removal mechanisms, Concentrations and size distribution, Radiative and health effects, Observational techniques for aerosols, Absorption and scattering of solar radiation, Rayleigh scattering and Mie scattering, Bouguert-Bambert law, Principles of radiometry, Optical phenomena in atmosphere, Aerosol studies using Lidars.

Books Recommended:

1. Fundamental Atmospheric Physics : Murray L Salby; Academic Press, Vol. 61, 1996
2. The Physics of Atmosphere - John T. Houghton; Cambridge University Press. 3rd edition 2002.
3. An Introduction to dynamic meteorology-James R Holton; Academic Press, 2004
4. Radar for meteorological and atmospheric observations - S Fukao and K Hamazu, Springer Japan, 2014

ATMOSPHERIC SCIENCE

Course outcome:

Co1: Students will be able to explain principle, characteristics and applications of different types of Cyclones and anticyclones and thunderstorms.

Co2: Students will be able to explain the instrumentation of Atmospheric Dynamics, waves and applications

Co3: Students will be able to explain different types of Atmospheric Radar and Lidar and Atmospheric Aerosols with their applications

AWADHESH PRATAP SINGH UNIVERSITY,
REWA (M.P.)

Ph. D. COURSE WORK STRUCTURE

Physics

2018-19

AWADHESH PRATAP SINGH UNIVERSITY, REWA

STRUCTURE OF SYLLABUS FOR Ph.D. COURSE WORK (PHYSICS) 2018-19 ONWARDS
(AS PER ORDINANCE NO. 11 DOCTOR OF PHILOSOPHY)

Paper Code	Name of Theory Papers	Credits	Maximum Marks (Theory+ Internal Assessment)	Minimum Passing Marks
Ph.D. 101	RESEARCH METHODOLOGY	4	100 (80+20)	55
Ph.D. 102	REVIEW OF PUBLISHED RESEARCH IN THE RELEVANT FIELD	3	100	55
Ph.D. 103	COMPUTER APPLICATIONS	3	100 (80+20)	55
Ph.D. 104	SPECIALIZATION SUBJECTS (ANY ONE OF THE FOLLOWING):MP104 (a) (Group-A): Astrophysics MP104 (b) (Group-B): Materials Science	3	100 (80+20)	55
Ph.D. 105	COMPREHENSIVE VIVA-VOCE	3	100	55
	TOTAL CREDITS	**16**		

Ph.D. (PHYSICS)

Ph. D. 101 : RESEARCH METHODOLOGY

Time: 03 Hours

Theory Paper: Max. Marks-80
Internal Assessment : Max. Marks-20
Minimum Pass Marks-55

The paper setter is required to set in all **Eight questions**, out of which only **four** questions are to be attempted by the students. All questions will be of equal marks. Two questions are to be set from each unit. The students are required to attempt at least one question from each unit.

Unit - I

Concepts in Research: Definition and Objective, Research Approach & Types of Research, Criteria of Good Research, Defining Research Problems. Research Design: Features of Good Research Design, Research Design With Reference to Physics, Basic Principles of Experimental Research Designs, Report, Paper & Dissertation

Writing Concept.

Unit - II

Nature and Purpose of Mathematical Statistics, Tabulation and Statistical Inference, Tabular and Graphical Representation of Data, Bar, Pie & Radar Diagrams, Mean, Median, Mode & Variance, Co-relation and Co-efficient, Random Sampling, X^2 - Test, Method of Least squares curve Fitting of Straight Lines & Polynomials Data Fourier Techniques and applications.

Unit - III

Theoretical Modelling Methods: Bisection Method, General Idea of Mathematical Modelling and Simulation - Mente Carlo Technique, Random Waik Problem, Newton Raphson Method, Least Square Fitting of Linear and Exponential Functions, Numerical Differentiati ons & Integration. Simpson's Rule, Runga Kutta Method.

Unit - IV

General Idea of Preparation of Materials: Solid State Reaction Method and Wet Chemical Method, Electro-Deposition Methods: (Basics only),Elementary Idea of Vacuum Coating Methods, Basic Principles & Applications of XRD, SEM, And FTIR. Methodology of Space Research - Ground Based & Satellite Observations, Cosmic Ray Detectors, Methods of Extracting Scientific Information from Space Data.

Reference Books:

1. Research Methodology: Methods & Techniques: C.R. Kothari, New Age International Publisher, N. Delhi (2009).
2. How to Write and Publish: R.A. Dayand, B. Gastel, Cambridge University Press.
3. How to Research: L. Blaxter, C. Hughes and M. Tight Viva Books.
4. A Student Guide to Methodology: P. Clough &, C. Mutbrown, Sage Publications.
5. Fundamentals to Computers: V. Rajaraman (PHI)
6. Probability & Statistical For Engineers & Scientists: Shelder Ren Elsevier Academic Press.
7. Principles of Instrumental Analysis: Skoog & Leary.
8. Astronomy: Baker
9. Solar Terrestrial Physics: Akasofu & Chapman.
10. Experimental Methods in Modern Physics: A.P. Mellissinos.

Ph.D. 102	REVIEW OF PUBLISHED RESEARCH IN THE RELEVANT FIELD

7/10/19

the meeting held on 07/08/19

Ph.D. (PHYSICS)

Ph.D. 103: COMPUTER APPLICATIONS

Time: 03 Hours

Theory Paper : Max. Marks-80
Internal Assessment : Max. Marks-20
Minimum Pass Marks-55

The paper setter is required to set in all **Eight questions**, out of which only **four** questions are to be attempted by the students. All questions will be of equal marks. Two questions are to be set from each unit. The students are required to attempt at least one question from each unit.

Unit - I :

Anatomy of computers and their classification: Input and output devices. Concepts of computer ware, language processors and computer languages. Basics of operating system: with emphasis on windows operating system. Concept of OLE. Basics of MS-Office: MS Word, MS Excel, MS Power Point, Internet and E-mail basics web search engines. Types of search engines.

Unit - II : Conceptual framework of computer languages (Algorithm, Flow charts). Need of structured programming, Top-down, bottom-up and modular programming design. Introduction to C and C^{++} languages. basic structure of C^{++} program. Character set, keyword and identifiers C^{++} data types, variable and data type declaration. Arithmetic, relational, logical, assignment, conditional, increment and decrement operations, input and output statements.

Unit - III : Control statements: Branching, Looping and Jumping: If, If-else, if nested, if-else statements, switch, while, Do....While and For statements. Simple C++ programs (search of prime number between given range of numbers, finding the smallest and largest of given numbers, sum of algebraic series, factorial of given number, roots of a quadratic equation, binary to decimal and decimal to binary convertor etc). Functions: need of functions, calling the function by value and reference. Category of functions, no argument no return, argument but no return, argument with return, Recursion: One and Two dimensional arrays. String and string handling functions like sprint( ), strcpy ( ) sscanf ( ), strlen ( ), sizeoff ( ), Stromp ( ), arrays and string functions.

Unit - IV : Computer network : LAN, MAN, WAN, client server. Network topologies: Bus, Ring, Star, Mesh. Internet : History of internet, Service provider (ISP), Types of internet account-shell/ Address, TCP / IP Address. Types of connectivity-Dial up, Leased lines, Satellite. IP Address- Class A, Class B, Class C, Domain Name Address, URL(absolute and relative). Web Technology: Web Browser: Internet Explorer, Netscape Navigator, Static and dynamic web page. Introduction to HTML: HTML tags, <HTML>, <TITLS>, <HEAD>, <BODY>, <P>, <BR>, <ALIGN>, <I>, <B>, <DIV>, <PRE>, and their attributes. <IMG>, <a> and their attributes.

Statistical packages: MS-Excel, Statistical functions, SPSS package: structure and characteristics, use of SPSS in data analysis in Physics. Origin software: Need, characteristics and application in Physics.

Reference Books:

1. Let us c: Yashwat Kanetkar
2. Programming with C++: Balaguruswami
3. Internet and Web Page : VK Jain
4. Internet and Web page design : Dr. PD Murarka
5. C# 2008 in simple step Dreamtech Press

Ph.D. (PHYSICS)

Ph. D. 104 (I) : Astrophysics

Time: 03 Hours

Theory Paper : Max. Marks-80
Internal Assessment : Max. Marks-20
Minimum Pass Marks-55

The paper setter is required to set in all **Eight questions**, out of which only **four** questions are to be attempted by the students. All questions will be of equal marks. Two questions are to be set from each unit. The students are required to attempt at least one question from each unit.

Unit - I: Solar output and Cosmic Ray Modulation:

Physical Characteristics of Sun, Solar Structure, Development of Centre of Activity, Sunspots, Prominences and Flares, The Sun and Interplanetary Space, the Solar Atmosphere (Photosphere, Chromosphere and Corona), Solar Wind and concept of heliosphere, Solar Wind Observation, Solar and Interplanetary Magnetic Fields, Interplanetary Sector Structure, Theory of Solar Cycle Evolution, Solar Flares and Coronal Mass Ejections, Variational Characteristic of different types of Solar Modulation, Long and Short Term Cosmic Ray Variation, Forbush Decreases, Ground level Enhancement, Comic Ray Propagation Models (Diffusion, Convection and Drift Model).

Unit - II Magnetospheric Processes

Structure of Geomagnetosphere, Different Regions of Magnetosophere and Associated Phenomena, Magnetosopheric Models, the Concept of Closed and Open Magnetosphere, Interplanetary and Geomagnetic Disturbances, Shock-Wave in Interplanetary Space, Magnetospheric Storms, Interaction of Solar plasma with Magnetosphere, Collision of the Interplanetary Shock Wave with the Magneto Sphere, Storms Sudden Commencement (SSC), Interaction of Solar Plasma with Magnetosphere, Morphology of Geomagnetic Storms, Polar Sub Storms and Auroral Phenomena, Association of geomagnetic Storms with Solar and Interplanetary Parameters. Near Earth Space Weather.

Unit - III : Radio Astronomy

Telescopes, Reflection and Refraction Telescope, Ground Based Optical Telescope (Visible And Infra-Red), Space Telescope (From Ultraviolet to Sub Millimetre), Radio Single Dishes and Aperture Synthesis, Radio Telescope (Beyond the Sub Millimetre Range), Large Telescope of the future. Radio Astronomy, Quasars and Molecules in Space, Infra-Red and X-Ray Astronomy, Neutrino Astronomy, Neutron Detector.

Unit - IV Stars and Galaxies

Formation of Stars, Evolution of Stars, Stellar Spectra and the Hertzsprung-Russell Diagram, Explanation of the Main- Sequence (the Mass-Luminosity Relation), Variable Stars, the Pulsation Theory of Variable Stars, Neutron stars, The Classification and Morphology of Galaxies, Formation and Evolution of Galaxies; Rotation of the Galaxy (Differential Rotation) the General Structure of Galaxy (the Central Region, the Galactic Disk and the Galactic Halo), the Mass of The Galaxy, the Cause of Spiral Structure, Luminosity Distribution in a Galaxy, Distances of Galaxies, Radio Galaxies, Seyfert GalaxiesNebulae, Novae, Super Nova, Chandrasekhar Limit and Black Holes,

Reference Books:

1. Discovering Astronomy, R. Rob~rt Robbins and Willam, H. Jefferys (John Wely).
2. Observational Astrophysics: P. Lena, F. Labrun and F. Mignard (springer).
3. Astronomy and Astrophysics with elements of Cosmology: V. B. Bhatia (Narsoa)
4. Advanced Stellar Astrophysics: William K. Rose.
5. Galaxies and Cosmology: F. Combes, P. Boisse, A. Mazure, A.Blanchard
6. An Introduction to Astrophysics: Baidyanath Basu.
7. Physics and The physical Universe: Jerry B. Marrion.
8. Prizicipal of Astronomy: P.Stanley Wyatt, James Bkaler.
9. The State Of Universe - Ed. By G. Bath.
10. Astronomy - D.H. Menzel
11. Source Book of Space Physics. - Glasstone,
12. Space Science & Earth Environment - S.S. Degaonkar
13. Star & Planet - Abbeti.
14. The Sun - Abbeti.
15. Solar & Terrestrial Phys. - Akasafu & Chapman.
16. Cosmic Rays: Donnan
17. Cosmic Rays: Sandstrom
18. Progress in STP(V Int. Symposium): J. Roederer

7/08/19

Syllabus opted by the board of studies in Physics, A. P. S. University in the meeting held on 07/08/19

Ph.D. (PHYSICS)

Ph. D. 104 (II): Materials Science

Time: 03 Hours

Theory Paper : Max. Marks-80
Internal Assessment : Max. Marks-20
Minimum Pass Marks-55

The paper setter is required to set in all **Eight questions**, out of which only **four** questions are to be attempted by the students. All questions will be of equal marks. Two questions are to be set from each unit. The students are required to attempt at least one question from each unit.

Unit - I: Crystal Graph and Nanomaterials Basics

Nucleation & Growth: Concept of Nucleation and their Types - Homogeneous & Heterogeneous Nucleation Processes, Growth and Overall Transformation Kinetics. Micro to Nano: Properties of Nano-particles, Nature of Carbon Bonds and Carbon Allotropes, Structure and Properties of C_{60}, Graphene and Carbon Nanotubes, Synthesis of Nanomaterials - Top Down and Bottom Up Approach, Chemical Route of Synthesis of Magnetic Nanoparticles: Sol-Gel Synthesis methods, Nano materials in Energy application (solid state Batteries, smart window and solar cells basics only).

Unit - II

Solid State Ionics: Super Ionic Solids- Definition and Characteristic Features, General Classification of Superionic Solids, Basic Idea of Ion Transport in Solids, Polymer Electrolytes and their Types. Mechanism of Ion Transport in Polymer Electrolyte-Macroscopic Approach: VTF and WLF Forms, Configurational Entropy Models, Application of Superionic Solids with emphasis to Electrochromic Display Devices, Sensors and Solid State Batteries (Without Theory).

Unit - III

Solar Cells: Sun's Spectrum, Solar Constant, Air Mass, Method of Measuring Solar Radiation (Out line only) Direct and Indirect Band Gap Materials, P-N Junction Diode, Photovoltaic Effect, Solar Cell Parameters and I-V Characteristics, Design Consideration for Solar Cell Fabrication, Type of Solar Cells. Metal Semiconductor Contacts and Photoelectrochemical Solar Cells (Basic Concept Only), Organic Solar Cells, Basic principles and types, Photovoltaic modules and arrays.

Unit - IV

Superconductors: Comparison Between Superconductor & Ideal Conductor, High Tc Cuprate (HTSC) Families, Structure of $Y_1Ba_2Cu_3O_{7-X}$ and Variation of Tc with X, General Characteristics of Cuprate Superconductors, Methods of Preparation of High Tc Superconductors in Bulk and Thin Film Forms. Type II Superconductivity, Phase Diagram of $La_{2-X}Sr_xCuO_4$, Electronic Structure of Cuprates, Two Band Model & Hubbard Model, Normal State Properties, Critical Current of Pure Elements, Critical Current in Mixed State, Role of Inhomogeneities in Flux Pinning Depinning, Anisotropies in HTSC, Limitations of BCS Theory, RVB Theory of High Tc Superconductivity,

Reference Books:

1. S. Chandra: Superionic Solids & Applications.
2. F M Gray: Solid Polymer Electrolytes-Fundamentals &.. Technological Applications
3. Fonash: Solar Cell.
4. Fa hrenbruch and Bube: Fundamentals of Solar Cells.
5. R.:K. Kotnala, N.P. Singh: Essentials of Solar Cells.
6. S.M. Sze: Physics & Technology of Semiconductor Devices.
7. S.Chandra: Photoelectrochemical Solar Cells.
8. A. K. Saxena High Temperature Superconductor
9. T.V. Ramakrishna & C.N.R. Rao: Superconductivity Today.
10. S.V. Subramaniam & E.S.R. Gopal: High Temperature Superconductors.
11. A_S. Edelstein and R.C. Cammaratra:Nanomaterials- Synthesis, Properties, Characterization and Applications
12. H.S. Nalwa :Encyc1opedia of Nanotechnology
13. Handbook of Nanotechnology: Bhushan (Ed), Springer Verlag, New York (2004).
14. CNR Rao and Govindaraj:Nanotubes And Nanowires.
15. Handbook of Analytical Instruments, R.S. Khandpur
16. Thermal Methods of Analysis: W.W. Wendlandt
17. Elements of X~Ray Diffraction, B.D. Cullity -
18. T'uan Vo-Dinh: Nanotechnology In B:·'logy and Medicine: Methods, Devices and Application
19. Mao Hong Fan, Chin-Pao Huang, Alan E Bland, Z Honglin Wang, Rachid Sliman, Ian Write: Environanotechnology.

DEPARTMENT OF PSYCHOLOGY

LEARNING OUTCOMES BASED

COURSE STRUCTURE

for

B.A. HONOURS PSYCHOLOGY

Department of Psychology

(As per NEP 2020 and CBCS Ordinance 14 (A)

AWADHESH PRATAP SINGH UNIVERSITY,
REWA (M.P.)

Vision of the University:

To be the premier institution that offers teaching and learning programmes of the best quality, graduate students who excel and become leaders in the chosen profession contributing to the community, the nation and the world, and prepares individuals of the highest moral fibre. The vision of university is:

To create an ideal society and an intellectual environment that initiates, nourishes and perpetuates values of co-existence and to fulfil and achieve excellence.

The university, under the dynamic leadership of our honourable Vice-chancellor is working on quite a few ambitious plans. The idea is to develop the university as a knowledge city.

Department of Psychology:

The department has organised Invited Talks, Workshops and Seminars to improve the knowledge of students regarding the latest developments in the field of Psychology..

Faculty:

1. Prof. Shreekant Mishra — Prof-in-Charge
2. Dr. Smriti Singh Baghel — Full Time Faculty
3. Dr. Nidhi Singh — Full Time Faculty
4. Dr. Kamlesh Dubey — Full Time Faculty

Programme: B.A. HonoursPsychology

Duration: 8 Semesters (Four Year)

Eligibility: 10+2 with 45% marks obtained

Admission Procedure:

The admission will be done as per merit of qualifying examinations.

PROGRAMME OUTCOMES (POs)

PO#	PROGRAMMEOUTCOMES
PO1	Critical Thinking: Inculcate critical thinking to carry out scientific investigation objectively. Formulate coherent arguments; critically evaluate practices, policies and theories by following scientific approach to knowledge development. Critically evaluate ideas, evidence and experiences from an open-minded and reasoned perspective.

PO2	Scientific Communication Skills: Imbibe effective scientific and / or technical communication in both oral and writing. Ability to show the importance of the subject as precursor to various scientific developments since the beginning of the civilization.
PO3	Social Interaction: Elicit views of others, mediate disagreements and help reach conclusions in group settings.
PO4	Enlightened Citizenship: Create awareness to become an enlightened citizen with commitment to deliver one's responsibilities within the scope of bestowed rights and privileges.
PO5	Ethics: Continue to acquire relevant knowledge and skills appropriate to professional activities and demonstrate highest standards of ethical issues in the subject concerned. Ability to identify unethical behaviour such as fabrication, falsification or misrepresentation of data and adoptive objective, unbiased and truthful actions in all aspects.
PO6	Environment and Sustainability: Understand the issues of environmental contexts and sustainable development.
PO7	Lifelong Learning: Ability to think, acquire knowledge and skills through logical reasoning and to inculcate the habit of self-learning throughout life, through self- paced and self- directed learning aimed at personal development, and adapting to changing academic demands of work place through knowledge/ skill development/ reskilling.

PROGRAMME SPECIFIC OUTCOME (BA HONOURS PSYCHOLOGY)

PSO #	PROGRAMME SPECIFIC OUTCOME
PSO 1	To gain a functional knowledge of theoretical concepts and experimental Aspects of Psyhology and their applications in the day-to-day life.
PSO 2	To integrate the gained knowledge with various contemporary and evolving areas in Psychology like Cognitive Processes, Guidance and Counseling, Theories of Personality and Research Methods etc.
PSO 3	To understand, analyze, plan and implement qualitative as well as quantitative, analytical and therapeutic –based problems related to Health and Clinical Psychology.
PSO 4	Provide students with opportunities to apply the concepts learnt in the class-rooms to real life situations.

EXAMINATION SCHEME

Ist Year

S.No.	Paper Name	Theory		Internal Assessment		Total Max. Marks	Credits
		Max.	Min.	Max.	Min.		
	Semester - I						
1.	Paper - 101 **(Major Core)** Introduction to Psychology	60	21	40	20	100	6
2.	Paper – 102 **(Minor Core)** Psychology and Social Work	60	21	40	20	100	6
3.	Paper – 103 **(Generic Elective (GE)*** Youth, Gender and Identity	60	21	40	20	100	4
4.	Paper – 104 **(Ability Enhancement Course) (AEC)** Hindi Language	60	21	40	20	100	4
Semester Total						**400**	**20**

Cumulative Total						**400**	**20**
Semester - II							
1.	Paper - 201 **(Major Core)** Introduction to Personality.	60	21	40	20	100	6
2.	Paper – 202 **(Minor Core)** Contemporary Social Problems and Concern	60	21	40	20	100	6
3.	Paper – 203 **(Generic Elective (GE)*** Community Psychology	60	21	40	20	100	4
4.	Paper – 204 **(Ability Enhancement Course) (AEC)** Environmental Studies	60	21	40	20	100	4
Semester Total						**400**	**20**
Cumulative Total						**800**	**40**

* Students may choose this course as a Generic Elective or may choose a Generic Elective Course offered in other UTDs at the same level or may choose offered by MOOCs through SWAYAM.

* The student will be awarded Certificate in Bachelor of Arts in Psychology (CBAP) on successful completion of first year.

Department of Psychology
A.P.S. University, Rewa (M.P.)

B.A HONOURS PSYCHOLOGY SEMESTER: I

Subject: Paper - 101 (Major Core) INTRODUCTION TO PSYCHOLOGY

Course Objectives

1. Understanding what Psychology is all about.
2. Appreciation of the scope and the fields of Psychology
3. Self Development, health and hygiene, self regulation skills.
4. Ability to relate and connect concepts with personal experiences and using critical thinking

Course Learning Outcomes (CO)

1. To develop knowledge and skill in life through learning principles.
2. Learn to apply techniques of memory improvement in everyday life.

3. Learn to gain self regulation for quality of life
4. Acquisition of life skills through motivation.
5. Learning about nature and theories of emotion.

Unit - I

An Introduction to Psychology

1. Concept, Origin and current status of Psychology
2. Nature, scope and fields of Psychology
3. Methods of Psychology (with special emphasis on Experimentation)
4. Psychology in India: History and current status

Unit - II

Psychological basis of Behaviour and Sensation

1. Receptors, Effectors, and Neurons
2. Nervous system –Central, Automatic, Peripheral-Conceptual framework
3. Sensation- Concept, Visual and Auditory sensation

Unit - III

Attention and Perception

1. Nature, Types and Determinants of Attention
2. Nature, Types and Determinants of Perception

Top down and Bottom up processes, size constancy, Depth Perception

Unit - IV

Learning and Memory

1. Learning: Nature, Types- Classical, Instrumental, Observational learning (Socio cognitive learning)
2. Nature, Types and Models of Memory: Information processing model (Sensory register, STM, LTM and concept of working memory),Reconstructive nature of Memory: Forgetting
3. Memory Improvement Techniques

Unit - V

Emotion and Motivation

1. Elements of Emotions (Components), Emotional Intelligence and Gender, Culture and Emotions
2. Nature, Approaches to understanding motivation and types of motives

Key Words: Psychology, Behaviour Sensation, Nervous System, Neurons, Attention and Perception, Learning, Memory, Emotion, Motivation

References:

1. Baron, R.A. and Mishra, G. (2016) Psychology 5th edition Pearson India Education Services Private Limited, New Delhi.
2. Chadha, N.K. (1991) Introduction to Psychology, RELIANCE Publication.
3. Feldman, R.S. (2011) Understanding Psychology, 10th edition, Tata Megraw Hill, New Delhi
4. Mishra, G and Mohanty, A.K. (2002) Perspective on Indigenous Psychology (edited) New Delhi, Concept publishing company
5. Rahman, A. (1995) Samanya manovigyan, Motilal Banarsidas, Patna.
6. Singh, A.K. (2011) Uchhatar Samanya Manovigyan, Motilal Banarsidas, Delhi.

Department of Psychology
A.P.S. University, Rewa (M.P.)

B.A HONOURS PSYCHOLOGY SEMESTER I

Subject: Paper – 102 (Minor Core) Psychology and Social Work

Course Objectives

1. To understand psychological concepts and its relevance to Social Work.
2. To understand determinants and processes of Personality Development.
3. To understand the basic concepts and processes in social psychology and its relevance to Social Work.
4. To understand Social Attitudes and Social Cognition.
5. To understand Psycho-Social Behaviour.

Learning Outcomes

1. Able to understand psychological concepts and its relevance to Social Work.
2. Able to understand determinants and processes of personality development.
3. Able to understand the basic concepts and processes in social psychology and its relevance to Social Work.
4. Able to understand social attitudes and social cognition.
5. Able to understand psycho-social behaviour.

Unit - I

Introduction to Psychology

1. Psychology Concept, Definition and Relevance to Social Work.
2 Perceiving self and others: - Self Concept and Self Esteem. Impression Formation and Impression Management
3. Social affects (Concept of Guilt, Shame, Envy, Gratitude, Forgiveness, and Compassion

Unit - II

Human Growth and Personality

1. Human Growth and Development: Meaning and Stages.
2. Personality: Nature, Types and Determinants.
3. Theories of Personality, Freud, Eric Erickson and Carl Rogers.

Unit - III

Introduction to Social Psychology

1. Social Psychology: Nature, Concept, and Relevance to Social Work.
2. Group: Nature, and Group Formation and Influence of Groups on Individual Behaviour.
3. Social Influence and Interpersonal Attraction: Definitions, Features and Factors.

Unit - IV

Social Attitude and Social Cognition

1. Social Attitude: Nature and Measurement, Attitude Formation & Change.
2. Social Perception - Nature and Concept,
3. Social Cognition: Definition, Feature, Stereotypes and Prejudices.

Unit - V

Collective Behaviour

1. Collective Behaviour: Characteristics and Dynamics. Crowd
2. Leadership: Meaning, Definition, Traits and Functions.
3. Public Opinion and Propaganda.

Key Words: Psychology, Human Growth, Personality, Collective Behaviour, Public Opinion, Perception and Social Attitude.

Reference:

- Atkinson, R.L., Atkinson, R.C., Smith, E.E., Bem, D.J. and Hilgard, E.R. (2013). Introduction to Psychology. New York: H. B. J. Inc.
- Baron, R.A. and Byron, D. (1998). Social Psychology. New Delhi: Prentice Hal.
- Dandapani, S. (2005). General Psychology. Hyderabad: Neel Kamal Publications.
- Elizabeth, H. (1968). Development Psychology. New York: Mc Graw Hill.
- Feldman, R.S. (1985). Social Psychology: Theories, Research and Applications. New York: McGraw hill.
- Feldman, R.S. (1997). Understanding Psychology. New Delhi: Mc Graw Hill.
- Hall, C.S. Lindzey, G. and Cambell J.B. (2004). Theories of Personalities. New York: Wiley M.
- Kuppuswamy, B. (1972). Elements of Social Psychology. New York: Asian Publishing House.
- Morgan, C.T., King, R.A. Weisz, J.R. and Schopler, J. (2001). Introduction to Psychology. New Delhi: Tata McGraw and Hill.
- Myers, D.G. (2005). Social Psychology (8th ed.). New Delhi: Tata McGraw Hill Pub. Co. Ltd.

Department of Psychology
A.P.S. University, Rewa (M.P.)

B.A. HONOURS PSYCHOLOGY SEMESTER: I

Subject: Paper – 103 (Generic Elective (GE)* Youth, Gender and Identity

Course Objectives

1. To understand the meaning and concept of youth
2. To understand the concept of identity in youth and gender
3. To develop disciplinary knowledge, experimental learning and critical thinking
4. To understand social dynamics and social problems
5. To develop gender sensitivity and awareness of gender fluidity issues

Learning Outcomes

1. Understanding the transitory phase of youth, the issue surrounding it and thereby developing sensitivity to the youth of today.
2. Developing an appreciation of the multiple influences that mould the identity of today's youth.
3. Develop disciplinary knowledge, experimental learning and critical thinking
4. Understand social dynamics and social problems
5. Develop gender sensitivity and awareness of gender fluidity issues

Unit - I

Introduction

1. Concept of youth, Transition to Adulthood.
2 Concept of Gender: Sex, Gender Identity, Sexual Orientation
3. Concept of Identity: Social and Psychological perspectives (Social Identity Theory, Eriksonian Perspective

Unit - II

Youth and Identity

1. Family: Parent-youth conflict, sibling relationships, intergenerational gap.
2. Peer group Identity: Friendships and Romantic relationships
3. Workplace identity and Relationships
4. Education and Youth Identity.

Unit - III

Gender and Identity

1. Gender discrimination- Meaning and Definition

2. Gender Socialization and Gender roles
3. Gender Stereotype- nature, concept and social change

Unit - IV

Issues related to Youth, Gender and Identity

1. Violence-Nature, definition and factors determining Aggression and Violence
2. Concept and Importance of Work-Life Balance, Addressing the challenges of Work Life Balance.
3. Concept and Promotion of Equity and Equality

Unit - V

Youth, Gender, Identity and Globalization

1. Youth Culture: Concept and features, Influence of globalisation on youth identity
2. Gender Culture: Influence of globalisation on Gender identity.

Key Words: Youth, Gender, Identity, Aggression, Violence, Globalization, Work Life Balance

References:

1. Berk, L.E.(2010). Child Development (9th Ed.), New Delhi: Prentice Hall
2. Baron, R.A., Byrne, D. and Bhardwaj, G (2010). Social Psychology(12th Ed.) New Delhi Pearson

Department of Psychology
A.P.S. University, Rewa (M.P.)

B.A. HONOURS PSYCHOLOGY SEMESTER: **I**

Subject: Paper – 104 **(Ability Enhancement Course) (AEC)** Hindi Language

ikB~;Øe dk mnn~s';&

1- bl v/;;u ds mijkar vki Hkk"kkvksa esa 'kCn oxksZ vkSj O;kdjf.kd dksfV;ksa esa foHksn dh fLFkfr;ksa ls ifjfpr gksxsaA

2- ikfjHkkf"kd 'kCnkoyh ds ifjHkk"kkvksa dh tkudkjh izkIr djsxsaA

dkslZ vf/kxe miyfC/k ¼yfuZx vkmVde½

1- mRd`"V lkfgfR;d ikBksa ds v/;;u ls :fp dk fodkl djukA

2- fgUnh Hkk"kk dk O;ogkfjd KkuA

3- Hkk"kk&KkuA

4- lkekU; 'kCnkoyh vkSj fo'ks"k 'kCnkoyh ds v/;;u }kjk Hkk"kk ,oa laLd`fr cks/k dk fodkl djukA

5- fof'k"V 'kCnkoyh ¼cht 'kCn@dh oMZ½ ls ifjfpr djokrs gq, cks/k ds Lrj dks fodflr djukA

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Department of Psychology
A.P.S. University, Rewa (M.P.)

B.A HONOURS PSYCHOLOGY SEMESTER: II

Subject: Paper - 201 (Major Core) INTRODUCTION TO PERSONALITY

Course Objectives

1. To gain knowledge of personality.
2. To develop skills to enhance self esteem and self presentation.

Course Learning Outcomes

1. Understanding biological and environmental influences on personality development.
2. Students will learn to implement coping strategies for better adjustment.
3. Acquisition of life skills based on happiness and positive thinking.
4 Self Development, health and hygiene, self regulation skills.
5 Ability to relate and connect concepts with personal experiences and using critical

Unit - I

An Introduction to Personality

1. Concept and definition of personality
2. Determinants of personality
3. Nature and Type of personality
4. Assessment of personality

Unit - II

Approaches of Personality

1. Traits and Type Approaches to Personality
2. Socio-cognitive Approaches to personality
3. Psychoanalytical Approach to Personality
4. Humanistic Approaches to Personality

Unit - III

Adjustment and Coping

1. Adjustment-Concept, Type of psychological adjustive, Reaction-task oriented, Defence oriented.
2. Coping- Concept, Strategies- Appraisal focused, Problem focused and Emotion focused constructive coping.

Unit – IV

Personality Measurement

1. Personality Test- Nature and Types
2. Personality Inventories and Projective test-nature, uses and limitations

Unit - V

Applied areas of personality development

1. SWOC analysis ,communication skills,
2. Time management, stress management,
3. Happiness and positive thinking.

Key Words/ Tags: Personality, SWOC, Stress Management, Adjustment, Coping

References:

1. Asthana, M and Verma, K (1999) vyaktitwa ka manovigyan, motilal banarsidas, New Delhi.
2. Cervone,D. & Lawrence P.A. (2013) Personality Psychology (ed.12) New York Wiley
3. Coleman, J.C. (1971) Psychology and Effective behaviour, D.B. Taraporeala Sons & Co. Private Ltd. Bombay.
4. Covey,S.R. (2004), The 7 Habits of Highly Effective People, Free Press.
5. Dweek, C.S. (2006). Mindset: The New Psychology of success, Randon House.
6. Hall, C.S., Lindze, G. & Campbell, J,B, (2007), Theories of Personaity, 4th Edn, Wiley, India.
7. Kundu, C.L.(1980). Personality Development, ND: Sterling Pub.

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B.A HONOURS PSYCHOLOGY SEMESTER II

Subject: Paper – 202 **(Minor Core) Contemporary Social Problems and Concern**

Course Objectives

1. To understand genesis and manifestation of social problems.
2. To understand preventive and remedial measures for contemporary social problems.
3. To understand the role of social work in addressing social problems.

Learning Outcomes

1. Able to understand social problems and its relevance to Social Work.
2. Able to understand factor causing social problems
3. Able to understand the basic concepts and processes of assessing problems related to society
4. Able to understand genesis and manifestation of social problems.
5 Understand the role of social work in addressing social problems.

Unit - I

Understanding Social Problems

1. Social Problems: Definition and characteristics
2. Contemporary Social Problems: Nature and Causative Factors.
3. Major theories of Social Problems: Social, Psychological, and Economic

Unit – II

Contemporary Social Problems I

1. Alcoholism and Drug Addiction: Definition, Causes, Type and Impact.
2. Alcoholism and Drug Addiction: Prevention, Remedy and role of Social Worker.
3. Terrorism and Extremism: Definition, type, causes, impact

4. Terrorism and Extremism: Prevention, Remedy and role of Social Worker.

Unit – III

Contemporary Social Problems II

1. Suicide: Definition, Causes, Types, and Impact
2. Farmers and Students Suicide: Prevention, Remedy and role of Social Worker.

Unit – IV

Contemporary Social Problems III

1. Trafficking of women and children: Definition, Cause, Type and Impact
2. Trafficking of women and children: Prevention, Remedy and role of Social Worker.
3. Displacement and Migration: Definition, Cause, Type.
4. Impact Displacement and Migration: Prevention, Remedy and role of Social Worker.

Unit – V

Contemporary Social Problems IV

1. Poverty and Unemployment: Definition, Cause, Type and Impact
2. Poverty and Unemployment: Prevention, Remedy and role of Social Worker.
3. Implications of Social Problems and Social Disorganisation: Individual, Family and Society.

Key Words: Social Problems, Social Work, Poverty, Displacement, Unemployment, Suicide, Human Trafficking, Terrorism, Alcoholism

Reference:

1. Anna Leon-Guerrero(2009) Contemporary reading in Social Problems: Pine Forge Press
2. Deb, S. (2006). Contemporary Social Problems in India. New Delhi: Anmol Publication Pvt. Ltd.
3. Donileen R. Loseke (2011) Thinking about Social Problems: Transaction Publishers.
4. H.S, Becker.(1966). Social Problems- A Modern Approach. New York: John Wiley and Sons.
5. Joel Best (2016): Social Problems: W.W. Norton, Incorporated.
6. Joel Best (2017): Images of Issues- Typifying Contemporary Social Problems, Routledge
7. Madan, G.R. (1981): Indian Social Problems, New Delhi: Allied publication.
8. Malcolm Spector (2017): Constructing Social Problems: Routledge

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B.A. HONOURS PSYCHOLOGY SEMESTER: II

Subject: Paper – 203 (Generic Elective (GE)* Community Psychology

Course Objectives

1. To understand the meaning and concept of Community Psychology.
2. To develop disciplinary knowledge, Experimental learning and critical thinking.
3. To understand social dynamics and community health problems.

Learning Outcomes

1. Understanding the role of Psychology in community development.
2. Developing an appreciation of the core values that guide Community Psychology and facilitate community functions.
3. Developing insights with respect to health promotion programs in communities, community programme for child and maternal health, for physically challenged and elderly people in the Indian context through case studies.
4 Develop disciplinary knowledge, Experimental learning and critical thinking.
5. Understand social dynamics and community health problems.

Unit - I

Introduction

1. Community Psychology-Definition, Types of communities- locality based and relational:
2. Models: Ecological level analysis of community, conceptual level model.
3. Historical development and Perspective of Community Psychology.

Unit – II

Core Values of Community Psychology

1. Individual and Family wellness: Sense of Community: Respect for Human Diversity,: Social Justice :Empowerment and Citizen Participation: Collaboration and Community Strengths.

2. Community Functions- Learning, Socialization, and Supportive Functions.

Unit – III

Community as setting for health promotion

1. Concept of community mental health,
2. Concept of prevention
3. Need and Process of community organisation and building for health promotion programming.
4. Maternal health, for physical challenged and old age in Indian context.

Unit – IV

Community Programme for:

1. Child and Maternal health, for physical challenged and old age in Indian context.
2. Mental health education

Unit – V

Interventions for Community Development and Empowerment:

1. Concept and Practice for community development and Empowerment
2. Case studies of community intervention programs by the governmental and non-governmental organizations in Indian context such as, rural panchayat programs, children's education, citizen right, self- help group, social accounting.

Key Words: Community Psychology, Empowerment, Mental Health, Social Justice

References:

1. Banerjee, A., Banerji, R., Duflo, E., Glenneske, R., and Khenani, S. (2006) Can Information Campaign start local participation and improve outcomes? A study of primary education in Utter Pradesh, India, World Bank Policy Research, Working Paper No. 3967.
2. Fetterman, D.M., Kaftarian, S.J. and Wandersman, A. (Eds) (1996) Empowerment Evaluation, New Delhi: Sage Publication.
3. Kloos B. Hill, J Thomas, Wandersman A, Elias, M.J. and Dalton J.H. (2012). Community Psychology: Linking Individuals and Communities, Wadsworth Cengage Learning.
4. Mishra. G. (Ed). (2010) Psychology in India, Indian Council of Social Science Research, Dorling Kindersley (India) Pvt. Ltd. Pearson Education.

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B.A. HONOURS PSYCHOLOGY SEMESTER: **II**

Subject: Paper – 204 **(Ability Enhancement Course) (AEC)**

ENVIRONMENTAL STUDIES

Course Objectives

1. To understand various aspects of life forms, ecological processes, and the impacts on them by the human during Anthropogenic era
2. To develop empathy for all life forms, awareness, and responsibility towards environmental protection and nature preservation.
3. To build capabilities to identify relevant environmental issues.

Course Learning Outcomes

1. Understanding the role of Psychology in community development.
2. Developing the critical thinking for shaping strategies.
3. Will able to analyze the various underlying causes, evaluate the practices and policies, and develop framework to make inform decisions.
4. Develop empathy for all life forms, awareness, and responsibility towards environmental protection and nature preservation.
5. Build capabilities to identify relevant environmental issues.

Unit – I

Basic concept of Ecosystem:

1. Definition of Ecology and Ecosystem
2. Structure of Ecosystem: producer, consumer and decomposer
3. Function: energy flow in ecosystem, food chain, food web, and ecological pyramids

Unit – II

Natural Resources and its exploitation

1. Different types of natural resources-Forest, Water, Mineral, Energy, Land - Uses and over exploitation and associated problems.

Unit – III

Biodiversity and its conservation:

1. Introduction- Meaning & Definition
2. Levels of Biodiversity- Genetic, Species, and Ecosystem Diversity
3. Biographical classification of India.
4. Value of Biodiversity- Consumptive use, productive use, social, ethical, aesthetic and option value.

Unit – IV

Pollution

1. Meaning, Definition & Causes
2. Air, Water, Soil, Noise, Thermal and Nuclear Hazard
3. Types of pollutants
4. Climate change, Acid rain, Global Warming, Ozone layer depletion and Greenhouse effect**.**

Unit – V

Social issue and the Environment:

1. Urban Problems related to energy
2. Water conservation:
   - Rain water harvesting
   - Water shed management

Key Words: Pollution, Environmental Legislation, Environmental Movement, Environmental programme and organization.

References:

1. Singh, J.S., Singh, S.P. and Gupta, S.R., "Ecology; Environment Science and Conservation", S Chand publishing, New Delhi, (2018)
2. Divan, S. And Rosencranz, A., "Environmental Law and Policy in India: Cases, Material & Status" Oxford University Press, India, (2002) 2nd Edition.
3. Odum, E.P., " Fundamentals of Ecology", Philadelphia Saundres, (1971).
4. Bharucha, E., "Environmental studies" Universities Press India Pvt. Ltd. Hyderabad (2014) (Hindi Edition also available).
5. Kaushik, Anubha, Kaushik, C.P. "Perspectives in Environmental Studies"

1BACHELOR OF ARTS (B.A.) HONOURS PSYCHOLOGY
PROGRAMME STRUCTURE
(As per NEP 2020 & CBCS Ordinance 14 A)

2nd Year

SEMESTER – III					
Course Code & Name	**Course Type**	**Theory Paper**	**Internal Assessment**	**Maximum Marks**	**Credits**
301 Foundation of Developmental Psychology	Major Core	60	40	100	6
302 Indian Society	Minor Core	60	40	100	6
303 **Dynamics of Psychology**	GE	60	40	100	4
304 Basic of Computer and Information Technology	SE (FC)	60	40	100	4
SEMESTER TOTAL				**400**	**20**
CUMULATIVE TOTAL				**400**	**20**

SEMESTER – IV					
Course Code & Name	**Course Type**	**Theory Paper**	**Internal Assessment**	**Maximum Marks**	**Credits**
401 Foundation of Social Psychology	Major Core	60	40	100	6
402 Human Resource Management	Minor Core	60	40	100	6
403 Cognitive Psychology	GE	60	40	100	4
404 Moral values and Personality Development	SE (FC)	60	40	100	4
SEMESTER TOTAL				**400**	**20**
CUMULATIVE TOTAL				**800**	**40**

GE: Generic Elective **SE: Skill Enhancement** **FC: Foundation Course**

*Students may choose this course as a **Generic Elective** or may choose a Generic Elective Course offered in other UTD's at the same level or may choose a Course offered by MOOC's through SWAYAM.

The student will be awarded Diploma in Psychology on successful completion of second year.

Credit Distribution as per the Ordinance 14 A

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		Main Faculty (as per prerequisite)			Any Faculty	Skill Enhancement Course (SEC)	Ability Enhancement Course (AEC)	Field Projects/ internship/ apprenticeship /community engagement & service	Credits	Qualification Title (Credits Requirements)
		Subject I		Subject II	Subject III					
Level	Sem	Major		Minor	Generic Elective Course	Vocational Course		#Inter/Intra Faculty		
		Core	DSE							
Level 5	1	6		6	4	-	4	-	6+6+4+4 =20	(40) Undergraduate Certificate in Main Faculty
	2	6		6	4	-	4	-	6+6+4+4 =20	
Level 6	3	6		6	4	4	-	-	6+6+4+4 =20	(80) Undergraduate Diploma in Main Faculty
	4	6		6	4	4	-	-	6+6+4+4 =20	
Level 7	5	6	4	-	-	4	-	6	6+4+4+6 =20	(120) Bachelor Degree in Main Faculty
	6	6	4+4	-	-	-	-	6	6+4+4+6 =20	
Level 8	7	6	4	4 Research Methodology	-	-	-	6	4+4+4+6 =20	(160) Bachelor Degree (Honours/Research) in Main Faculty
	8	6	-	4	-	-	-	10	6+4+10 = 20	
Total		48	16	32	16	12	8	28	160 Credits	

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lsesLVj&III/ Semester - III
eq[; fo"k;@Major Core **-**301
Developmental Psychology
विकासात्मक मनोविज्ञान

Credits- 06
Max. Marks - 60
Min. Marks -

mìs';	**मानव विकास में प्रमुख सैद्धांतिक दृष्टिकोणों और पद्धतिगत दृष्टिकोणों को समझने और उनमें अंतर करने की क्षमता का प्रदर्शन करना।**	
Objective	1. Demonstrating an ability to understand and distinguish major theoretical perspectives and methodological approaches in human development.	
bdkbZ	fo"k;	O;k[;ku dh la[;k
bdkbZ-I	विकासात्मक मनोविज्ञान में मुद्दे और सिद्धांत- **1-** प्रकृति और पोषण **2-** निरंतरता और असंतोष **3-** विकास में प्लास्टिसिटी।	18 ?k.Vs
Unit-I	Issues and theories in Developmental Psychology – **1-** Nature and nurture; **2-** continuity and discontinuity, **3-** Plasticity in development.	18 Hours
bdkbZ-II	जीवन काल में विकास के क्षेत्र -1 **1-** शारीरिक विकास (बचपन से देर से वयस्कता तक) **2-** संज्ञानात्मक विकास और भाषा विकास **3-** संज्ञानात्मक विकास में भाषा की भूमिका	18 ?k.Vs
Unit-II	Domains of Development across life span - I **1-** Physical development (from infancy to late adulthood) **2-** Cognitive development and language development, **3-** Role of language in cognitive development,	18 Hours
bdkbZ-III	जीवन काल में विकास के क्षेत्र - 2 **1-** सामाजिक विकास **2-** भावनात्मक विकास और **3-** नैतिक विकास	18 ?k.Vs
Unit-III	Domains of Development across life span – II **1-** Socio development **2-** Emotional development and **3-** Moral development	18 Hours
bdkbZ-IV	**1-** भारतीय संदर्भ में विकासात्मक मुद्दे **2-** सामाजिक प्रासंगिकता के मुद्दे (लिंग, विकलांगता और गरीबी) **3-** बच्चों और किशोरों में विकासात्मक मुद्दे	18 ?k.Vs

	4- वयस्कता की चुनौतियाँ,वृद्धावस्था	
Unit-IV	**1-** Developmental issues in Indian context **2-** Issues of social relevance (gender, disability and poverty) **3-** Developmental issues in children and adolescents **4-** Challenges of adulthood; Aging	18 Hours
bdkbZ-V	सैद्धांतिक परिप्रेक्ष्य: **1-** .मनोगतिकी (फ्रायड और एरिकसन); **2-** व्यवहारिक (क्लासिकल और ऑपरेंट कंडीशनिंग; सोशल लर्निंग थ्योरी)। **3-** संज्ञानात्मक (पियाजे, सूचना संसाधन उपागम)।	18 ?k.Vs
Unit-V	Theoretical Perspectives: **1-** Psychodynamic (Freud and Erikson); **2-** Behavioural (classical and operant conditioning; social learning theory). **3-** Cognitive (Piaget, information processing approaches).	18 Hours
Suggested Readings :	**References:** Berk, L. E. (2010). *Child development* (9th Ed.). New Delhi, India: Prentice Hall. Feldman, R. S., & Babu, N. (2011). *Discovering the life-span*. New Delhi, India: Pearson. Georgas, J., Berry, J. W., Van de Vijver, F. J., Kagitçibasi, Ç., & Poortinga, Y. H. (Eds.) (2006). *Families across cultures: A 30-nation psychological study*. New York: Cambridge University Press. Kakar, S. (2012). *The inner world: A psychoanalytic study of childhood and society in India* (4th Ed.). New Delhi, India: Oxford University Press. Mitchell, P., & Ziegler, F. (2007). *Fundamentals of development: The psychology of childhood*. New York: Psychology Press. Papalia, D. E., Olds, S. W., & Feldman, R. D. (2006). *Human development* (9th Ed). New Delhi, India: Tata McGraw-Hill.	
ifjyfC/k	१ मानव विकास में प्रमुख सैद्धांतिक दृष्टिकोणों और पद्धतिगत दृष्टिकोणों को समझने और उनमें अंतर करने की क्षमता का प्रदर्शन करना। 2 जीवन के चरणों में मानव विकास के विविध क्षेत्रों में मील के पत्थर की पहचान करने की क्षमता विकसित करना। 3 मानव विकास को आकार देने की दिशा में सामाजिक-सांस्कृतिक संदर्भ के योगदान को समझना। 4 प्रमुख विकासात्मक चुनौतियों और भारतीय सामाजिक संदर्भ में सामने आने वाले मुद्दों को समझने की क्षमता प्राप्त करना। **5.मानव विकास में प्रमुख सैद्धांतिक दृष्टिकोणों और पद्धतिगत दृष्टिकोणों को समझने और उनमें अंतर करने की क्षमता का प्रदर्शन करना।**	
Course Learning Outcomes:	1. Demonstrating an ability to understand and distinguish major theoretical perspectives and methodological approaches in human development. 2. Developing an ability to identify the milestones in diverse domains of human development across life stages. 3. Understanding the contributions of socio-cultural context toward shaping human development. 4. Acquiring an ability to decipher key developmental challenges and issues faced in the Indian societal context. .5. Demonstrating an ability to understand and distinguish major theoretical perspectives and methodological approaches in human development.	

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Credits- 06
Max. Marks - 60
Min. Marks -

lsesLVj&III Semester - III
xkS.k fo"k;@Miner Core -302

Indian Society

भारतीय समाज

mÌs';	**इस पाठ्यक्रम का उद्देश्य भारतीय समाज की संकल्पना करना और समझना है भारतीय समाज के तत्कालीन वर्तमान और अतीत के बीच निरंतरता।**	
Objective	1. The course intends to conceptualize Indian society and understand the Continuity between then present and the past of Indian Society.	
bdkbZ	**fo"k;**	**O;k[;ku dh la[;k**
bdkbZ-I	भारत के विचार **1-** भारत उपनिवेश के रूप में। **2-** राष्ट्र राज्य और समाज।	18 ?k.Vs
Unit-I	**Ideas of India** **1-** India as Colony. **2-** Nation, State and Society.	18 Hours
bdkbZ-II	भारतीय गाँव **1-** एक सामाजिक इकाई के रूप में गाँव। **2-** एक आर्थिक इकाई के रूप में गाँव। **3-** एक राजनीतिक इकाई के रूप में गाँव।	18 ?k.Vs
Unit-II	**Indian Villages** **1-** Village as a Social Unit. **2-** Village as an Economic Unit. **3-** Village as a Political Unit.	18 Hours
bdkbZ-III	शहरी भारत **1-** शहरीकरण और उसके आयाम। **2-** ग्रामीण-शहरी सातत्य। **3-** भारत में शहरीकरण के मुद्दे।	18 ?k.Vs
Unit-III	**Urban India** **1-** Urbanisation and its Dimensions. **2-** Rural – Urban Continuum**.** **3-** Issues of Urbanisation in India.	18 Hours
bdkbZ-IV	जाति और वर्ग **1-** वर्ग और जाति।	18 ?k.Vs

	2- भारत में सामाजिक वर्ग। **3-** जाति और वर्ग के बीच संबंध।	
Unit-IV	**Caste and Class** **1-** Class and Caste. **2-** Social Classes in India. **3-** Relationship between Caste and Class.	18 Hours
bdkbZ-V	परिवार और विवाह **1-** परिवार : अर्थ विशेषताएँ कार्य एवं महत्व। **2-** विवाह : अर्थ लक्षण प्रकार और महत्व। **3-** परिवार और विवाह संस्था में परिवर्तन।	18 ?k.Vs
Unit-V	**Family and Marriage** **1-** Family: Meaning, Characteristics, Functions and Importance. **2-** Marriage: Meaning, Characteristics, Types and Importance. **3-** Changes in the Family and the Marriage Institution.	18 Hours
Suggested Readings :	Ahuja Ram : Social problems in India (Jaipur, Rawat Publication 1992) Bhusan, Vidya and Sachdev (2006) An introduction to sociology. Allahabad, KitabMahal. Davis, K : ManavSamaj (Allahabad: Kitab Mahal-1973) Gupta, M.L.: SamajShastra (Agra: SahityaBhavan Publication, 2021) Harry. M, Johns (1993) Sociology: A systematic introduction. Chennai: Allied Publications Horton, P.S. and Hunt, C.L., (2005) Sociology, New Delhi: Tata McGraw Hill Johnson, H.M.: Sociology A Systematic Introduction (Bombay: Allied Publishers) Mac Iver and Page: Society- An Introductory Analysis (London-Mac Millen 1955) Madan, G.R.: Indian Social problem, Vol. 1 and 2 Shankar, Rao (2006) CN: Sociology (S Chand and Company, New Delhi	
ifjyfC/k	.भारतीय सामाजिक व्यवस्था के वैचारिक ढांचे को समझना और उसकी गणना करना। सामाजिक संस्थाओं की गतिशीलता और विभिन्न के अनुप्रयोगों को समझें सैद्धांतिक के साथ-साथ भारतीय समाज के अध्ययन की कार्यप्रणाली और दृष्टिकोण।	
Learning Outcomes	1.Comprehend and calculate the conceptual framework of Indian Social System. 2.Understand the dynamic of Social institutions and applications of different Theoretical as well as methodology and perspectives of studying Indian Society. 3. The course intends to conceptualize Indian society and understand the Continuity between then present and the past of Indian Society. 4.Develop understanding about nature and dimentions of urbanization. 5.Student will learn about concept and relation between class and class	

ch-,- ikB~;Øe ¼मनोविज्ञान½ / B.A. Programme (Psychology)

lsesLVj & III / Semester - III

Credits- 04
Max. Marks - 60
Min. Marks -

oSdfYid fo"k;@Generic Elective (G.E.) – 303

Dynamics of Psychology

मनोविज्ञान की गतिकी

mÌs';	इस पाठ्यक्रम में भाग लेकर, छात्र को मानव मानस और अचेतन प्रक्रियाओं की खोज में आरंभ किया जाएगा।	
Objective	By participating in this course, the student will be initiated into an exploration of human psyche and unconscious processes.	
bdkbZ	**fo"k;**	**O;k[;ku dh la[;k**
bdkbZ-I	**मानव मन** **1-** रचनात्मक संभावनाएं और अनुमान **2-** चेतना और मानस	12 ?k.Vs
Unit-I	**Human Mind** **1-** creative possibilities and projections **2-** Consciousness and Psyche	12 Hours
bdkbZ-II	**मानव द्वारा नियोजित प्रमुख रक्षा तंत्र :** **1-** दमन, प्रक्षेपण,विखंडन,अस्वीकरण और विच्छेदन **2-** अचेतन का परिचय ।	12 ?k.Vs
Unit-II	**Major defenses employed by human beings:** **1-** Repression, Projection, Splitting, Denial and Dissociation. **2-** An introduction to the Unconscious	12 Hours
bdkbZ-III	**1- अचेतन एवं अवचेतन प्रक्रियाएं** **2-** फ्रायड एवं नव फ्रायडियन सिद्धांत	12 ?k.Vs
Unit-III	**1-** Consciousness and unconscious processes. **2-** Freud and Neo Freudian theories	12 Hours
bdkbZ-IV	**1- न्यूरॉन्स,संधिस्थल,न्यूरोट्रांसमीटर।** **2- तंत्रिका तंत्र की अवधारणा: बुनियादी उपखंड- परिधीय और मध्य।** **3- गोलार्ध के कार्य : स्पेरी और विभक्त मस्तिष्क** **4- बायां हाथ, भावना और दायाँ गोलार्ध।**	12 ?k.Vs
Unit-IV	**1- Neurons, Synapses, Neurotransmitters.** **2-** Concept of The nervous system: **3-** Basic subdivisions- Peripheral and Central. **4-** Hemisphere function: Sperry and the split –brain; **5-** Left handedness; Emotion and the right hemispheres.	12 Hours
bdkbZ-V	**1- सीखना और स्मृति**	12 ?k.Vs

	2- स्मृतिलोप के प्रकृति एवं प्रकार **3- कोर्साकॉफ का मनस्ताप।** **4- अल्जाइमर रोग।** **5- स्मृति की जैव रसायन।** **6- नींद, उत्तेजना और जैविक ताल** **7- उत्तेजना की अवधारणा; उत्तेजन के दैहिक मापन**	
Unit-V	**1- Learning and Memory** **2-** Amnesia: Nature and Types **3-** Korsakoff's psychosis. **4-** Alzheimer disease. **5-** Sleep and Arousal **6-** Concept of arousal; Physiological measures of arousal	12 Hours
Suggested Readings :	**:** Craib, I. *Psychoanalysis: A Critical Introduction*. London: Routledge Kakar, S. (1978) *The Inner World.* New Delhi: Viking. Kakar, S. (2006). *The Indians*. New Delhi: Penguin. Lear, J. (1990). *Freud*. London: Routledge. Winnicott, D.W. (1965) *Maturational Processes and the Facilitating Environment*. New York: International Universities Press. Winnicott, D.W. (1971). *Playing and Reality*. London: Tavistock Publication	
ifjyfC/k	1. इस पाठ्यक्रम में भाग लेकर, छात्र को मानव मानस और अचेतन प्रक्रियाओं की खोज में आरंभ किया जाएगा। 2. इस पाठ्यक्रम को शुरू करने और इसका अध्ययन करने से, छात्र न केवल उस ज्ञान से परिचित होगा जो अचेतन को रचनात्मकता, आश्चर्य, अनंत ज्ञान के आसन के रूप में स्थापित करता है बल्कि भय, चिंताओं और प्रतिरोधों और कठिन भावनात्मक पैटर्न के भंडार के रूप में भी होता है जो निरंतर जारी रहता है। किसी व्यक्ति के जीवन इतिहास में अपनी उपस्थिति दर्ज कराते हैं। 3. किसी के सपनों और अन्य लोगों के अचेतन मन की अभिव्यक्ति से संबंधित। 4. मानव जीवन के मानसिक स्थान में फैली कल्पनाओं, स्थानिक और लौकिक रूपकों के साथ चंचलता से जुड़ने के लिए एक चिंतनशील क्षमता विकसित करें। 5. प्रभाव और अनुभूति, संस्कृति और अचेतन मन के बीच के बंधन को समझें।	
Course Outcomes	1. By participating in this course, the student will be initiated into an exploration of human psyche and unconscious processes. 2.By undertaking and studying this course, the student will not only get familiarized with knowledge that locates the unconscious as a seat of creativity, surprise, infinite wisdom but also as a reservoir of fears, anxieties and resistances and difficult emotional patterns that continue to make their appearance throughout a person's life history. 3. Relate to one's dreams and others articulations of the unconscious mind. 4.Develop a reflective capacity to playfully engage with fantasies, spatial and temporal metaphors spanning the psychic space of human life. 5. Understand the bond between affect and cognition, culture and unconscious mind.	

ch-,- ikB~;Øe ¼मनोविज्ञान½ /B.A. Programme (Psychology)

lsesLVj & III/ Semester - III

Credits- 04
Max. Marks - 60
Min. Marks -

vk/kkj ikB~;Øe@Skill Enhancement - S.E. (FC) -304

dEI;wVj ,oa lwpuk rduhdh dk vk/kkj

Basic of Computer and Information Technology

mÌs';	bl ikB~;dze dk mís'; fo|kfFkZ;ksa dks dEI;wVj rFkk lwpuk rduhdh ds izkjfEHkd Kku ls ifjfpr djkuk gSA	
Objective	The objective of this course is to teach the students the basic knowledge of Computer and Information Technology.	
bdkbZ	**fo"k;**	**O;k[;ku dh la[;k**
bdkbZ-I	**dEI;wVj** 1- bfrgkl] dEI;wVj dh ihf<+;k¡] fo'ks"krk,¡] {kerk vkSj lhek,¡ 2- dEI;wVj dk oxhZdj.k] fMftVy dEI;wVj ds izdkj] gkMZos;j] lkW¶Vos;j] lkW¶Vos;j ds izdkj 3- dEI;wVj Hkk"kkvksa dh ihf<+;k¡] mPpLrjh; ,oa fuEuLrjh; Hkk"kk,¡ 4- VªkUlysVj ds izdkj] dEI;wVj flLVe ds ?kVd	12 ?k.Vs
Unit-I	**Computer** **1-** History, Generations of Computer, Characteristics, Capabilities and Limitations **2-** Classification of Computers, types of Digital computer Hardware, Software, Types of software **3-** Generations of Computer languages, High and low level languages **4-** Types of Translator, Components of Computer System	12 Hours
bdkbZ-II	**fMokbl dk ifjp;** **1-** fofHkUu buiqV@vkmViqV fMokbl dk ifjp; **2-** dh&cksMZ] ekÅl] ,e-vkbZ-lh-vkj-] vks-lh-vkj-] vks-,e-vkj-] ckjdksM] LdSuj **3-** oh-Mh-;w-lykWVj] bEiSDV vkSj ukWu&bEiSDV fizUVj **4-** LVksjst bdkbZ & fcV~l ,oa ckbV~l] izk;ejh ,oa lsds.Mjh eseksfjt	12 ?k.Vs
Unit-II	Introduction of devices 1. Introduction of various input/output devices 2. Keyboard, Mouse, MICR, OCR, OMR, Barcode, Scanner 3. VDU, Plotter, Impact and Nonimpact printers 4. Storage units - Bits and Bytes, Primary and Secondary Memories	12 Hours
bdkbZ-III	**foUMkst**	12 ?k.Vs

	1- foUMkst % ifjp;] foaMkst MsLdVkWi 2- LVkVZ cVu] VkLdckj] izksxzke rFkk foaMkst ds chp fLop djuk] Qkby eSust djuk] QksYMlZ ,oa vkWCtsDV~l 3- foaMkst ,DlIyksjj] 'kkWVZ&dV cukuk] dUVªksy iSuy] foUMkst ,lsljht % isUV] cz'k] oMZ iSM 4- foaMkst dks dLVekbt djuk] bUVjusV ,DlIyksjj	
Unit-III	**Windows** 1- Windows : Introduction, windows desktop 2- Start button, taskbar, switching between programs and windows, managing files, folders and objects 3- Windows explorer, creating shortcuts, control panel, windows accessories : paint, brush, word pad 4- Windows customizing, Internet Explorer	12 Hours
bdkbZ-IV	**,e-,l-oMZ** 1- gsMj] QqVj] ,UMuksV~l] QqVuksV~l] VSCl] VscYl 2- lkWfVZax ds lkFk dk;Z djuk] xzkfQDl ds lkFk dk;Z djuk & xzkfQDl bEiksZfVax 3- MªkWbZax vkWCtsDV~l] VsDLV MªkWbZax ¼oMZ vkVZ½] Mªkbax vkCtsDV dk iz;ksx djds fiDpj jksVsfVax ,oa vkWCtsDV ¶yhihax 4- Lisfyax vkSj xzkej psdj] vkWVks djsDV] vkWVks VsDLV] fdz,fVax VscYl] esyetZ	12 ?k.Vs
Unit-IV	**MS WORD** **1-** Headers, Footers, Endnotes, Footnotes, tabs, tables **2-** Working with sorting, Working with graphics-Importing graphics **3-** Drawing objects, Text in Drawings (Word Art), Pictures using Drawing objects, Rotating and Flipping Objects **4-** Spelling and Grammar Checker, Auto Correct, Auto Text, Creating Tables, Mailmerge	12 Hours
bdkbZ-V	**,e-,l- ikWoj IokbaV** **1-** izstsUVs'ku cukuk] vkWVks dWVsUV fotkMZ] ,fMfVax LykbM~~l **2-** ikWoj IokbaV esa VsDLV ds lkFk dke djuk] QkWjesfVax ,oa ,ykbfuax VsDLV] ikWoj IokbaV esa xzkfQDl ds lkFk dk;Z djuk **3-** best bEiksVZ djuk ,oa ikWoj IokbaV esa MªkWbax] vkWxZukbts'kuy pkVZ rS;kj djuk **4-** ikWoj IokbaV izstsuVs'ku esa fDyi vkVZ ,oa fiDpj QksVkst+ bUlVZ djuk] ikWoj IokbaV esa ,Dly pkVZ~l] oMZ ls Vscy bUlVZ djuk	12 ?k.Vs
Unit-V	**MS POWERPOINT** **1-** Creating presentations, Auto content wizard, editing slides **2-** Working with Text in Power Point, Formatting and Aligning Text, Working with graphics in Power Point **3-** Importing images and drawing in power point, creating organizational charts **4-** Inserting clip arts & picture/photos in Power Point Presentation, Excel Charts in Power Point, Inserting Table from Word	12 Hours

Suggested Readings :	1. Sinha, P.K., Computer Fundamentals, BPB Publ. 2. Rapidex Computer Courses 3. Jain, Satish, Introduction to Computer Science, BPB Publ. 4. Mansfield R, The Compact guide to MS-OFFICE, BPB 5. Mansfield R, word 6 for window quick & easy reference, tech.
ifjyfC/k	**bl ikB~;Øe ds v/;;uksijkar fo|kFkhZ dEI;wVj ij dk;Z djus esa l{ke gks ldsaxsA**
Outcomes	1. The students, after their study, will be able to work on Computer. 2. Understanding the concept of input and output devices 3. Study to use the internet safely. 4.Understanding The operating system. 5. Learning about MS Office.

ch-,- ikB~;Øe ¼ मनोविज्ञान ½ / B.A. Programme (Psychology)

lsesLVj&IV/Semester - IV
eq[; fo"k;@ Major Core -401
Social Psychology
समाज मनोविज्ञान

Credits- 06
Max. Marks - 60
Min. Marks -

mÌs';	**लिंग पर्यावरण स्वास्थ्य अंतरसमूह संघर्ष आदि जैसे सामाजिक मुद्दों पर सामाजिक मनोविज्ञान के अनुप्रयोगों को समझना।**	
Objective	Understanding the applications of social psychology to social issues like gender, environment, health, intergroup conflicts, etc.	
bdkbZ	**fo"k;**	**O;k[;ku dh la[;k**
bdkbZ-I	**1-** सामाजिक मनोविज्ञान की परिभाषा और प्रकृति **2-** सामाजिक मनोविज्ञान का संक्षिप्त इतिहास **3-** सामाजिक मनोविज्ञान के तरीके: मात्रात्मक और गुणात्मक तरीके **4-** सामाजिक मनोविज्ञान के अनुप्रयोग: पर्यावरण अंतरसमूह संघर्ष स्वास्थ्य और लैंगिक मुद्दे सोशल मीडिया का प्रभाव	18 ?k.Vs

Unit-I	**1- Definition and nature of social psychology** **2-** Brief history of social Psychology **3-** Methods of social psychology: Quantitative and qualitative methods **4-** Applications of social psychology: Environment intergroup conflicts, health and gender issues, influence of social media	18 Hours
bdkbZ-II	सामाजिक अनुभूति और मनोवृत्तियाँ **1-** सामाजिक अनुभूति और सूचना प्रसंस्करण: **2-** योजनाए, **3-** रूढ़िवादिता और संज्ञानात्मक रणनीतियाँ स्वयं और दूसरों को समझना: **1-** आत्म-अवधारणा और आत्म-सम्मान **2-** छाप निर्माण, प्रभाव प्रबंधन मनोवृत्ति **1-** प्रकृति और माप **2-** मनोवृत्ति परिवर्तन गुणारोपण : प्रकृति और अनुप्रयोग	18 ?k.Vs
Unit-II	**Social cognition and attitudes** **1-** Social cognition and information processing: **2-** Schemas, **3-** stereotypes and cognitive strategies Perceiving self and others: **1-** Self-concept and self-esteem, **2-** impression formation, Impression Management Attitudes: **1-** Nature and measurement, **2-** attitude change, Attribution: **1-** nature and applications	18 Hours
bdkbZ-III	सामाजिक संदर्भ में प्रभावशाली प्रक्रियाएं: **1-** समाजोपकारी व्यवहार **2-** आक्रामकता और सामाजिक हिंसा **3-** अंतर व्यक्तिगत आकर्षण	18 ?k.Vs
Unit-III	**Affective processes in social context** **1-** Pro-social behaviour **2-** Aggression and social violence **3-** Inter personal attraction	18 Hours
bdkbZ-IV	समूह प्रक्रियाएं और सामूहिक व्यवहार: **1-** समूह: प्रकृति और समूह गठन **2-** समूह और प्रदर्शन: सामाजिक सुविधा सामाजिक आवारगी और सामाजिक अनुरूपता	18 ?k.Vs

Unit-IV	**Group Processes and Collective behaviour:** **1-** Group: Nature and group formation **2-** Group and performance: Social facilitation, Social loafing and social conformity.	18 Hours
bdkbZ-V	नेतृत्व: **1-** नेताओं के गुण नेतृत्व के प्रकार: **2-** नेतृत्व के सिद्धांत **3-** सामूहिक व्यवहार: भीड़	18 ?k.Vs
Unit-V	**Leadership**: **1-** Qualities of leaders, types of leadership: **2-** Theories of Leadership **3-** Collective Behaviour: Crowd	18 Hours
Suggested Readings :	**:** Baron, R. A., Byrne, D., & Bhardwaj, G. (2010). *Social psychology* (12th Ed.). New Delhi, India: Pearson. Hogg, M. A., & Vaughan, G. M. (2005). *Social psychology*. Harlow: Pearson Prentice Hall. Husain, A. (2012). *Social psychology*. New Delhi, India: Pearson. Myers, D. G. (2008). *Social psychology.* New Delhi, India: Tata McGraw-Hill. Taylor, S. E., Peplau, L. A., & Sears, D. O. (2006). *Social psychology* (12th Ed.). New Delhi, India: Pearson.	
ifjyfC/k	1. बुनियादी सामाजिक मनोवैज्ञानिक अवधारणाओं को समझना और प्रासंगिक तरीकों से परिचित होना। 2. सामाजिक मनोविज्ञान के अनुप्रयोगों को सामाजिक मुद्दों जैसे लिंग, पर्यावरण, स्वास्थ्य, अंतरसमूह संघर्ष आदि को समझना। 3. सामाजिक वास्तविकता के मानचित्रण से संबंधित कौशल विकसित करना और यह समझना कि लोग सामाजिक स्थितियों का मूल्यांकन कैसे करते हैं। 4. लोगों को नुकसान पहुँचाने और मदद करने वाले व्यवहारों सहित सामाजिक प्रभाव और प्रभावी प्रक्रियाओं की अवधारणाओं से परिचित होना। 5. सामाजिक प्रभाव प्रक्रियाओं से संबंधित समझ विकसित करना विशेष रूप से व्यक्तिगत व्यवहार और प्रदर्शन पर दूसरों का प्रभाव।	
Course Outcomes	➢ Understanding the basic social psychological concepts and familiarize with relevant methods. ➢ Understanding the applications of social psychology to social issues like gender, environment, health, intergroup conflicts, etc. ➢ Developing skills pertaining to mapping of social reality and understanding how people evaluate social situations. ➢ Familiarizing with the concepts of social affect and affective processes including people's harming and helping behaviours. ➢ Developing an understanding pertaining to social influence processes particularly the influence of others on individual behaviour and performance.	

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lsesLVj&IV Semester - IV

xkS.k fo"k;@Miner Core -402

Human Resource Management

मानव संसाधन प्रबंधन

Credits- 06
Max. Marks - 60
Min. Marks -

mìs';	एचआरएम के बहु-सांस्कृतिक ज्ञान और विविधता के प्रति संवेदनशीलता का प्रदर्शन।	
Objective	Demonstrating multi-cultural knowledge of HRM and sensitivity towards diversity.	
bdkbZ	fo"k;	O;k[;ku dh la[;k
bdkbZ-I	मानव संसाधन प्रबंधन 1- अवधारणा और प्रकृति 2- कार्यक्षेत्र और इसका महत्व	18 ?k.Vs
Unit-I	Human Resource Management 1- Concept and Nature, 2- Scope and its Importance	18 Hours
bdkbZ-II	1- जनशक्ति नियोजन 2- कार्य विश्लेषण 3- नौकरी का विवरण और विशिष्टता।	18 ?k.Vs
Unit-II	1- Man Power Planning	18 Hours

	2- Job Analysis 3- Job Description and Specification.	
bdkbZ-III	चयन प्रक्रिया: 1- चयन की विधि 2- कार्य संतुष्टि और कार्य संवर्धन।	18 ?k.Vs
Unit-III	1- Selection Process:Method of Selection 2- Job Satisfaction and Job Enrichment.	18 Hours
bdkbZ-IV	1- प्रशिक्षण और विकास 2- प्रदर्शन मूल्यांकन: अवधारणा और उद्देश्य 3- पदोन्नति	18 ?k.Vs
Unit-IV	1- Training and Development 2- Performance Appraisal: Concept and objectives 3- Promotion	18 Hours
bdkbZ-V	1- परिवेदना निवारण प्रक्रिया 2- अनुशासन 3- सहभागिता प्रबंधन	18 ?k.Vs
Unit-V	1- Grievance Procedure 2- Discipline 3- Workers Participation in Management	18 Hours
Suggested Readings :	**Banfield, P., & Kay, R. (2011). *Introduction to human resource management* (2nd Ed.). New Delhi, India: Oxford University Press. DeCenzo, D. A., & Robbins, S. P. (2006). *Fundamentals of human resource management* (8th Ed.). NY: Wiley. Dessler, G., & Varkkey, B. (2011). *Human resource management* (12th Ed.). New Delhi, India: Pearson Education. Tayeb, M. H. (2005). *International human resource management: A multinational company perspective.* NY: Oxford University Press.**	
ifjyfC/k	1. विशेष रूप से भर्ती, चयन, प्रदर्शन मूल्यांकन, प्रशिक्षण और करियर विकास से संबंधित मानव संसाधन समस्याओं को हल करने में मानव संसाधन विभागों की सहायता करने की क्षमता विकसित करना। 2. उपयुक्त मात्रात्मक/गुणात्मक विधियों का उपयोग करके प्रशिक्षण आवश्यकताओं के विश्लेषण के लिए कौशल का प्रदर्शन करना। 3. नौकरी विश्लेषण करने के लिए कौशल विकसित करना जो चयन उपकरणों के साथ-साथ प्रदर्शन मूल्यांकन प्रणाली का आधार बन सके। 4. किसी संगठन के कर्मचारियों की दक्षताओं को मैप करने के लिए प्रासंगिक क्षमताओं को प्राप्त करना। 5. एचआरएम के बहु-सांस्कृतिक ज्ञान और विविधता के प्रति संवेदनशीलता का प्रदर्शन।	
Outcomes	**1. Developing the ability to assist HR departments in resolving human resource problems, particularly related to recruitment, selection, performance appraisal, training and career development. 2. Demonstrating skills to conduct training needs analysis using appropriate quantitative/qualitative methods. 3. Developing skills to conduct job analysis that could form the basis of selection instruments as well as performance appraisal system. 4. Acquiring relevant abilities to map competencies of employees of an organization.**	

	5. Demonstrating multi-cultural knowledge of HRM and sensitivity towards diversity.

ch-,- ikB~;Øe ¼मनोविज्ञान½ / B.A. Programme (Psychology)

lsesLVj&IV / Semester - IV

oSdfYid fo"k;/ Generic Elective (G.E.) - 403

Cognitive Psychology

संज्ञानात्मक मनोविज्ञान

Credits- 04
Max. Marks - 60
Min. Marks -

mìs';	उन तरीकों को समझना जिसमें मनुष्य सूचना प्रसंस्करण में संलग्न हैं और प्रमुख धारणाओं के साथ-साथ संज्ञानात्मक मनोविज्ञान की विशिष्ट विशेषताओं का ज्ञान विकसित करना।	
Objective -	Understanding the ways in which humans engage in information processing and developing knowledge of the key assumptions as well as distinguishing features of cognitive psychology.	
bdkbZ	**fo"k;**	**O;k[;ku dh la[;k**
bdkbZ-I	**संज्ञानात्मक मनोविज्ञान का परिचय** **1- संज्ञानात्मक मनोविज्ञान में प्रकृति, इतिहास और प्रणाली** **2- उपागम -प्रायोगिक संज्ञानात्मक मनोविज्ञान**	12 ?k.Vs

	3- संज्ञानात्मक तंत्रिका विज्ञान और संज्ञानात्मक तंत्रिका मनोविज्ञान	
Unit-I	Introduction to Cognitive Psychology **1-** Nature, History, and Methods in Cognitive Psychology **2-** Approaches-Experimental Cognitive Psychology, **3-** Cognitive Neuroscience and Cognitive neuropsychology	12 Hours
bdkbZ-II	**अवधान और चेतना** **1- प्रकार:चयनात्मक अवधान,विभाजित अवधान और दिर्घिक्रित अवधान।** **2- सिद्धांत:आरंभिक चयन और विलम्बित चयन क्षमता और मानसिक प्रयास मॉडल**	12 ?k.Vs
Unit-II	Attention and Consciousness **1-** Types: Selective Attention, Divided Attention and Sustained Attention. **2-** Theories: Early and Late Selection, Capacity and Mental Effort Models	12 Hours
bdkbZ-III	**मेमोरी प्रक्रियाएं** **1- संकेतिकी: संचयन और पुनः प्राप्ति ।** **2- स्मृति के रूपक: संवेदी अल्पकालिक और दीर्घकालिक।** **3- वर्किंग मेमोरी और मेनेमिक्स(स्मृति सहायक प्रविधियां)** **4- चलन स्मृति: अग्रोंन्मुखो स्मृति एवं पश्चोंन्मुखो स्मृति**	12 ?k.Vs
Unit-III	Memory Processes **1-** Encoding, Storage and retrieval. **2-** Metaphors of Memory: Sensory, Short-term and Long-term. **3-** Working Memory, and Mnemonics **4-** Everyday Memory: Autobiographical Memory, Eyewitness Memory,Prospective Memory	12 Hours
bdkbZ-IV	**तर्क और निर्णय लेना** **1- तर्क के प्रकार: आगमनात्मक और निगमनात्मक।** **2- तर्क के उपागम: घटक नियम / अनुमान और मानसिक मॉडल।** **3- निर्णय स्वतः शोध पूर्वाग्रह एवं त्रुटियाँ (संज्ञानात्मक भ्रम) उपलब्धता, प्रतिनिधित्व, फ्रेमिंग प्रभाव और पश्चदृष्टि पूर्वाग्रह।**	12 ?k.Vs
Unit-IV	Reasoning and Decision Making **1-** Types of Reasoning: Inductive and Deductive. **2-** Approaches to Reasoning: Componential, Rules/Heuristics and Mental Models. **3-** Heuristics and Biases in Decision Making ('Cognitive Illusions'): Availability, Representativeness, Framing Effect and Hindsight Bias.	12 Hours
bdkbZ-V	**समस्या समाधान और रचनात्मकता** **1- समस्या समाधान की परिभाषा, प्रकृति और रणनीतियाँ।**	12 ?k.Vs

	2- परिभाषा, प्रकृति और रचनात्मकता के परिभाषा, प्रकृति एवं प्रकार। **3- सृजनात्मकता को प्रभावित करने वाले कारक**	
Unit-V	Problem Solving and Creativity 1. Definition, Nature and Straregies of problem solving. 2. Definition, Nature and Types of Creativity. 3. Factors influencing creativity.	12 Hours
Suggested Readings :	**:** Galotti, K. M. (2008). *Cognitive psychology: In and out of the laboratory* (2nd Ed.). Bangalore: Wadsworth, Cengage Learning. Goldstein, E.B. (2011/2014). *Cognitive Psychology: Connecting Mind, Research, and Everyday Experience*. Belmont, CA: Wadsworth Cengage. Hunt, R. R., & Ellis, H. C. (2004). *Fundamentals of cognitive psychology* (7th Ed.). New Delhi: Tata McGraw-Hill. Riegler, B. R., & Riegler, G. R. (2008). *Cognitive psychology: Applying the science of the mind* (2nd Ed.). New Delhi: Dorling Kindersley.	
ifjyfC/k	1. उन तरीकों को समझना जिसमें मनुष्य सूचना प्रसंस्करण में संलग्न हैं और प्रमुख धारणाओं के साथ-साथ संज्ञानात्मक मनोविज्ञान की विशिष्ट विशेषताओं का ज्ञान विकसित करना। 2. मानव मानसिक प्रक्रियाओं को समझने के लिए प्रयोगशाला की सावधानीपूर्वक नियंत्रित प्रायोगिक स्थितियों से लेकर आत्मनिरीक्षण की अधिक व्यक्तिपरक विधि तक विभिन्न विधियों को सीखना। 3. मानव अनुभूति (जैसे ध्यान, स्मृति, तर्क और निर्णय लेने) में मूल अवधारणाओं का बुनियादी ज्ञान प्राप्त करना। 4. विभिन्न संज्ञानात्मक प्रक्रियाओं से संबंधित क्लासिक और वर्तमान प्रायोगिक अनुसंधान के बारे में महत्वपूर्ण जागरूकता विकसित करना। 5. संज्ञानात्मक मनोविज्ञान में प्रयोगों को डिजाइन करने और संचालित करने के लिए आवश्यक उपयुक्त कौशल का प्रदर्शन करना। 6. संज्ञानात्मक प्रक्रियाओं के ज्ञान को अपने निजी जीवन और वास्तविक जीवन के मुद्दों पर लागू करना। (जैसे याददाश्त में सुधार, और मल्टीटास्किंग)। 7. संज्ञानात्मक कार्यप्रणाली में व्यक्तिगत अंतर और सामाजिक-सांस्कृतिक कारकों की भूमिका की सराहना करना।	
Outcomes -	1. Understanding the ways in which humans engage in information processing and developing knowledge of the key assumptions as well as distinguishing features of cognitive psychology. 2. Learning the different methods ranging from carefully controlled experimental conditions of the lab to the more subjective method of introspection, to understand human mental processes. 3. Acquiring basic knowledge of core concepts in human cognition (e.g. attention, memory, reasoning and decision making). 4. Developing critical awareness about the classic and current experimental research relating to various cognitive processes. 5. Demonstrating appropriate skills essential in designing and conducting experiments in cognitive psychology.	

ch-,- ikB~;Øe ¼मनोविज्ञान½ / B.A. Programme (Psychology)

lsesLVj&IV /Semester - IV

vk/kkj ikB~;Øe@Skill Enhancement- (S.E.) -404

Credits- 04
Max. Marks - 60
Min. Marks -

uSfrd ewY; ,oa O;fDrRo fodkl

Moral values and Personality Development

mÌs';	bl ikB~;Øe dk mÌs'; fo|kfFkZ;ksa dks O;fDrRo fodkl gsrq uSfrd ewY;ksa dh f'k{kk nsuk gSA	
Objective -	The objective of this course is to teach the students the moral values for their personality development.	
bdkbZ	**fo"k;**	**O;k[;ku dh la[;k**
bdkbZ-I	**ewY;** **1-** ewY; dk vFkZ **2-** ewY;ksa dk oxhZdj.k **3-** uSfrd ewY; dh vo/kkj.kk **4-** uSfrd ewY;ksa dk egRo	12 ?k.Vs
Unit-I	**Values** 1. Meaning of values 2. Classification of values 3. Concept of Moral values 4. Importance of Moral values	12 Hours
bdkbZ-II	**pfj=&fuekZ.k** 1- pfj= dk vFkZ vkSj ifjHkk"kk 2- mÙke pfj= & fuekZ.k dk lk/ku 3- mÙke pfj= ds y{k.k 4- pfj= fuekZ.k esa f'k{kk dh Hkwfedk	12 ?k.Vs
Unit-II	**Character Building** **1-** Meaning and definition of character **2-** Means of Good character building **3-** Traits of Good character **4-** Role of Education in character Building	12 Hours
bdkbZ-III	**ln~xq.k** 1- ;e 2- fu;e 3- deZ;ksx 4- olq/kSo dqVqEcde	12 ?k.Vs
Unit-III	**Virtues** **1-** Yama **2-** Niyama **3-** Karmayoga **4-** Vasudhaiva Kutumbakam	12 Hours
bdkbZ-IV	**vknrsa** **1-** vuq'kklu **2-** le;&izca/ku **3-** fu;fer fnup;kZ **4-** ldkjkRed fpUru	12 ?k.Vs
Unit-IV	**Habits** **1-** Discipline **2-** Time Management	12 Hours

	3- Regular routine **4-** Positive thinking	
bdkbZ-V	**O;fDrRo fodkl** **1-** O;fDrRo dh vo/kkj.kk 2- O;fDrRo fodkl dk vFkZ **3-** O;fDrRo fodkl ,oa pfj= O;fDrRo fodkl esa uSfrd ewY;ksa dh Hkwfedk	12 ?k.Vs
Unit-V	**Personality Development** **1-** Concept of Personality **2-** Meaning of Personality Development **3-** Personality Development and Character Role of Moral values in Personality Development	12 Hours
Suggested Readings :	**1-** Lokeh foosdkuUn] O;fDrRo dk lEiw.kZ fodkl] izdk'kd jkeÑ".k eB] ukxiqj] 2006 **2-** MkW-,e-,- csx] O;fDrRo fodkl ,oa fu[kkj] e/; izns'k fgUnh xzUFk vdkneh] Hkksiky] 1997 **3-** cStukFk flag] O;fDrxr vkSj lkeqnkf;d fodkl] fczfV'k cqd fMiks] gtjrxat y[kuÅ] 1961 **4-** v#.k lkxj] f'k"Vkpkj ,oa O;fDrRo fodkl] vkuUn] oh ,.M ,l ifCy'klZ] ubZ fnYyh] 2017 **5-** MkW- lqjs'kpUnz 'kekZ] O;fDrRo fodkl vkSj Hkxon~xhrk] eatqy ifCyf'kax gkml] Hkksiky] 2016 **6-** izks- lekuh _tqizKk] O;fDrRo fodkl vkSj ;ksx] tSu fo'o Hkkjrh cqd LVksj] jktLFkku] 2015 **7-** vftr ukjk;.k f=ikBh] uSfrd vkSj ekuoh; ewY;] izfrJqfr izdk'ku] dydÙkk] 2017 **8-** Barun K. Mitra, Personality Development and soft skills, Oxford University Press, 2016	
ifjyfC/k	bl ikB~;dze ds v/;;u ds mijkar fo|kFkhZ ln~xq.kksa ls ;qDr gksdj lekt ds csgrjh ds fy, dk;Z dj ldsaxsA	
Course Outcomes	1 .On the basis of this course the students will be able to work for betterment of their society. 2. Students will learn to implement coping strategies for better adjustment. 3. Acquisition of life skills based on happiness and positive thinking. 4 Self Development, health and hygiene, self regulation skills. 5 Ability to relate and connect concepts with personal experiences and using critical	

STUDY CENTRE FOR SOCIAL WORK

LEARNING OUTCOMES BASED

COURSE STRUCTURE

for

Bachelor of Social Work (B.S.W)

Study Centre for Social Work

(As per NEP 2020 and CBCS Ordinance 14 (A)

AWADHESH PRATAP SINGH UNIVERSITY,
REWA (M.P.)

Vision of the University:

To be the premier institution that offers teaching and learning programmes of the best quality, graduate students who excel and become leaders in the chosen profession contributing to the community, the nation and the world, and prepares individuals of the highest moral fibre. The vision of university is:

To create an ideal society and an intellectual environment that initiates, nourishes and perpetuates values of co-existence and to fulfil and achieve excellence.

The university, under the dynamic leadership of our honourable Vice-chancellor is working on quite a few ambitious plans. The idea is to develop the university as a knowledge city.

Study Centre for Social Work:

The department has organized Invited Talks, Workshops and Seminars to improve the knowledge of students regarding the latest developments in the field of Social Work Faculty:

Faculty:

1. Prof. Shreekant Mishra	Prof-in-Charge
2. Dr. Shashank Pandey	Full Time Faculty
3. Dr. Preetam Singh	Full Time Faculty
4. Mr. Sunit Kuma Dwivedi	Full Time Faculty
5. Dr. Shalini Sharma	Full Time Faculty
Programme : B.S.W. Duration : 8 Semesters (Four Year) Eligibility : 10+2 with 45% marks obtained	

Admission Procedure:

The admission will be done as per merit of qualifying examinations.

PROGRAMME OUTCOMES (POs)

PO#	PROGRAMMEOUTCOMES
PO1	Critical Thinking: Inculcate critical thinking to carry out scientific investigation objectively. Formulate coherent arguments; critically evaluate practices, policies and theories by following scientific approach to knowledge development. Critically evaluate ideas, evidence and experiences from an open-minded and reasoned perspective.

PO2	Scientific Communication Skills: Imbibe effective scientific and / or technical communication in both oral and writing. Ability to show the importance of the subject as precursor to various scientific developments since the beginning of the civilization.
PO3	Social Interaction: Elicit views of others, mediate disagreements and help reach conclusions in group settings.
PO4	Enlightened Citizenship: Create awareness to become an enlightened citizen with commitment to deliver one's responsibilities within the scope of bestowed rights and privileges.
PO5	Ethics: Continue to acquire relevant knowledge and skills appropriate to professional activities and demonstrate highest standards of ethical issues in the subject concerned. Ability to identify unethical behaviour such as fabrication, falsification or misrepresentation of data and adoptive objective, unbiased and truthful actions in all aspects.
PO6	Environment and Sustainability: Understand the issues of environmental contexts and sustainable development.
PO7	Lifelong Learning: Ability to think, acquire knowledge and skills through logical reasoning and to inculcate the habit of self-learning throughout life, through self- paced and self- directed learning aimed at personal development, and adapting to changing academic demands of work place through knowledge/ skill development/ reskilling.

PROGRAMME SPECIFIC OUTCOME (B.S.W.)

PSO #	PROGRAMME SPECIFIC OUTCOME
PSO 1	To gain a functional knowledge of theoretical concepts and experimental Aspects of Social Work and their applications in the day-to-day life.
PSO 2	To integrate the gained knowledge with various contemporary and evolving areas in Social Work.
PSO 3	To understand, analyze, plan and implement qualitative as well as quantitative, analytical and therapeutic –based problems related to Human Behaviour and Social Work.
PSO 4	Provide students with opportunities to apply the concepts learnt in the class- rooms to real life situations.

Bachelor of Social Work (BSW)
Study Centre for Social Work
A.P.S. University, Rewa (M.P.)
Programme Structure
(As per NEP 2020 and CBCS Ordinance 14 (A)

EXAMINATION SCHEME

I[st] Year

S.No.	Paper Name	Theory		Internal Assessment		Total Max. Marks	Credits
		Max.	Min.	Max.	Min.		
	Semester - I						
1.	Paper - 101 **(Major Core)** Foundations of Social Work	60	21	40	20	100	6
2.	Paper – 102 **(Minor Core)** Psychology and Social Work	60	21	40	20	100	6
3.	Paper – 103 **(Generic Elective (GE)*** Introduction to Contemporary Indian Society	60	21	40	20	100	4
4.	Paper – 104 **(Ability Enhancement Course) (AEC)** Hindi Language	60	21	40	20	100	4
Semester Total						**400**	**20**
Cumulative Total						**400**	**20**
	Semester - II						
1.	Paper - 201 **(Major Core)** Social Case Work	60	21	40	20	100	6
2.	Paper – 202 **(Minor Core)** Social Science Concepts and Social Work	60	21	40	20	100	6
3.	Paper – 203 **(Generic Elective (GE)*** Community Psychology	60	21	40	20	100	4
4.	Paper – 204 **(Ability Enhancement Course) (AEC)** Environmental Studies	60	21	40	20	100	4
Semester Total						**400**	**20**
Cumulative Total						**800**	**40**

* Students may choose this course as a Generic Elective or may choose a Generic Elective Course offered in other UTDs at the same level or may choose offered by MOOCs through SWAYAM.
* The student will be awarded Certificate in Bachelor of Social Work (CBSW) on successful completion of first year.

Bachelor of Social Work (BSW)
Study Centre for Social Work
A.P.S. University, Rewa (M.P.)
Programme Structure
(As per NEP 2020 and CBCS Ordinance 14 (A)

EXAMINATION SCHEME

I[st] Year

S.No.	Paper Name	Theory		Internal Assessment		Total Max. Marks	Credits
		Max.	Min.	Max.	Min.		
	Semester - I						
1.	Paper - 101 **(Major Core)** Foundations of Social Work	60	21	40	20	100	6
2.	Paper – 102 **(Minor Core)** Psychology and Social Work	60	21	40	20	100	6
3.	Paper – 103 **(Generic Elective (GE)*** Introduction to Contemporary Indian Society	60	21	40	20	100	4
4.	Paper – 104 **(Ability Enhancement Course) (AEC)** Hindi Language	60	21	40	20	100	4
Semester Total						**400**	**20**
Cumulative Total						**400**	**20**

Study Centre for Social Work
A.P.S. University, Rewa (M.P.)

B.S.W. SEMESTER: **I**

Subject: Paper - 101 **(Major Core) Foundations of Social Work**

Course Objectives

1. To understand history and evolution of social work profession, both in India and the West.
2. To develop insights into the origin and development of ideologies and approaches to socialchange.
3. To develop Skills to understand contemporary reality in its historical contest.
4. To understand of Gandhian Philosophy.

Course Learning Outcomes (CO)

CO1: Able to understand social work as a profession.

CO2: Able to understand various ideologies of social work.

CO3: Able to demonstrate awareness of values and ethics of the social work profession.

CO4: Develop Skills to understand contemporary reality in its historical contest.

CO5: Understand of Gandhian Philosophy.

Unit - I

An Introduction to Social Work

1. Social Work: Concept, Meaning, Definition and Objectives
2. Social Work: Nature, Scope and Functions
3. Emergence of Social Work: UK, USA, India

Unit - II

Gandhian Philosophy of Social Work

1. Gandhian Philosophy of Social Work
2. Salient Features of Gandhian Thought
3. Gandhian Values and Concept of help

Unit - III

Values and Ethics in Social Work Practice

1. Assumptions and Values of the Social Work
2. Codes of Ethics
3. Principles of Social Work

Unit - IV

Social Work Profession in India

1. Profession: Meaning Definition and Attributes

2. Professionalization of Social Work in India
3. Issues and Challenges before Social Work Profession

Unit - V

Approaches and Ideologies

1. Professional v/s Voluntary Approaches to Social Work
2. Ideology of Action Groups and Social Movements
3. Generalist Approach Groups and Social Movements

Key Words: Social Work, Values and Ethics, Philosophy, Professional Attributes and Social Work Practice.

References:

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- Banks, S. (1995), Ethics and Values in Social Work: Practical Social Work Series, London: Macmillan Press Ltd.
- Compton, B.R. (1980), Introduction to Social Welfare and Social Work. Illinois: The Dorsey Press.
- Desai, Murli, (2006), Ideologies and Social Work: Historical and Contemporary Analyses, Rawat Publication, New Delhi.
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- Heun, Linda R., Heun, Richard E. (2001) Developing Skills for Human Interaction, London: Charles E. Merrill Co.
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- Joseph, Sherry (Ed.) (2000) Social Work: In the Third Millennium (Some Concerns and Challenges), Sriniketan, Department of Social Work, Visva-Bharati.
- National Association of Social Workers. (2008) Coce of Ethics of the National Association of Social Workers. Washington, D.C.: NASW Press.
- O' Hagan, Kieran, Kingsley, Jessica (2003) Competence in Social Work Practice - A Practical Guide for Professionals, London.
- Reamer and Fredric (2005) Social Work Values and Ethics, New Delhi: Rawat Publication.
- Singh, D.K. and Bhartiya, A.K. (2010) Social Work: Concept and Methods. Lucknow: New Royal Book Company.
- Skidmore, Rex A. (1982), Introduction to Social Work, New Jersey, Thackeray, Milton G. Prentice-Hall, Englewood Cliffs.

- Surendra Singh (Chief Editor). (2012): Encyclopedia of Social Work in India. Lucknow: New Royal Book Company.

Study Centre For Social Work
A.P.S. University, Rewa (M.P.)

B.S.W. Semester: **I**

Subject: Paper – 102 **(Minor Core) Psychology and Social Work**

Course Objectives

1. To understand psychological concepts and its relevance to Social Work.
2. To understand determinants and processes of Personality Development.
3. To understand the basic concepts and processes in social psychology and its relevance to Social Work.
4. To understand Social Attitudes and Social Cognition.
5. To understand Psycho-Social Behaviour.

Learning Outcomes

CO1: Able to understand psychological concepts and its relevance to Social Work.

CO2: Able to understand determinants and processes of personality development.

CO3: Able to understand the basic concepts and processes in social psychology and its relevanceto Social Work.

CO4: Able to understand social attitudes and social cognition.

CO5: Able to understand psycho-social behaviour.

Unit - I

Introduction to Psychology

1. Psychology Concept, Definition and Relevance to Social Work.
2. Motivation and Learning: Meaning and Definition of Learning, Concept and Factors, Affecting Motivation.
3. Emotion and Intelligence: Concept, Factors, Affecting Emotion and Intelligence.

Unit - II

Human Growth and Personality

1. Human Growth and Development Meaning and Stages.
2. Personality: Concept and Determinants.
3. Theories of Personality, Freud, B.F. Skinner and Carl Rogers.

Unit - III

Introduction to Social Psychology

1. Social Psychology: Concept, Definition and Relevance to Social Work.
2. Group: Concept Meaning and Definition Influence of Groups on Individual Behaviour.

3. Social Influence and Interpersonal Attraction: Definitions Features and Factors.

Unit - IV

Social Attitude and Social Cognition

1. Social Attitude: Meaning, Definition Features and Formation.
2. Perception, Social Perception - Meaning and Concept, Self Concept and Self Esteem.
3. Social Cognition: Definition Feature, Stereotypes and Prejudices.

Unit - V

Collective Behaviour

1. Collective Behaviour: Characteristics and Dynamics.
2. Leadership: Meaning, Definition, Traits and Functions.
3. Public Opinion and Propaganda.

Key Words: Psychology, Human Growth, Personality, Collective Behaviour, Public Opinion, Perception and Social Attitude.

Reference:

- Atkinson, R. L., Atkinson, R. C., Smith, E. E., Bem, D. J. and Hilgard, E. R. (2013). Introduction to Psychology. New York: H. B. J. Inc.
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- Feldman, R.S. (1985). Social Psychology: Theories, Research and Applications. New York: McGraw hill.
- Feldman, R.S. (1997). Understanding Psychology. New Delhi: Mc Graw Hill.
- Hall, C.S. Lindzey, G. and Cambell J.B. (2004). Theories of Personalities. New York: Wiley M.
- Kuppuswamy, B. (1972). Elements of Social Psychology. New York: Asian Publishing House.
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Study Centre For Social Work
A.P.S. University, Rewa (M.P.)

B.S.W. Semester: **I**

Subject: Paper – 103 **(Generic Elective (GE)* Introduction to Contemporary Indian Society**

Course Objectives

1. To understand History evolution of Indian Society.
2. To understand basic Various Concept of Society.
3. To understand Skills to understand Concept of Social System.
4. To understand essential Elements of Society.

Learning Outcomes

CO1: Able to understand Indian Society.

CO2: Able to understand Various Social Groups and Institution.

CO3: Able to demonstrate Awareness of Social System and Elements of Society.

CO4: To understand Skills to understand Concept of Social System.

CO5: To understand essential Elements of Society.

Unit - I

Conceptual Perspectives of Society

1. Society: Meaning, Definition, Nature, Types, Function
2. Historical Development of Society: Vaidic Period, Mughal Periods, Modern Period.
3. Demographic Profile of Indian Society.
4. Theories of Society.

Unit - II

Basic Understanding of Social Groups and Social Institutions

1. Social Group: Meaning, Definition, Characteristics, Importance.
2. Types of Group: Primary Group, Secondary Group, Reference Group.
3. Social Institution: Meaning, Definition, Characteristics, Importance.
4. Social Institutions: Family, Marriage, Education, Religion, Property.

Unit - III

Units of Society

1. Social Norms: Meaning, Definition, Characteristics and its Role in Society.
2. Classification of Social Norms: Culture, Traditions, Folkways, Customs, Mores.
3. Community: Meaning, Definition, Characteristics and Importance.

Unit - IV

Concepts of Social System

1. Social Stratification: Concept, Importance and Forms.
2. Status and Roles: Meaning, Definition, Characteristics, Importance.
3. Caste, Class, Race, Social Mobility: Meaning, Definition, Characteristics and its Role in Society.
4. Social Structure: Meaning, Definition, Characteristics.
5. Social System: Meaning, Definition, Characteristics, Structure and Funtion.

Unit - V

Essential Elements of Society

1. Social Process: Meaning, Definition, Characteristics, Importance.
2. Forms of Social Process: Cooperation, Accommodation, Assimilation, Competition and Conflict.
3. Social Control, Concept, Means and Types.
4. Social Change: Meaning, Definition, Characteristics, Types.
5. Socialization, Sanskretization, Westernization, Modernization, Globalization, Liberalization Privatization.
6. State Meaning, Element, Role and Functions.
7. Concept of Welfare State and Present Trend of Democracy.

Keywords/Tags: Society, Social Group, Social Institutions. Community, Social Organization, Social Structure, Social System, Social Stratification, Social Control, Social Change.

Reference:

- Ahuja Ram: Social problems in India (Jaipur, Rawat Publication 1992)
- Bhusan, Vidya and Sachdev (2006) An introduction to sociology. Allahabad, Kitab Mahal.
- Davis, K: ManavSamaj (Allahabad: Kitab Mahal-1973)
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- Harry. M, Johns (1993) Sociology: A systematic introduction. Chennai: Allied Publications
- Horton, P.S. and Hunt, C.L., (2005) Sociology, New Delhi: Tata McGraw Hill
- Johnson, H.M.: Sociology A Systematic Introduction (Bombay: Allied Publishers)
- Mac Iver and Page: Society- An Introductory Analysis (London-Mac Millen 1955)
- Madan, G.R.: Indian Social problem, Vol. 1 and 2
- Shankar, Rao CN: Sociuology (S Chand and Company, New Delhi 2006)

2. Suggestive digital platforms web links

1. http://www.egyankosh.ac.in/handle/123456789/17065
2. http://www.ignouhelp.in/ignou-bsw-study-material/

3. http://www.rahul-edr.org/pdf/Self-Learning-Materials/Course-2.pdf
4. http://egyankosh.ac.in/handle/123456789/2418
5. https://www.slideshare.net/DrJBalamuruganiPhD/social-stratification-30789892
6.https://www.yourarticlelibrary.com/sociology/social-processes-the-meaning-types-characteristics-of-social-processes/8545

Study Centre For Social Work
A.P.S. University, Rewa (M.P.)

B.S.W. Semester: **I**

Subject: Paper – 104 **(Ability Enhancement Course) (AEC) Hindi Language**

पाठ्यक्रम का उददे्श्य–

1. इस अध्ययन के उपरांत आप भाषाओं में शब्द वर्गो और व्याकरणिक कोटियों में विभेद की स्थितियों से परिचित होगें।
2. पारिभाषिक शब्दावली के परिभाषाओं की जानकारी प्राप्त करेगें।

कोर्स अधिगम उपलब्धि (लर्निंग आउटकम)

1. उत्कृष्ट साहित्यिक पाठों के अध्ययन से रूचि का विकास करना।
2. हिन्दी भाषा का व्यवहारिक ज्ञान।
3. भाषा–ज्ञान।
4. सामान्य शब्दावली और विशेष शब्दावली के अध्ययन द्वारा भाषा एवं संस्कृति बोध का विकास करना।
5. विशिष्ट शब्दावली (बीज शब्द/की वर्ड) से परिचित करवाते हुए बोध के स्तर को विकसित करना।
6. प्रतियोगी परीक्षाओं हेतु तैयार करना।
7. अभिव्यक्ति क्षमता का विकास

इकाई – 1

हिन्दी की व्याकरणिक कोटियॉ– लिंग, पुरूष, वचन,

शब्द वर्ग– संज्ञा, सर्वनाम, विशेषण, क्रिया विशेषण, संबंध सूचाक, समुच्चय बोधक, विस्मयादिबोधक।

इकाई – 2

पारिभाषिक शब्दावली – परिभाषा एवं नियम,

पारिभाषिक शब्दों के उदाहरण – प्रशासनिक, विज्ञान, वाणिज्य एवं मानविकी के पारिभाषिक शब्द व उनके हिन्दी।

इकाई – 3

प्रेमचन्द्र– परिचय, पाठः शतरंज के खिलाड़ी,

व्यंग– शरद जोशी– जीव पर सवार इल्लिया।

इकाई – 4

पर्यायवाची शब्द,

विलोम शब्द,

अनेक शब्द के लिए एक शब्द,

इकाई – 5

पत्र लेखन,

निबंध लेखन एवं अपठित गद्यांश

सार बिन्दु– प्रेमचन्द्र शतरंज के खिलाड़ी, हिन्दी व्याकरण।

सन्दर्भ पुस्तकें–

1. प्रेमचन्द्र – मानसरोवर खण्ड 3
2. हिन्दी ज्ञान कोश
3. इन्टर नेट सामग्र– टैग में उल्लेखित
4. प्रयोजन मूलक हिन्दी

Bachelor of Social Work (BSW)
Study Centre for Social Work
A.P.S. University, Rewa (M.P.)
Programme Structure
(As per NEP 2020 and CBCS Ordinance 14 (A)

EXAMINATION SCHEME

I[st] Year

Semester - II							
1.	Paper - 201 **(Major Core)** Social Case Work	60	21	40	20	100	6
2.	Paper – 202 **(Minor Core)** Social Science Concepts and Social Work	60	21	40	20	100	6
3.	Paper – 203 **(Generic Elective (GE)*** Community Psychology	60	21	40	20	100	4
4.	Paper – 204 **(Ability Enhancement Course) (AEC)** Environmental Studies	60	21	40	20	100	4
Semester Total						**400**	**20**
Cumulative Total						**800**	**40**

Study Centre For Social Work
A.P.S. University, Rewa (M.P.)

B.S.W. Semester: **II**

Subject: Paper - 201 **(Major Core) Social Case Work**

Course Objectives

1. To understand the individual, family and their problems and the social contextual factorsaffecting them
2. To understand Social Casework as a method of Social Work practice
3. To gain knowledge about the basic concepts, tools, techniques, processes and Skills of working with individuals
4. To develop an understanding of application of case work in diverse settings.

Learning Outcomes

CO1: Able to demonstrate familiarity with Casework processes, tools and techniques and theirapplication in Professional Social Work Practice.

CO2: Able to develop skills of Observation, Listening, Interviewing and Home Visits, Rapport Building, Resource Mobilization and Recording.

CO3: Understand Social Casework as a method of Social Work practice.

CO4: Gain knowledge about the basic concepts, tools, techniques, processes and Skills of working with individuals.

CO4: Develop an understanding of application of case work in diverse settings

Unit - I

Introduction to Social Casework

1. Social Casework: Concept, Nature, Scope, Objectives and Importance
2. Historical Development of Social Casework
3. Components of Social Casework (Person, Place, Problem and Process)
4. Principles of Social Casework

Unit - II

Understanding Individuals and Problems

1. Individual: Nature and Needs
2. Problems Faced by Individuals and Families
3. Concept of Social Role, Functioning and Coping

Unit - III

Tools, Techniques and Skills of Social Casework

1. Casework Relationship, Use of Authority and Advocacy
2. Communication: Observation, Listening, Interviewing and Home Visits
3. Rapport Building and Resource Mobilization
4. Recording in Casework

Unit - IV

Approaches and Process of Social Casework

1. Task Centered Approach.
2. Social Psychological Approach.
3. Problem Solving Approach and Integrated approach.
4. Phases of Casework Process: Study, Assessment, Intervention, Termination, Evaluation and Follow-up.

Unit - V

Casework Practice in Different Setting

1. Medical, School.
2. Elderly care Homes.
3. Correctional and Rehabilitation Centres.

Key Words: Social Casework, Skills in Social Casework, Process and Approaches.

References:

- Aptekar, Herbert (1955) The Dynamics of Casework and Counselling, New York: Houghton Mifflin Co.
- Beistek, F.P. (1957). The Casework Relationship. Chicago: Loyola University Press.
- Fisher, J.(1978). Effective Casework Practice: an Eclectic Approach, New York: McGraw Hill.
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- Keats, Daphne (2002) Interviewing – A Practical Guide for Students and Professionals, New Delhi: Viva Books Pvt.Ltd.
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- Pearlman, H H. (1957). Social Case Work: a Problem Solving Process. Chicago: University of Chicago.
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- Richmond, Mary (1970) Social Diagnosis, New York : Free Press
- Sainsbury, Eric. (1970). Social Diagnosis in Casework. London: Routledge and Kegan Paul.

- Skidmore, R.A. andThakhary, M.G. (1982): Introduction to Social Work. New Jersey: Prentice Hall.
- Timms, N. (1964): Social Casework: Principles and Practice. London: Routledge and Kegan Paul.
- Timms, N. (1972): Recording in Social Work. London: Routlege and Kegan Paul.
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- Werner, H.D. (1965): A Rational Approach to Social Casework. New York: Association Press.
- Younghusband, E. (1966): New Development in Casework. London: George Allen and Unwin.

Study Centre For Social Work
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B.S.W. Semester: **II**

Subject: Paper - 202 **(Minor Core) Social Science Concepts and Social Work**

Course Objectives

1. To understand basic sociological concepts and notions of society.
2. To know the basic concepts of economics and structure of economy.
3. To understand the political framework for social welfare.

Learning Outcomes

CO1: Able to understand the basic sociological concepts and notions of society.

CO2: Able to know the basic concept of economics and structure of economy.

CO3: Able to explore the knowledge about political framework in the context of social welfare.

CO4: Know the basic concepts of economics and structure of economy.

CO5: Understand the political framework for social welfare.

Unit - I

Introduction to Sociological Concepts

1. Society, Man and Society and its Relationships.
2. Caste, Class, Power and Authority.
3. Social Values, Norms, Customs, Mores and Culture.

Unit - II

Social Group and Process

1. Social Groups: Primary, Secondary and Reference.
2. Social Institutions: Family, Marriage and Religion.
3. Social Process: Concept, Importance and Types.

Unit - III

Notions of Society

1. Social Change: Concept, Characteristics and Factors.
2. Social Control: Concept, Importance and Agencies.
3. Socialization: Concept, Importance and Agencies.

Unit - IV

Basics of Economics

1. Micro: Demand and Supply, Cost, Production, Revenue and Market.
2. Macro: National Income, Inflation, Money and Banking.

3. Economic System: Capitalist, Socialist and Mixed.

Unit - V

Introduction to Political Concepts

1. State: Origin, Concept and its Organs.
2. Concepts of Welfare State.
3. Fundamental Rights, Directive Principles of State Policy.

Key Words: Society, Social Institution, Economic System and Welfare State.

References:

- Ahuja ,Ram (1997) Social Problem in India, Rawat Publishers, Jaipur.
- Ali, A.F. Iman (1992) Social Stratification Among Muslim-Hindu Community, New Delhi : Commonwealth Publishers.
- Bhusan, Vidya & Sachdeva, D. R. (2000) An Introduction to Sociology, Allahabad : Kitab Mahal.
- Crawford, K. (2004). Social Work and human development: Transforming Social Work practice. Exeter: Learning Matters.
- Flippo, Osella and Katy, Gardner (2003) Contraventions to Indian Sociology, Migration Modernity and Social Transformation in South Asia, New Delhi : Sage Publication.
- Gandhi P. Jagadish (1982) Indian Economy – Some Issues, Institute of Social Sciences and Research, Vellore.
- Koutsoyiannis (2008), Modern Micro Economics, 2nd Edition, London: Macmillan Press Ltd.
- M.Adhikari, Managerial: Economics.
- Mahajan, G. (Ed.). (1998). Democracy, Difference and Social Justice. New Delhi: Cambridge University Press.
- Mohanty, Manoranjan (2004) Class, Caste, Gender – Readings in Indian Government and Politics, New Delhi: Sage Publication.
- Singh, Yogendra (1997) Social Stratification & Change in India, New Delhi: Manohar Publication.
- Srinivas, M.N. (1991) Indian Social Structure. New Delhi: Hindustan Publishing House.
- Stroup, H.H. (1960). Social Work Education – An Introduction to the Field. New Delhi: Urasia Publishing.

Study Centre For Social Work
A.P.S. University, Rewa (M.P.)

B.S.W. Semester: **II**

Subject: Paper - 203 (Generic Elective (GE)* Community Psychology

Course Objectives

1. To understand the meaning and concept of Community Psychology.
2. To develop disciplinary knowledge, Experimental learning and critical thinking.
3. To understand social dynamics and community health problems.

Learning Outcomes

CO1: Understanding the role of Psychology in community development.

CO2: Developing an appreciation of the core values that guide Community Psychology and facilitate community functions.

CO3: Developing insights with respect to health promotion programs in communities, community programme for child and maternal health, for physically challenged and elderly people in the Indian context through case studies.

CO4: Develop disciplinary knowledge, Experimental learning and critical thinking.

CO5: Understand social dynamics and community health problems.

Unit - I

Introduction

1. Community Psychology-Definition, Types of communities- locality based and relational:
2. Models: Ecological level analysis of community, conceptual level model.
3. Historical development and Perspective of Community Psychology.

Unit – II

Core Values of Community Psychology

1. Individual and Family wellness: Sense of Community: Respect for Human Diversity,: Social Justice :Empowerment and Citizen Participation: Collaboration and Community Strengths.
2. Community Functions- Learning, Socialization, and Supportive Functions.

Unit – III

Community as setting for health promotion

1. Concept of community mental health,
2. Concept of prevention
3. Need and Process of community organisation and building for health promotion programming.
4. Maternal health, for physical challenged and old age in Indian context.

Unit – IV

Community Programme for:

1. Child and Maternal health, for physical challenged and old age in Indian context.
2. Mental health education

Unit – V

Interventions for Community Development and Empowerment:

1. Concept and Practice for community development and Empowerment
2. Case studies of community intervention programs by the governmental and non-governmental organizations in Indian context such as, rural panchayat programs, children's education, citizen right, self- help group, social accounting.

Key Words: Community Psychology, Empowerment, Mental Health, Social Justice

References:

1. Banerjee, A., Banerji, R., Duflo, E., Glenneske, R., and Khenani, S. (2006) Can Information Campaign start local participation and improve outcomes? A study of primary education in Utter Pradesh, India, World Bank Policy Research, Working Paper No. 3967.
2. Fetterman, D.M., Kaftarian, S.J. and Wandersman, A. (Eds) (1996) Empowerment Evaluation, New Delhi: Sage Publication.
3. Kloos B. Hill, J Thomas, Wandersman A, Elias, M.J. and Dalton J.H. (2012). Community Psychology: Linking Individuals and Communities, Wadsworth Cengage Learning.
4. Mishra. G. (Ed). (2010) Psychology in India, Indian Council of Social Science Research, Dorling Kindersley (India) Pvt. Ltd. Pearson Education.

Study Centre For Social Work
A.P.S. University, Rewa (M.P.)

B.S.W. Semester: **II**

Subject: Paper - 204 **(Ability Enhancement Course) (AEC) Environmental Studies**

Course Objectives

1. To understand various aspects of life forms, ecological processes, and the impacts on them by the human during anthropogenic era.
2. To develop empathy for all life forms, awareness, and responsibility towards environmental protection and nature preservation.
3. To build capabilities to identify relevant environmental issues.Course.

Learning Outcomes

CO1: Understanding the role of Psychology in community development.

CO2: Developing the critical thinking for shaping strategies.

CO3: Will able to analyze the various underlying causes, evaluate the practices and policies, and develop framework to make inform decisions.

CO4: Develop empathy for all life forms, awareness, and responsibility towards environmentalprotection and nature preservation.

CO5: Build capabilities to identify relevant environmental issues.

Unit – I

Basic concept of Ecosystem:

1. Definition of Ecology and Ecosystem
2. Structure of Ecosystem: producer, consumer and decomposer
3. Function: energy flow in ecosystem, food chain, food web, and ecological pyramids

Unit – II

Natural Resources and its exploitation

1. Different types of natural resources-Forest, Water, Mineral, Energy, Land - Uses and over exploitation and associated problems.

Unit – III

Biodiversity and its conservation:

1. Introduction- Meaning and Definition
2. Levels of Biodiversity- Genetic, Species, and Ecosystem Diversity
3. Biographical classification of India.
4. Value of Biodiversity- Consumptive use, productive use, social, ethical, aesthetic and option value.

Unit – IV

Pollution

1. Meaning, Definition and Causes
2. Air, Water, Soil, Noise, Thermal and Nuclear Hazard
3. Types of pollutants
4. Climate change, Acid rain, Global Warming, Ozone layer depletion and Greenhouse effect.

Unit – V

Social issue and the Environment:

1. Urban Problems related to energy
2. Water conservation:

- Rain water harvesting
- Water shed management

Key Words: Pollution, Environmental Legislation, Environmental Movement, Environmental programme and organization.

Reference:

- Singh, J.S., Singh, S.P. and Gupta, S.R., (2018) Ecology; Environment Science and Conservation, S Chand publishing, New Delhi.
- Divan, S. and Rosencranz, A. (2002) Environmental Law and Policy in India: Cases, Material and Status Oxford University Press, India, 2nd Edition.
- Odum, E.P. (1971) Fundamentals of Ecology", Philadelphia Saundres.
- Bharucha, E. (2014) Environmental studies" Universities Press India Pvt. Ltd. Hyderabad. (Hindi Edition also available).
- Kaushik, Anubha, Kaushik, C.P. Perspectives in Environmental Studies.

Study Centre for Social Work
A.P.S. University, Rewa (M.P.)
Bachelor of Social Work
PROGRAMME STRUCTURE
(As per NEP 2020 & CBCS Ordinance 14 A)

2nd Year

SEMESTER – III					
Course Code and Name	Course Type	Theory Paper	Internal Assessment	Maximum Marks	Credits
301 Fields of Social Work	Major Core	60	40	100	6
302 Indian Society and Social Problems	Minor Core	60	40	100	6
303 Social Psychology and Social Work*	GE	60	40	100	4
304 Basic of Computer and Information Technology	SE (FC)	60	40	100	4
SEMESTER TOTAL				**400**	**20**
CUMULATIVE TOTAL				**400**	**20**

SEMESTER – IV					
Course Code & Name	Course Type	Theory Paper	Internal Assessment	Maximum Marks	Credits
401 Social Group Work	Major Core	60	40	100	6
402 Social Norms, Religion and Culture	Minor Core	60	40	100	6
403 Human Behaviour and Environment*	GE	60	40	100	4
404 Moral values and Personality Development	SE (FC)	60	40	100	4
SEMESTER TOTAL				**400**	**20**
CUMULATIVE TOTAL				**800**	**40**

GE: Generic Elective **SE: Skill Enhancement** **FC: Foundation Course**

*Students may choose this course as a **Generic Elective** or may choose a Generic Elective Course offered in other UTD's at the same level or may choose a Course offered by MOOC's through SWAYAM.

The student will be awarded Diploma in Social Work on successful completion of second year.

Credit Distribution as per the Ordinance 14 A

		Main Faculty (as per prerequisite)			Any Faculty	Skill Enhancement Course (SEC)	Ability Enhancement Course (AEC)	Field Projects/ internship/ apprenticeship /community engagement & service	Credits	Qualification Title (Credits Requirements)
		Subject I		Subject II	Subject III					
Level	Sem	Major		Minor	Generic Elective Course	Vocational Course		#Inter/Intra Faculty		
		Core	DSE							
Level 5	1	6		6	4	-	4	-	6+6+4+4 =20	(40) Undergraduate Certificate in Main Faculty
	2	6		6	4	-	4	-	6+6+4+4 =20	
Level 6	3	6		6	4	4	-	-	6+6+4+4 =20	(80) Undergraduate Diploma in Main Faculty
	4	6		6	4	4	-	-	6+6+4+4 =20	
Level 7	5	6	4	-	-	4	-	6	6+4+4+6 =20	(120) Bachelor Degree in Main Faculty
	6	6	4+4	-	-	-	-	6	6+4+4+6 =20	
Level 8	7	6	4	4 Research Methodology	-	-	-	6	4+4+4+6 =20	(160) Bachelor Degree (Honours/Research) in Main Faculty
	8	6	-	4	-	-	-	10	6+4+10 = 20	
Total		48	16	32	16	12	8	28	160 Credits	

Study Centre for Social Work
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Bachelor of Social Work
2nd Year

SEMESTER – III					
Course Code and Name	Course Type	Theory Paper	Internal Assessment	Maximum Marks	Credits
301 Fields of Social Work	Major Core	60	40	100	6
302 Indian Society and Social Problems	Minor Core	60	40	100	6
303 Social Psychology and Social Work*	GE	60	40	100	4
304 Basic of Computer and Information Technology	SE (FC)	60	40	100	4
SEMESTER TOTAL				**400**	**20**
CUMULATIVE TOTAL				**400**	**20**

बी.एस.डब्ल्यू. पाठ्यक्रम B.S.W. Programme

सेमेस्टर – III / Semester - III

मुख्य विषय/Major Core -301

समाज कार्य के क्षेत्र

redits- 06
Max. Marks - 60
Min. Marks - 21

Fields of Social Work

उद्देश्य	पाठ्यक्रम का उददेश्य छात्रों को समाज कार्य के विभिन्न क्षेत्रों से अवगत कराना।	
Objective	The objective of this course is aware the students different fields of social work.	
Learning Outcomes	1. Able to understand social work as a profession. 2. Able to understand various ideologies of social work. 3. Able to demonstrate awareness of values and ethics of the social work profession. 4. Develop skills to understand contemporary reality in its historical contest. 5. Understand of Gandhian Philosophy	
इकाई	**विषय**	**व्याख्यान की संख्या**
इकाई-I	1. श्रम कल्याण का अर्थ, अवधारणा व दर्शन। 2. समाजिक सुरक्षा और सामाजिक बीमा। 3. कार्य के सामाजिक संगठन – औद्योगिक समाज, पूँजीवादी समाज।	18 घण्टे
Unit-I	1. Labour Welfare: Meaning, Concept and Philosophy. 2. Social Assistance and Social Insurance. 3. Social Organization of Work : Industrial Society, Capitalistic Society.	18 Hours
इकाई-II	1. कार्य के औपचारिक एवं अनौपचारिक संगठन। 2. श्रम समाज एवं औद्योगिक संबंध। 3. कारखाना अधिनियम 1948 : श्रम कल्याण के संदर्भ में। 4. उद्योगों में समाज कार्य की भूमिका व महत्व।	18 घण्टे
Unit-II	1. Formal and Informal Organization of Work. 2. Labour Society and Industrial Relation. 3. Labour Welfare Provisions in Factory Act– 1948 in Reference to Labour Welfare. 4. Role and Importance of Social Work in Industries.	18 Hours
इकाई-III	1. संवैधानिक प्रावधान महिला एवं बाल विकास के संदर्भ में। 2. वर्तमान में प्रचलित कल्याणकारी योजनाएँ – महिला एवं बाल विकास।	18 घण्टे

	3. महिला एवं बाल विकास के क्षेत्र में अंतराष्ट्रीय एवं राष्ट्रीय संस्थायें।	
Unit-III	1. Constitutional Provisions in Reference to Women and Child Development. 2. Current Welfare Schemes for Women and Child Development. 3. Agencies – International and National for Women and Child Development.	18 Hours
इकाई-IV	1. अनुसूचित जाति एवं अनुसूचित जनजाति के लिए संवैधानिक प्रावधान। 2. राष्ट्रीय आयोग : अनुसूचित जाति एवं अनुसूचित जनजाति। 3. वर्तमान समय में अनुसूचित जाति एवं अनुसूचित जनजाति के लिए कल्याणकारी योजनाएँ। 4. अनुसूचित जाति एवं अनुसूचित जनजाति के लिए कार्यरत संस्थायें। 5. वृद्धों की समस्यायें एवं उनके लिए कल्याणकारी योजनाएँ।	18 घण्टे
Unit-IV	1. Constitutional Provisions of Schedule Caste and Schedule Tribes. 2. National Commissions : Schedule Caste and Schedule Tribes. 3. Welfare Schemes in the Recants Years for Schedule Caste and Schedule Tribes. 4. Agencies Working for Schedule Caste and Schedule Tribes. 5. Problems Faced by Aged People and their Welfare Schemes.	18 Hours
इकाई-V	1. सामाजिक न्याय – अर्थ, अवधारणा एवं विशेषतायें। 2. सामाजिक न्याय – मुद्दे एवं सिद्धांत। 3. कल्याणकारी राज्य की अवधारणा। 4. सामाजिक न्याय एवं सामाजिक कार्य।	18 घण्टे
Unit-V	1. Social Justice –Meaning, Concept and Characteristic. 2. Social Justice – Issues and Principles. 3. Welfare State – Concept. 4. Social Justice and Social Work.	18 Hours
Suggested	1. Saxena, R.C. (1971) Labour Problems and Social Welfare (New Academic	

Readings :	Publishers, Jallandhar. 2. Malhotra, S.N. (1981) Labour Problem in India (S Chand and Company Ltd. New Delhi. 3. Industrial Sociology – Baghel, D.S.

बी.एस.डब्ल्यू. पाठ्यक्रम B.S.W. Programme

सेमेस्टर – III / Semester - III

गौण विषय / Minor Core -302

भारतीय समाज एवं सामाजिक समस्याएँ

Credits- 06
Max. Marks - 60
Min. Marks - 21

Indian Society and Social Problems

उद्देश्य	इन पाठ्यक्रम का उद्देश्य विद्यार्थियों को भारतीय समाज एवं सामाजिक समस्याओं से परिचित कराना।	
Objective	The objective of the course is to introduce the students Indian society and social problems.	
Learning Outcomes	The students after their study will be able to understand Indian society and social problems. 1. Able to understand Indian Society. 2. Able to understand Various Social Groups and Institution. 3. Able to demonstrate Awareness of Social System and Elements of Society. 4. To understand Skills to understand Concept of Social System. 5. To understand essential Elements of Society.	
इकाई	**विषय**	**व्याख्यान की संख्या**
इकाई-I	1. सामाजिक समस्या : अवधारणा एवं विशेषताएँ। 2. सामाजिक समस्याएँ : कारक एवं उनके प्रभाव। 3. सामाजिक समस्याए : शासन की भूमिका।	18 घण्टे
Unit-I	1. Social Problem : Concept and Characteristics. 2. Social Problems : Causes and their Impact. 3. Social Problems : Role of Governments	18 Hours
इकाई-II	1. समाज कार्य एवं सामाजिक समस्या। 2. विस्थापन एवं प्रवास। 3. पर्यावरणीय समस्याएँ एवं सतत् विकास। 4. गंदी बस्तियाँ एवं नगरीय बसाहट।	18 घण्टे
Unit-II	1. Social Work and Social Problems. 2. Displacement and Migration. 3. Environmental Problems and Sustainability. 4. Slums and Urban Settlement.	18 Hours
इकाई-III	1. निरक्षरता, शिक्षा में असमानता। 2. निर्धनता एवं असमानता। 3. कुपोषण, अस्पृश्यता, जातीय संघर्ष एवं साम्प्रदायिकता।	18 घण्टे

Unit-III	1. Illiteracy, Disparity in Education. 2. Poverty and Inequality. 3. Malnutrition, Untouchability, Caste Conflicts and Communalism.	18 Hours
इकाई-IV	1. लिंग भेद एवं बालिक भ्रूण हत्या। 2. महिलाओं के विरुद्ध हिंसा। 3. बाल श्रम, बाल उत्पीड़न, बाल अपराध। 4. मद्यपान व नशा प्रवृत्ति।	18 घण्टे
Unit-IV	1. Gender Discrimination and Female Foeticide. 2. Violence against Women. 3. Child labour, Child Abuse, Juvenile Delinquency. 4. Alcoholism and Drug Addition.	18 Hours
इकाई-V	1. जनसंख्या – आकार, संरचना एवं विभाजन। 2. जनसंख्या वृद्धि के घटक – जन्म, मृत्यु एवं प्रवास। 3. जनसंख्या नीति एवं परिवार नियोजन। 4. उभरते मुद्दे – लिंग अनुपात, बाल एवं शिशु मृत्यु दर।	18 घण्टे
Unit-V	1. Population-Size, Composition and Distribution. 2. Components of Population Growth – Birth Death, Migration. 3. Population Policy and Family Planning. 4. Emerging issues – Sex Ratio, Child and Infant Mortality.	18 Hours
Suggested Readings :	• Madan, G.R. Indian Docial Problem, Vol. 1 and 2. • Ahuja Ram (1992) Social Problems in India (Jaipur, Rawat Publication).	

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सेमेस्टर – III / Semester - III

वैकल्पिक विषय / Generic Elective (G.E.) - 303

Credits- 04
Max. Marks - 60
Min. Marks - 21

समाज मनोविज्ञान और समाज कार्य

Social Psychology and Social Work

उद्देश्य	पाठ्यक्रम में छात्रों को समाज मनोविज्ञान की सहायता से विभिन्न सामाजिक व्यवहारों से अवगत कराना।	
Objective	To make students aware of various social behaviour with the help of social psychology in the course.	
Learning Outcomes	Able to understand the utility of social practices in social work and the current practical challenges. 1. Able to demonstrate familiarity with Casework processes, tools and techniques and their application in Professional Social Work Practice. 2. Able to develop skills of Observation, Listening, Interviewing and Home Visits, Rapport Building, Resource Mobilization and Recording. 3. Understand Social Casework as a method of Social Work practice 4. Gain knowledge about the basic concepts, tools, techniques, processes and Skills of working with individuals 5. Develop an understanding of application of case work in diverse settings	
इकाई	**विषय**	**व्याख्यान की संख्या**
इकाई-I	**समाजीकरण** 1. समाजीकरण का अर्थ, विशेषता एवं महत्व। 2. समाजीकरण की प्रक्रिया। 3. समाजीकरण के माध्यम (अभिकरण)।	12 घण्टे
Unit-I	**Socialization** 1. Meaning of Socialization, Characteristics and Importance. 2. Process of Socialization. 3. Agencies of Socialization.	12 Hours
इकाई-II	**सामाजिक व्यवहार के नियम** 1. अनुकरण। 2. सुझाव।	12 घण्टे

	3. सहानुभूति।	
Unit-II	**Principles of Social Behaviour** 1. Imitation 2. Suggestion. 3. Sympathy.	12 Hours
इकाई-III	**परोपकारी एवं सहायता परक व्यवहार** 1. स्वरुप एवं विशेषताएँ। 2. सहायता परक व्यवहार के निर्धारक। 3. भारतीय संदर्भ में परोपकारी व्यवहार।	12 घण्टे
Unit-III	**Altruistic and Helping Behaviours** 1. Nature and Characteristics. 2. Determinants of Helping Behaviours. 3. Altruistic Behaviour in Indian Context.	12 Hours
इकाई-IV	**आक्रामकता तथा सामाजिक हिंसा** 1. आक्रामकता के अर्थ एवं स्वरुप। 2. आक्रामकता तथा हिंसा को उकसाने वाले कारक। 3. आक्रामकता को रोकने तथा दूर करने के उपाय।	12 घण्टे
Unit-IV	**Aggression and Social Violence** 1. Meaning and Nature of Aggression. 2. Factors Provoking Aggression and Violence. 3. Measures and Preventing and Reducing Aggression.	12 Hours
इकाई-V	**वर्तमान सामाजिक समस्याएँ** 1. सामाजिक समस्या का अर्थ एवं विशेषताएँ 2. सामाजिक समस्याओं के प्रकार। 3. सामाजिक समस्याओं का समाधान।	12 घण्टे
Unit-V	**Present Social Problems** 1. Meaning and Characteristics of Social Problems. 2. Types of Social Problems. 3. Solution to Social Problems.	12 Hours
Suggested Readings :	1. Alock, J.E., Carments, D.W., Sadava, S.W., Collins, J.E. and Green, J.M. (1997) A textbook of Social psychology Scarborough, Ontraio: Prentice Hall/Allyn and Bacon. 2. Feldman, R.S. (1985) Social Psychology, New Delhi: Prentice Hall.	

	3. Myers, Dravid, G. (1994) Exploring Social Psychology, New York L McGraw Hill. 4. Semin, G.R. and Fiedler, K. (Eds.) (1996) Applied Social Psychology, London: Sage. 5. Shaw and Shaw: Group Dynamics. 6. Krech and Crutchfield: Individual in Society, McGraw Hill. 7. Braon, R.A. and Branscombe, N.R. (2015) Social Psychology. Pearson: Delhi. 8. तिवारी, इन्दू प्रभा एवं दानी, वी. (2001) मनोविज्ञान का इतिहास एवं संप्रदाय, हिन्दी ग्रन्थ अकादमी, भोपाल। 9. सिंह अरुण कुमार (2004) उच्चतर सामाजिक मनोविज्ञान, मोतीलाल बनारसीदास। 10. त्रिपाठी लालबचन (1996) सामाजिक मनोविज्ञान की रुपरेखा–हरप्रमाद भार्गव, आगरा। 11. रस्तोगी, जी.डी. (1992) आधुनिक सामाजिक मनोविज्ञान पल्लव प्रकाशन गोरखपुर।

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सेमेस्टर – III / Semester - III

आधार पाठ्यक्रम / Skill Enhancement - S.E. (FC) -304

कम्प्यूटर एवं सूचना तकनीकी का आधार

Credits- 04
Max. Marks - 60
Min. Marks -

Basic of Computer and Information Technology

उद्देश्य	इस पाठ्यक्रम का उद्देश्य विद्यार्थियों को कम्प्यूटर तथा सूचना तकनीकी के प्रारम्भिक ज्ञान से परिचित कराना है।	
Objective	The objective of this course is to teach the students the basic knowledge of computer and information technology.	
Outcomes	On completion of this course, the student will be able to: CO1: The students, after their study, will be able to work on computer. CO2: Learn and understand the characteristics & capabilities of Computers. CO3: To make them comfortable to evaluate, select and use Office Software appropriate to specific tasks. CO4: To make them work on Open Software for Office Automation. CO5: To develop expertise in Word Processing, Spreadsheet, and Presentation Skills.	
इकाई	**विषय**	**व्याख्यान की संख्या**
इकाई-I	**कम्प्यूटर** 1. इतिहास, कम्प्यूटर की पीढ़ियाँ, विशेषताएँ, क्षमता और सीमाएँ 2. कम्प्यूटर का वर्गीकरण, डिजिटल कम्प्यूटर के प्रकार, हार्डवेयर, सॉफ्टवेयर, सॉफ्टवेयर के प्रकार 3. कम्प्यूटर भाषाओं की पीढ़ियाँ, उच्चस्तरीय एवं निम्नस्तरीय भाषाएँ 4. ट्रान्सलेटर के प्रकार, कम्प्यूटर सिस्टम के घटक	12 घण्टे
Unit-I	**Computer** 1. History, Generations of Computer, Characteristics, Capabilities and Limitations 2. Classification of Computers, types of Digital computer Hardware, Software, Types of software 3. Generations of Computer languages, High and low level languages 4. Types of Translator, Components of Computer System	12 Hours
इकाई-II	**डिवाइस का परिचय**	12 घण्टे

	1. विभिन्न इनपुट/आउटपुट डिवाइस का परिचय 2. की–बोर्ड, माऊस, एम.आई.सी.आर., ओ.सी.आर., ओ.एम.आर., बारकोड, स्कैनर 3. वी.डी.यू.प्लॉटर, इम्पैक्ट और नॉन–इम्पैक्ट प्रिन्टर 4. स्टोरेज इकाई – बिट्स एवं बाइट्स, प्रायमरी एवं सेकेण्डरी मेमोरिज	
Unit-II	**Introduction of devices** 1. Introduction of various input/output devices 2. Keyboard, Mouse, MICR, OCR, OMR, Barcode, Scanner 3. VDU, Plotter, Impact and Nonimpact printers 4. Storage units - Bits and Bytes, Primary and Secondary Memories	12 Hours
इकाई-III	**विन्डोज** 1. विन्डोज : परिचय, विंडोज डेस्कटॉप 2. स्टार्ट बटन, टास्कबार, प्रोग्राम तथा विंडोज के बीच स्विच करना, फाइल मैनेज करना, फोल्डर्स एवं ऑब्जेक्ट्स 3. विंडोज एक्सप्लोरर, शॉर्ट–कट बनाना, कन्ट्रोल पैनल, विन्डोज एसेसरीज : पेन्ट, ब्रश, वर्ड पैड 4. विंडोज को कस्टमाइज करना, इन्टरनेट एक्सप्लोरर	12 घण्टे
Unit-III	**Windows** 1. Windows : Introduction, windows desktop 2. Start button, taskbar, switching between programs and windows, managing files, folders and objects 3. Windows explorer, creating shortcuts, control panel, windows accessories : paint, brush, word pad 4. Windows customizing, Internet Explorer	12 Hours
इकाई-IV	**एम.एस.वर्ड** 1. हेडर, फुटर, एन्डनोट्स, फुटनोट्स, टैब्स, टेबल्स 2. सॉर्टिंग के साथ कार्य करना, ग्राफिक्स के साथ कार्य करना – ग्राफिक्स इम्पोर्टिंग 3. ड्रॉईंग ऑब्जेक्ट्स, टेक्स्ट ड्रॉईंग (वर्ड आर्ट), ड्राइंग आब्जेक्ट का प्रयोग करके पिक्चर रोटेटिंग एवं ऑब्जेक्ट फ्लीपींग 4. स्पेलिंग और ग्रामर चेकर, ऑटो करेक्ट, ऑटो टेक्स्ट,	12 घण्टे

	क्रिएटिंग टेबल्स, मेलमर्ज	
Unit-IV	**MS WORD** 1. Headers, Footers, Endnotes, Footnotes, tabs, tables 2. Working with sorting, Working with graphics-Importing graphics 3. Drawing objects, Text in Drawings (Word Art), Pictures using Drawing objects, Rotating and Flipping Objects 4. Spelling and Grammar Checker, Auto Correct, Auto Text, Creating Tables, Mailmerge	12 Hours
इकाई-V	**एम.एस. पॉवर प्वाइंट** 1. प्रेजेन्टेशन बनाना, ऑटो कॅटेन्ट विजार्ड, एडिटिंग स्लाइड्स 2. पॉवर प्वाइंट में टेक्स्ट के साथ काम करना, फॉरमेटिंग एवं एलाइनिंग टेक्स्ट, पॉवर प्वाइंट में ग्राफिक्स के साथ कार्य करना 3. इमेज इम्पोर्ट करना एवं पॉवर प्वाइंट में ड्रॉइंग, ऑर्गनाइजेशनल चार्ट तैयार करना 4. पॉवर प्वाइंट प्रेजेनटेशन में क्लिप आर्ट एवं पिक्चर फोटोज़ इन्सर्ट करना, पॉवर प्वाइंट में एक्सल चार्ट्स, वर्ड से टेबल इन्सर्ट करना	12 घण्टे
Unit-V	**MS POWERPOINT** 1. Creating presentations, Auto content wizard, editing slides 2. Working with Text in Power Point, Formatting and Aligning Text, Working with graphics in Power Point 3. Importing images and drawing in power point, creating organizational charts 4. Inserting clip arts & picture/photos in Power Point Presentation, Excel Charts in Power Point, Inserting Table from Word	12 Hours
Suggested Readings :	1. Sinha, P.K., Computer Fundamentals, BPB Publ. 2. Rapidex Computer Courses 3. Jain, Satish, Introduction to Computer Science, BPB Publ. 4. Mansfield R, The Compact guide to MS-OFFICE, BPB 5. Mansfield R, word 6 for window quick & easy reference, tech.	

Study Centre for Social Work
A.P.S. University, Rewa (M.P.)
Bachelor of Social Work
2nd Year

SEMESTER – IV					
Course Code & Name	Course Type	Theory Paper	Internal Assessment	Maximum Marks	Credits
401 Social Group Work	Major Core	60	40	100	6
402 Social Norms, Religion and Culture	Minor Core	60	40	100	6
403 Human Behaviour and Environment*	GE	60	40	100	4
404 Moral values and Personality Development	SE (FC)	60	40	100	4
SEMESTER TOTAL				**400**	**20**
CUMULATIVE TOTAL				**800**	**40**

बी.एस.डब्ल्यू. पाठ्यक्रम B.S.W. Programme

सेमेस्टर – IV / Semester - IV

मुख्य विषय / Major Core -401

सामाजिक सामूहिक कार्य

Credits- 06
Max. Marks - 60
Min. Marks - 21

Social Group Work

उद्देश्य	इस पाठ्यक्रम का उद्देश्य छात्रों को सामाजिक सामूहिक कार्य से अवगत करना।	
Objective	The objective of this course is aware the students social group work.	
Outcomes	The students after their study will be able to understand social group work. 1. Able to understand the basic group Work concepts and notions of society. 2. Able to know the basic concept of economics and structure of economy. 3. Able to explore the knowledge about political framework in the context of social welfare. 4. Know the basic concepts of economics and structure of economy. 5. Understand the political framework for social welfare	
इकाई	**विषय**	**व्याख्यान की संख्या**
इकाई-I	1. सामाजिक समूह : परिभाषा, विशेषताएँ एवं प्रकार। 2. सामाजिक समूह कार्य : अवधारणा, अर्थ एवं परिभाषा। 3. सामाजिक समूह कार्य का महत्व।	18 घण्टे
Unit-I	1. Social Group : Definition, Characteristics and Types. 2. Social Group Work : Concept, Meaning and Definition. 3. Importance of Social Group Work.	18 Hours
इकाई-II	1. सामाजिक समूह कार्य के दर्शन एवं उददेश्य। 2. सामाजिक समूह कार्य के प्रारुप। 3. सामाजिक समूह कार्य समाज कार्य की विधि के रुप में।	18 घण्टे
Unit-II	1. Philosophy and Objectives of Social Group Work. 2. Models of Social Group Work. 3. Social Group Work as a Method of Social Work.	18 Hours
इकाई-III	1. सामाजिक समूह कार्य के सिद्धान्त। 2. सामाजिक समूह कार्य के कौशल एवं तकनीक। 3. सामाजिक समूह कार्य के चरण।	18 घण्टे
Unit-III	1. Principles of Social Group Work. 2. Skills and Technique in Social Group Work.	18 Hours

	3. Phases of Social Group Work.	
इकाई-IV	1. समूह निदान। 2. समूह संघर्ष। 3. सामूहिक प्रक्रिया में समूह कार्यकर्ता की भूमिका।	18 घण्टे
Unit-IV	1. Group Diagnosis. 2. Group Conflict. 3. Role of Group Worker in Group Work Process.	18 Hours
इकाई-V	1. समूह कार्य प्रक्रिया में नेतृत्व विकास। 2. समूह में संचार। 3. समूह कार्य में अभिलेखन।	18 घण्टे
Unit-V	1. Leadership Development in Group Work Process. 2. Communication in Group. 3. Recording in Group Work.	18 Hours
Suggested Readings :	1. Friedlander, W. (1959) Concepts and Method of Social Work. New York: Prentice Hall. 2. Balgopal, P.R. and Vassil, T.V. (1983) Groups in Social Work: An Ecological Perspective, Macmillan Publishing Company inc. New York. 3. Bhatt, R.M. (1960) Records of Social Group Work Practice in India, Baroda University: Baroda. 4. Encyclopedia of Social Work in India Vol. 2 and 4 Dr. Surendar Singh (Ed), Published by New Royal Book Company, New Delhi (2012)	

बी.एस.डब्ल्यू. पाठ्यक्रम B.S.W. Programme
सेमेस्टर – IV / Semester - IV

गौण विषय / Minor Core -402

Credits- 06
Max. Marks - 60
Min. Marks - 21

सामाजिक आदर्श, धर्म एवं संस्कृति

Social Norms, Religion and Culture

उद्देश्य	इस पाठ्यक्रम का उद्देश्य छात्रों को सामाजिक आदर्श, धर्म एवं संस्कृति से अवगत कराना।	
Objective	The objective of this course is aware the students social norms, religion and culture.	
Outcomes	The students after their study will be able to understand social group work. 1. The students after their study will be able to understand social norms, religion and culture Able to understand Indian Society. 2. Able to understand Various Social Groups and Institution. 3. Able to demonstrate Awareness of Social System and Elements of Society. 4. To understand Skills to understand Concept of Social System. 5. To understand essential Elements of Society.	
इकाई	**विषय**	**व्याख्यान की संख्या**
इकाई-I	1. सामाजिक आदर्श : अर्थ, परिभाषा एवं विशेषताएँ। 2. परम्परा : अर्थ, परिभाषा एवं विशेषताएँ।	18 घण्टे
Unit-I	1. Social Norms : Meaning, Definition and Characteristics. 2. Traditions : Meaning, Definition and Characteristics.	18 Hours
इकाई-II	1. जनरीतियाँ : अर्थ, परिभाषा एवं विशेषताएँ। 2. प्रथाएँ : अर्थ, परिभाषा एवं विशेषताएँ। 3. रुढ़ियाँ : अर्थ, परिभाषा एवं विशेषताएँ।	18 घण्टे
Unit-II	1. Folkways : Meaning, Definition and Characteristics. 2. Customs : Meaning, Definition and Characteristics. 3. Mores : Meaning, Definition and Characteristics.	18 Hours
इकाई-III	1. धर्म : अर्थ एवं अवधारणा। 2. धार्मिक व्यवहार : जीववाद, अद्धैतवाद, अनेकवाद। 3. आधुनिक समाज में धर्म : धर्म एवं विज्ञान, धर्मनिरपेक्षता, रुढ़िवादिता।	18 घण्टे
Unit-III	1. Religion : Meaning and Concept. 2. Religious Practices : Animism, Monism, Pluralism.	18 Hours

	3. Religion in Modern Society : Religion and Science, Secularization, Fundamentalism.	
इकाई-IV	1. संस्कृति : अर्थ, परिभाषा, विशेषताएँ, तत्व तथा कार्य। 2. सांस्कृतिक परिवर्तन।	18 घण्टे
Unit-IV	1. Culture : Meaning, Definition, Characteristics, Elements and Function. 2. Cultural Change.	18 Hours
इकाई-V	1. सभ्यता : परिभाषा, विशेषताएँ, व्यक्ति और समुदाय। 2. संस्कृति एवं सभ्यता में अंतर, संस्कृति के उपादान।	18 घण्टे
Unit-V	1. Civilisation : Definition, Characteristics, Community and Individuals. 2. Distinction between culture and Civilization, Components of Culture.	18 Hours
Suggested Readings :	1. Vidhyabhushan Vidhya and Sachideva, D.K.: An Introduction to Sociology (Kitab Mahal, Patna).	

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सेमेस्टर – IV / Semester - IV
वैकल्पिक विषय / Generic Elective (G.E.) - 403
मानव व्यवहार एवं पर्यावरण

Credits- 04
Max. Marks - 60
Min. Marks - 21

Human Behaviour and Environment

उद्देश्य	पाठ्यक्रम का उद्देश्य विभिन्न पर्यावरणीय कारकों का मानव व्यवहार पर मनोवैज्ञानिक प्रभाव को समझना।	
Objective -	Course Objective to Understand the Psychological Impact of Various Environmental Factors on Human Behaviour.	
Outcomes-	Able to understand the role of environmental psychology in social work practice. 1. Understanding the role of Psychology in community development. 2. Developing an appreciation of the core values that guide Community Psychology and facilitate community functions. 3. Developing insights with respect to health promotion programs in communities, community programme for child and maternal health, for physically challenged and elderly people in the Indian context through case studies. 4. Develop disciplinary knowledge, Experimental learning and critical thinking. 5. Understand social dynamics and community health problems.	
इकाई	**विषय**	**व्याख्यान की संख्या**
इकाई-I	**पर्यावरणीय मनोविज्ञान** 1. पर्यावरणीय मनोविज्ञान की परिभाषाएँ। 2. पर्यावरणीय मनोविज्ञान का स्वरुप। 3. पर्यावरण का सम्प्रत्तय।	12 घण्टे
Unit-I	**Environmental Psychology** 4. Definitions of Environmental Psychology. 5. Nature of Environmental Psychology. 6. Concept of Environment.	12 Hours
इकाई-II	**पर्यावरणीय प्रत्यक्षीकरण** 1. स्वरुप एवं विशेषताएँ 2. गति, अभ्यसन तथा परिवर्तन का प्रत्यक्षीकरण। 3. प्राकृतिक आपदाओं का प्रत्यक्षीकरण।	12 घण्टे
Unit-II	**Environmental Perception** 3. Nature and Characteristics. 4. Movement, Habituation and the Perception of Change. 5. Perception of Natural Hazards.	12 Hours

इकाई-III	**पर्यावरणीय प्रतिबल** 1. स्वरूप एवं विशेषताएँ। 2. प्रतिबलक की विशेषताएँ। 3. प्राकृतिक आपदाओं के प्रभाव।	12 घण्टे
Unit-III	**Environmental Stress** 1. Nature and Characteristics. 2. Characteristics of Stressors. 3. Effects of Natural Disasters.	12 Hours
इकाई-IV	**मानव स्थानगत व्यवहार** 1. व्यक्तिगत स्थान। 2. प्रादेशिकता या भूभागीयता। 3. जनसंकुलन। 4. अलगाव या एकाकीपन।	12 घण्टे
Unit-IV	**Human Spatial Behaviour** 1. Personal Space. 2. Territoriality. 3. Crowding. 4. Isolation.	12 Hours
इकाई-V	**व्यवहार पर पर्यावरणीय प्रभाव** 1. आवाज। 2. मौसम।	12 घण्टे
Unit-V	**Environmental Effects on Behaviour** 1. Noise 2. Weather.	12 Hours
Suggested Readings :	1. Braon, R.A. and Branscombe, N.R. (2015) Social Psychology. Pearson: Delhi. 2. Feldman, R.S. (1985) Social Psychology, New Delhi: Prentice Hall. 3. रस्तोगी, जी.डी. (1992) आधुनिक सामाजिक मनोविज्ञान पल्लव प्रकाशन गोरखपुर 4. सिंह अरुण कुमार (2004) उच्चतर सामाजिक मनोविज्ञान, मोतीलाल बनारसीदास। 5. त्रिपाठी लालबचन (1996) सामाजिक मनोविज्ञान की रुपरेखा–हरप्रमाद भार्गव, आगरा। 6. तिवारी प्रेमसागर नाथ (2007) पर्यावरणीय मनोविज्ञान, मोतीलाल बनारसीदास।	

बी.एस.डब्ल्यू. पाठ्यक्रम B.S.W. Programme

सेमेस्टर – IV / Semester – IV

आधार पाठ्यक्रम / Skill Enhancement- (S.E.) -404

Credits- 04
Max. Marks - 60
Min. Marks -

नैतिक मूल्य एवं व्यक्तित्व विकास

Moral values and Personality Development

उद्देश्य	इस पाठ्यक्रम का उद्देश्य विद्यार्थियों को व्यक्तित्व विकास हेतु नैतिक मूल्यों की शिक्षा देना है।	
Objective -	The objective of this course is to teach the students the moral values for their personality development.	
Outcomes	On completion of this course, the student will be able to: CO1: Understand and analyze the essentials of human values and skills, self exploration, happiness and prosperity. CO2: Evaluate coexistence of the "I" with the body. CO3: Identify and evaluate the role of harmony in family, society and universal order. CO4: To help students initiate a process of dialog within themselves to understand what they 'really want to be' in their lives and professions. CO5: To help students understand harmony at all the levels of human living and to lead an ethical life.	
इकाई	**विषय**	**व्याख्यान की संख्या**
इकाई-I	**मूल्य** 1. मूल्य का अर्थ। 2. नैतिक मूल्य की अवधारणा। 3. मूल्यों का वर्गीकरण। 4. नैतिक मूल्यों का महत्व।	12 घण्टे
Unit-I	**Values** 1. Meaning of values. 2. Concept of Moral values. 3. Classification of values. 4. Importance of Moral values.	12 Hours
इकाई-II	**चरित्र–निर्माण** 1. चरित्र का अर्थ और परिभाषा। 2. उत्तम चरित्र – निर्माण का साधन। 3. उत्तम चरित्र के लक्षण। 4. चरित्र निर्माण में शिक्षा की भूमिका।	12 घण्टे

Unit-II	**Character Building** 1. Meaning and definition of character. 2. Means of Good character building. 3. Traits of Good character. 4. Role of Education in character Building.	12 Hours
इकाई-III	**सद्गुण** 1. यम। 2. नियम। 3. कर्मयोग। 4. वसुधैव कुटुम्बकम।	12 घण्टे
Unit-III	**Virtues** 1. Yama. 2. Niyama. 3. Karmayoga. 4. Vasudhaiva Kutumbakam.	12 Hours
इकाई-IV	**आदतें** 1. अनुशासन। 2. समय–प्रबंधन। 3. नियमित दिनचर्या। 4. सकारात्मक चिन्तन।	12 घण्टे
Unit-IV	**Habits** 1. Discipline. 2. Time Management. 3. Regular routine. 4. Positive thinking.	12 Hours
इकाई-V	**व्यक्तित्व विकास** 1. व्यक्तित्व की अवधारणा। 2. व्यक्तित्व विकास का अर्थ। 3. व्यक्तित्व विकास एवं चरित्र। 4. व्यक्तित्व विकास में नैतिक मूल्यों की भूमिका।	12 घण्टे
Unit-V	**Personality Development** 1. Concept of Personality. 2. Meaning of Personality Development. 3. Personality Development and Character.	12 Hours

	4. Role of Moral values in Personality Development.	
Suggested Readings :	1. स्वामी विवेकानन्द, व्यक्तित्व का सम्पूर्ण विकास, प्रकाशक रामकृष्ण मठ, नागपुर, 2006 2. डॉ.एम.ए. बेग, व्यक्तित्व विकास एवं निखार, मध्य प्रदेश हिन्दी ग्रन्थ अकादमी, भोपाल, 1997 3. बैजनाथ सिंह, व्यक्तिगत और सामुदायिक विकास, ब्रिटिश बुक डिपो, हजरतगंज लखनऊ, 1961 4. अरुण सागर, शिष्टाचार एवं व्यक्तित्व विकास, आनन्द, वी एण्ड एस पब्लिशर्स, नई दिल्ली, 2017 5. डॉ. सुरेशचन्द्र शर्मा, व्यक्तित्व विकास और भगवद्गीता, मंजुल पब्लिशिंग हाउस, भोपाल, 2016 6. प्रो. समानी ऋजुप्रज्ञा, व्यक्तित्व विकास और योग, जैन विश्व भारती बुक स्टोर, राजस्थान, 2015 7. अजित नारायण त्रिपाठी, नैतिक और मानवीय मूल्य, प्रतिश्रुति प्रकाशन, कलकत्ता, 2017 8. Barun K. Mitra, Personality Development and soft skills, Oxford University Press, 2016	

CENTRE FOR YOGA

AND

CONSCIOUSNESS

A.P.S. UNIVERSITY, REWA (M.P.)

SYLLABUS

FOR

P.G. DIPLOMA IN YOGA EDUCATION

VISION OF UNIVERSITY:

To be the premier institution that offers teaching and learning programmes of the best quality, graduate students who excel and become leaders in the chosen profession contributing to the community, the nation and the world and prepare individuals of the highest moral fibre.

The vision of university to create an ideal society and an intellectual environment that initiates ,nourishes and perpetuates values of coexistence and to fulfill and achieve excellence.

The university under the dynamic leadership of our honoruable Vice chancellor is working on quite a few ambitious plans. The idea is to develop the university as a knowledge-city.

FACULTY OF CENTRE FOR YOGA AND CONSCIOUSNESS:

1.	PROF. SHREEKANT MISHRA	PROFESSOR IN CHARGE
2.	DR. ALPI SINGH	GUEST FACULTY
3.	RAJESH KUMAR SINGH	GUEST FACULTY

AIMS :

1. Developing yoga skills among the students.
2. Preparing students for yoga therapist and yoga teachers.
3. Students prepare for soft spoken spiritual skill and develop holistic health

PROGRAMME:	**DIPLOMA IN YOGA EDUCATION**
DURATION:	**01 YEAR**
NUMBER OF SEATS :	**100**
ELIGIBILITY:	**GRATUATION**
AGE LIMIT:	**NO AGE LIMIT**

Programme outcome

PO	Programme outcome
PO1	The students would be able to demonstrate yoga in scientific way to improve positive health.
PO2	After completing the program the students would be able to specialized in Yoga Health.
PO3	After finishing the program the students would be able to get employment opportunity.
PO4	After successful completion of the program students would able to establish Yoga and Health center in the service of common man.
PO5	The students would preserve and propagate ancient Indian concept of health.
PO6	Ethics: Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.
PO7	Self- directed and Life-long learning: Acquire the ability to engage in independent and life-long learning in the broadcast context of socioecological changes.

Program Specific Name

Program Specific Name	PSO	Programme Specific outcome
D.Y.Ed.	PSO1	After Finishing the Program the students would be able to have an integrated knowledge of the various disciplines in multidisplinary field of Yogic science.
	PSO2	At the end of the course the students will be able to understand traditional Indian yoga system the philosophy of the yoga systems and the new thought in yoga movement in the country.
	PSO3	Holistic development according to the percepts of Upanishads and Gita.
	PSO4	Understand and apply the physical and psychological benefits of Yoga.
	PSO5	Recognize, understand and develop the therapeutic skill of yoga in handling various health issues.
	PSO6	Evaluate and incorporate the traditional and modern approaches in their yogic interventions.
	PSO7	Students are able to socially responsible as they are dealing with the modern and psychosomatic diseases through their yogic therapy.

D.Y.ED.

EXAMINATION SCHEME

NAME OF PAPER	MAX.	MIN.	TOTAL
PAPER -1 Patanjal Yoga Sutra	100	33	100
PAPER-2 Principle of Hathyoga	100	33	100
PAPER-3 Basics of integral approach to Yoga therapy	100	33	100
PAPER-4 Anatomy and Physiology of Yogic practices	100	33	100
PAPER-5 Yoga and Mental Health	100	33	100
PAPER-6 Practical and Teaching			
(A) Practical	100	50	100
(B) Teaching Practices	100	50	100

Grand Total - 700

PAPER-1

Marks: 100

PATANJAL YOGA SUTRA

Unit -1

The philosophical and historical background of yoga and comparative study of different yoga schools with the Patanjali Yoga.

Unit -2

Importance of Patanjal yoga sutra in modern times. Concept of Chitta, Chittabhumi , Chitta-prasadhan , Panchaklesha, Concept of Ishwer. Types and Nature of Samadhi.

Unit -3

Introduction of Astnga yoga: Bahirang Yogsadhana - Yama, Niyama,Asana,Pranayam,Pratyahara.

Unit-4

Astang Yogsadhana- Dharna, Dhyana, Samadhi. Sayama- first 12 sutras of Vibhutipada.

Unit-5

Kaivlya- last 7 sutras of Kaivalyapada with the necessary comments based on commentaries. Karma siddhanta and its importance of Yoga sadhana.

Recommended books:

1. योग विज्ञान – स्वामी विज्ञानानन्द सरस्वती
2. पातंजल योग प्रदीप – स्वामी ओमानन्दजी
3. भगवद्गीता – गीता प्रेस गोरखपुर
4. कल्याण (योगांक) – गीता प्रेस गोरखपुर
5. भारतीय दर्शन की रूप–रेखा – डॉ. हरेन्द्र प्रसाद सिन्हा

Course Outcomes

1. Students would be able to know the journey of yoga.
2. Student would be able to know the introduction of Patanjali yoga sutra.
3. Control on Indriya.
4. Knowledge of Samdhi.
5. Tecnique of dhyan.

PAPER-2

Marks: 100

PRINCIPLES OF HATH YOGA

Unit-1

Hathayoga: Its origin, Definition, Importance of modern era. Brief descreption to Hatha yoga texts. Do's and don't in Hathayoga.

Unit-2

Asanas: Definition of asana, Classification of asana (According to Swami Kuvalyanandaji), Aim and Principles of Cultural asana, Relaxation asanas and Meditative asana, Characteristics of Meditative asanas.

Unit-3

What is Pranayama-General features of Pranayama, Three phase of pranayama, Techniqual aspects of Pranayama. Types of pranayama (According to Swatmarama), Use of Kumbhaka.

Unit-4

Mudra, Bandha & Nadanusandhana (Hathpradipika). Shatkarma (According to Gheranda samhita).Kundilini . Importance of time, Place, sequence and combination with other exercise. Precautions, contraindications. Yoga for female.

Unit-5

Sign and symptoms of success in Hathayoga. Relationship of Hathayoga and Rajayoga. Sadhaka and Badhaka Tattva.

Recommened Books

1. घेरण्ड संहिता – स्वामी निरंजनानंद सरस्वती
2. हठप्रदीपिका – कैवल्यधाम, लोनावला
3. आसन प्राणायाम मुद्रा बंध – स्वामी सत्यानन्द सरस्वती
4- योगासन – स्वामी कुवलयानंद

Course Outcomes

1. Students would be able to know the journey of Hath yoga.
2. Knowledge about Mudra and Bandha**.**
3. Technique of Pranayama.
4. Classificationof Asana.
5. Technique of Nadanusandhan.

PAPER -3

Marks: 100

BASICS OF INTEGRAL APPROACH TO YOGA

Unit-1

Philosophy- Meaning and definition, General introduction of Indian Philosophy. Buddhist philosophy- Four noble truth, Jaina philosophy- Syadvad, 5 Mahavrata.

Unit-2

Samkhya Yoga- Three-fold affliction. Introduction of 25 elements according to Samkhya, Concept of Pramana, Purusha and Prakriti, Sarg and Pratisarg, Samyog, similarities and dissimilarities of vyakta and avyakta.

Unit-3

Bhagavad Geeta: - The context of the Bhagavad Geeta, Concept of Yoga, Concept of Karma, Concept of Bhakti, Nature of mind, Concept of Sthitapragya, Triguna. Dhyana, Ahara.

Unit-4

Brief introduction of Principal Upanishads, Definition of yoga, nature of Atma (Kathoppnishad).

Unit-5

Concept of Panchkosha (According to Taittiriyopnishad), Panch Prana (According to Prashna Upanishad), Brahma, Om.

Recommended Books

1. योग विज्ञान – स्वामी विज्ञानानन्द सरस्वती
2. वेदों में योग विद्या – योगेन्द्र पुरूषार्थी
3. भगवद्गीता – गीता प्रेस, गोरखपुर
4. कल्याण (योगांक) – गीता प्रेस गोरखपुर
5- भारतीय दर्शन की रूप–रेखा – डॉ. हरेन्द्र प्रसाद सिन्हा

Course Outcome

1. Knowledge about BhagavadGeeta.
2. Knowledge about shatdarshan(Indian philosophy).
3. Learn concept of Purusha and prakriti.
4. Knowledge about Brahma.
5. Technique of Om chanting according to Upanishad.

PAPER- 4

Marks: 100

ANATOMY AND PHYSIOLOGY OF YOGIC PRACTICES

Unit-1

General introduction of Human body, Importance of anatomy and physiology in the field of Yoga. Central nervous system.

Unit-2

Physiology of Asanas (Muscle-Nerves- Neuromuscular activity and Coordination), Oxygen debt, fatigue, Postural physiology.

Unit-3

Principles and physiology of Mudra and Bandha. Neurophysiological aspects of Pranayama, Endocrine gland and effect of yogic practices on it.

Unit-4

General metabolism and deities (their yogic principles). Special senses: - Eyes anatomy and effect of yoga on it. Sense of smell – nasal mucosa, tongue, taste buds, Ear (their yogic practices).

Unit-5

Circulatory, Respiratory and Reproductive system (Mechanism and effect of yogic Practices). Limitations and contra-indications of specific yoga practices.

Recommended Books

1. Anatomy of Hathayoga – David Coulter
2. Anatomy & Physiology of Yogic Practices - Dr. M.M. Gore
3- Yoga Therapy for selected diseases - Dr. M.M. Gore

Course Outcomes

1. After completion of course students will be able to understand about yogic concept of health and healing.
2. Students will familiarize with yogic concept of human anatomy and physiology on the basis they would apply ancient techniques of yoga therapy.
3. After completion of course students will be able to understand aboutyogic anatomy.
4. After completion of course students will be able to understand about specifics yga techniques for disease.
5. Limitations of Yoga practices.

PAPER-5

Marks: 100

YOGA AND MENTAL HEALTH

Unit-1

Human psyche: Yogic and Modern concept, Mental health (its meaning, determinates and application) -Concept of normality of yoga and modern psychology.

Unit-2

Personality: Meaning and definition, personality theories with special reference of Sigmund Freud and Jung. Concept of personality. Relationship between body and mind.

Unit-3

Indian approach to personality, Personality integration with the view point of Yoga. Attitude formation through Yamas and Niyamas.

Unit-4

Rationale of selected yogic practices and contribution to physical and Mental health. Frustration, Anxiety, Conflicts and Psychosomatic disorders.

Unit-5

Psychology as per the Yoga Sutra of Patanjali, Role of yoga in stress management. Yoga in personal and interpersonal adjustment.

Recommended Books

1. योग एवं मानसिक स्वास्थ्य – कैवल्य धाम
2. व्यक्तित्व का मनोविज्ञान – अरूण कुमार सिंह
3. Indian Psychology - Raghunath Sajaya
4. Yoga and Psychotherapy- Swami Rama, Rudolph Ballentine,Swami Ajay.

Course outcomes

1. After completion of course students will be able to understand about mental health .
2. After completion of course students will be able to understand about yogic psychotherapy.
3. Student would be able to characterize the different stages of mind.
4. Student would be able to understand the concept of mental health and understand the different psychological theories.
5. Students will have deeper understanding of Yogic personality.

PAPER- 6

Marks:100

PRACTICALS AND TEACHING PRACTICES

(A)

Marks:100

Practical

- Prayer
- Shukshma Vyayama
- Asanas: - The full course of the Kaivlyadham performance of selected asanas and general familiarity with other Asanas from Hathpradiopika, Gheranda Samhita, Yoga Upanishads and with another Asana vogue.
- Pranayam: - Ujjayi, Anuloma viloma, Bhastrika and Suryabhedhan, Sitkari, Shitli etc.
- Mudra and Bandha: - Mahamudra. Vipareetkarni mudra, Matang mudra,Mula , Uddiyana and Jalandhaer Bandha.
- Kriyas: - Shatkriyas described in Hthapradipika and Gheranda Samhita.
- Meditation: - Elementary practice of meditation with Pranva in any of following selected Poses, Sidhasana, Padmasana,Swastiasana,Sukhasana.
- Rhythmic Yoga exercise.

Course Outcomes

1. After completion of this course students will be able to importance of shatkarma, asana and pranayama.
2. Students would be acknowledged about the variety of advanced asanas- Pranayama-Mudra-Bandha-Meditation and about their effect on body.
3. Students will have knowledge of Yoganidra.
4. Knowledge of Rhythmic Yoga exercise.
5. Technique of Yoga camp.

Paper-6

(B) Marks:100

Teaching Practice

- Lecture on organization of classes methods to teaching and lession planning.
- Salient features of each practice with reference to Yoga text from practical aspects.
- Conducting practical lesson in the class
- Critical observation of the practical class.

Course Outcomes

1 After completion of this course students will be able to importance of shatkarma, asana and pranayama.

2 Students would be acknowledged about the variety of advanced asanas- Pranayama-Mudra-Bandha-Meditation and about their effect on body.

3 Students will have knowledge of Yoganidra**.**

4 Knowledge of Rhythmic Yoga exercise.

5 Technique of Yoga camp.

The medium of instruction will be English/Hindi or both.

DEPARTMENT OF PSYCHOLOGY

COURSE STRUCTURE

for

M.A. (PSYCHOLOGY)

Four Semesters (Two Years)

Programme

Based on

Choice Based Credit System (CBCS)

(As per ordinance-14)

I & II Semester 2020-21

III & IV Semester 2021-22

Semester Course of M.A. PSYCHOLOGY Based on CBCS

Vision of the University:

To be the premier institution that offers teaching and learning programmes of the best quality, graduate students who excel and become leaders in the chosen profession contributing to the community, the nation and the world, and prepares individuals of the highest moral fibre. The vision of university is:

To create an ideal society and an intellectual environment that initiates, nourishes and perpetuates values of co-existence and to fulfil and achieve excellence.

The university, under the dynamic leadership of our honourable Vice-chancellor is working on quite a few ambitious plans. The idea is to develop the university as a knowledge city.

Department of Psychology:

The department has organised Invited Talks, Workshops and Seminars to improve the knowledge of students regarding the latest developments in the field of Psychology..

Faculty:

1. Prof. Shreekant Mishra — Head of the Department
2. Dr. Richa Chaturvedi — Full Time Faculty
3. Dr. Kalpna Pandey — Full Time Faculty

Programme: M.A. Psychology

Duration: 4 Semesters (Two Year)

Eligibility: Graduation with 55% marks obtained

Age Limit: No age limit.

Admission Procedure:

The admission will be done as per merit of qualifying examinations.

PROGRAMME OUTCOMES (POs)

PO#	PROGRAMMEOUTCOMES
PO1	Critical Thinking: Inculcate critical thinking to carry out scientific investigation objectively. Formulate coherent arguments; critically evaluate practices, policies and theories by following scientific approach to knowledge development. Critically evaluate ideas, evidence and experiences from an open-minded and reasoned perspective.

PO2	Scientific Communication Skills: Imbibe effective scientific and / or technical communication in both oral and writing. Ability to show the importance of the subject as precursor to various scientific developments since the beginning of the civilization.
PO3	Social Interaction: Elicit views of others, mediate disagreements and help reach conclusions in group settings.
PO4	Enlightened Citizenship: Create awareness to become an enlightened citizen with commitment to deliver one's responsibilities within the scope of bestowed rights and privileges.
PO5	Ethics: Continue to acquire relevant knowledge and skills appropriate to professional activities and demonstrate highest standards of ethical issues in the subject concerned. Ability to identify unethical behaviour such as fabrication, falsification or misrepresentation of data and adoptive objective, unbiased and truthful actions in all aspects.
PO6	Environment and Sustainability: Understand the issues of environmental contexts and sustainable development.
PO7	Lifelong Learning: Ability to think, acquire knowledge and skills through logical reasoning and to inculcate the habit of self-learning throughout life, through self- paced and self- directed learning aimed at personal development, and adapting to changing academic demands of work place through knowledge/ skill development/ reskilling.

EXAMINATION SCHEME

S.No	Paper Name		Theory/ External Assessment		Internal Assessment		Total Max. Marks	Credit
			Max.	Min.	Max.	Min.		
	Semester - I							
1.	Paper- 101 Cognitive Processes-I	Core	60	21	40	20	100	04

2.	Paper 102 Psychopathology	Core	60	21	40	20	100	04
3.	Paper 103 Research Methods -I	Core	60	21	40	20	100	04
4.	Paper 104 Psychological Assessment	Core/Generic Elective I	60	21	40	20	100	04
5.	Paper 105 Practical/Seminar/Assignment		100	35	-	-	100	04
6.	Paper 106 Comprehensive Viva-Voce		100	35	-	-	100	04
	Semester - II							
1.	Paper- 201 Cognitive Processes-II	Core	60	21	40	20	100	04
2.	Paper 202 Theories of Personality	Core	60	21	40	20	100	04
3.	Paper 203 Research Methods-II	Core	60	21	40	20	100	04
4.	Paper 204 Guidance and Counseling	Core/ Generic Elective II	60	21	40	20	100	04
5.	Paper 205 Practical/Seminar/Assignment		100	35	-	-	100	04
6.	Paper 206 Comprehensive Viva-Voce		100	35	-	-	100	04
	Semester - III							
1.	Paper- 301 Educational Psychology	Core	60	21	40	20	100	04
2.	Paper 302 Clinical Psychology	Core	60	21	40	20	100	04
3.	Paper 303 Developmental Psychology	Core	60	21	40	20	100	04
4.	Paper 304 Health Psychology	Core/ Generic Elective III	60	21	40	20	100	04
5.	Paper 305 Practical/Seminar/Assignment		100	35	-	-	100	04
6.	Paper 306 Comprehensive Viva-Voce		100	35	-	-	100	04
	Semester - IV							
1.	Paper- 401 Environmental Psychology	Core	60	21	40	20	100	04
2.	Paper 402 Organizational Behavior	Core	60	21	40	20	100	04
3.	Paper 403 Psychology of Adjustment	Core	60	21	40	20	100	04
4.	Paper 404 Human Resource Management	Core/ Generic Elective IV	60	21	40	20	100	04
5.	Paper 405 Practical/Project/Internship		100	35	-	-	100	04
6.	Paper 406 Comprehensive Viva-Voce		100	35	-	-	100	04

Programme Administration Evaluation:

1. Each course will be assessed for 100 marks, out of which 60 marks will be for end-semester examination and 40 marks will be for Continuous Evaluation. The duration of end-semester examination for each course shall be of three hours.
2. The question paper of end-semester examination of each course will consist of two sections A & B. Section A will consist of short answer type questions each carrying 4 marks and section B of long answer type questions each carrying 8 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.
3. During the semester, a teacher offering the course will do the continuous evaluation of the student at three points of time by conducting three tests of 20 marks each. Of these, two must be written tests and third may be written test/Quiz/Seminar/Assignment. Marks obtained in two best tests out of three will be awarded to the student.
4. Total of Marks obtained in end-semester examination and best two tests under continuous evaluation will decide the grade in the course.

PROGRAMME SPECIFICOUT COMES (PSOs) (M.A.Psychology)

PSO #	PROGRAMME SPECIFIC OUTCOME
PSO 1	To gain a functional knowledge of theoretical concepts and experimental Aspects of Psychology and their applications in the day-to-day life.
PSO 2	To integrate the gained knowledge with various contemporary and evolving areas in Psychology like Cognitive Processes, Guidance and Counseling, Theories of Personality and Research Methods etc.
PSO 3	To understand, analyze, plan and implement qualitative as well as quantitative, analytical and therapeutic –based problems related to Health and Clinical Psychology.
PSO 4	Develop insight to excel; Adjust in academics, research or Industry skill enhancement and real word situation based courses like Environment Psychology, Organizational Behavior, HRM and Psychology of Adjustment.

COURSE STRUCTURE

Under CBCS

M.A. PSYCHOLOGY

SEMESTER-I to IV

M.A. Psychology Syllabus

A.P.S. University, Rewa (M.P.)

Class : M.A
Semester : I
Subject : Psychology
Course Name: Cognitive Processes-I
Course Code: 101

Max. Marks: 60
Min. Marks: 21
Credit: 04

Course Objectives

Cognitive psychology is a discipline of mental processes involved in gaining knowledge and compression. These processes include thinking knowing remembering judging and problem solving.

Unit I: Introduction: A brief history of the cognitive approach. The emergence of contemporary cognitive psychology. Current theoretical issues in cognitive psychology- Cognitive science, Cognitive Neuroscience, Artificial intelligence, and The parallel distributed processing approach.

Unit II: Perceptual Processes: Object Recognition-Its background, Theories of Object Recognition. TopDown processing and Object Recognition. Attention: Divided Attention, Selective Attention Theories of attention. Biological basis of attention.

Unit III: Working Memory: The history of research on working memory- Miller's concept, Classical research on STM, Atkinson and Shiffrin's model. Factors affecting working memory- Pronunciation time, Semantic similarity of the items in working memory. Baddeley's working memory approach- Phonological loop, Visuo-spatial sketch pad, and Central executive.

Unit IV: Long-Term Memory: Encoding in long-term memory- Depth of Processing, The Self-Reference Effect, The Effect of Context: Encoding Specificity, Emotions, Mood and Memory. Retrieval in Long Term Memory- Explicit Versus Implicit Memory Task, Very Long Term Memory, Expertise, and Individuals with Amnesia. Autobiographical Memory- Flashbulb Memories, Schemas and Autobiographical Memory, and Eyewitness Testimony.

Unit V: Memory Strategies and Metacognition: Introduction, Mnemonics using Imagery and organization, The Multimodal Approach, Prospective memory. Metacognition -Tip of the Tongue Phenomenon, Meta comprehension.

Course Outcome (COs)

CO1	Compare and contrast the major theories of memory and attention.
CO2	Analyze major concepts and theories about concept formation, problem solving, thinking and intelligence.
CO3	Classify recent developments in pattern recognition and perceptual processing.
CO4	Describe cultural differences in thinking, language, and problem solving.
CO5	Articulate the neurobiological basis of cognition.

Recommended Readings:

Galotti, M.K. (2004). Cognitive Psychology. Singapore: Thompson.

Matlin, M.W (2002). Cognition (Fifth Edition). New York: Harcourt College Publishers.

Solso, R.L. (2001). Cognitive Psychology, (Sixth Edition). Singapore: Pearson Education.

Class : M.A
Semester : I
Subject : Psychology
Course Name: Psychopathology
Course Code: 102

Max. Marks: 60
Min. Marks: 21
Credit: 04

Course Objectives

Psychopathology is the study of mental illness or mental distress on the manifestation of behaviors and experiences which may be indicative of mental illness or psychological impairment.

Unit-I Normality and Abnormality: Concept of normality and abnormality Classification of Mental Disorder. DSM IV & ICD-10.

Unit-II Intorduction to models of psychopathology: psychosocial models of psychopathology: Psychodynamic, Behavioural, Cognitive, Humanistic and Existential.

Unit – III Anxiety Disorders: Panic disorders, Phobic disorders, Obsessive compulsive disorder, Generalized Anxiety disorders and PTSD (earthquake, storm etc & life events).

Unit- IV Somatoform Disordrs: Hypochondriasis, Pain disordrs, body dysmorphic disorder, conversion & dissociative disorder.

Unit – V Schizophrenia, delusional disorder, Brief psychotic disorder.

Mood disorders: Manic episode, Depressive episode, Bipolar affective disorder.

Course Outcome	
CO1	Evaluate observational, clinical, and epidemiologic research approaches in psychopathology research.
CO2	Analyze current research on the biological bases of psychopathology.
CO3	Critically evaluate the role of neurobiology, cultural, and social context in the evaluation of mental disorders.
CO4	Identify goals, develop strategies and determine further actions for personal growth.
CO5	Compare and contrast the pros and cons of DSM as a means of classifying and diagnosing psychopathology.

Books Recmmended:

1. Adams H.E. and Sutkar F.G. (E.D.) (1984) Comprehensive Handbook of psychopathology. New York; Plenum Press.
2. Buss A.H. (1986) Psyvhopathology, London: Wiley.

3. Coleman J.C. (1988) Abnormal Psychology & Modern Life
4. Friedman & Kaplan Text book of Psychiatry

M.A. Psychology Syllabus

A.P.S. University, Rewa (M.P.)

Class : M.A

Class : M.A
Semester : I
Subject : Psychology
Course Name: Research Methods -I
Course Code: 103

Max. Marks: 60
Min. Marks: 21
Credit: 04

Course Objectives

Research methods and statistics are central to the development of professional competence and evidence based psychological practices.

Unit I: Nature of Research: The Scientific Approach, Problem, Hypothesis, Nature and types of Variables, Controlling extraneous variables.

Unit II: Techniques of Data Collection: Observation, Questionnaire, Interview, and Content-Analysis.

Unit III: Sampling: Meaning, Types, and methods of sampling. Probability and Non-Probability sample. Sampling Errors.

Unit IV: Correlation: its concepts. Methods of Calculating correlation-Product- Moment and Rank-Order correlation..

Unit V: Basic statistical techniques: Significant Difference between Mean: t-Test. Non-parametric Statistics: Chi-square, Sign-test, Mann Whitney U test, Duncan Range test.

COURSE OUTCOME (CO)

CO1	Analyze & comprehend research and its application.
CO2	Design and develop the strategy, to conduct research.
CO3	Comprehend the inter relation between parameters under study.
CO4	Develop insight into procedural scientific steps of conducting a research.
CO5	Able to have skills of various methods and techniques for scientific conduct of research in psychology.

Recommended Readings:

Broota, K.D. (1992). Experimental design in behavioral research. New Delhi: Wiley Eastern.
Panneerselvam R. (2016) – Research Methodology PHI Learning
Kerlinger, F.N. (1988). Foundation of behavioral research (2nd ed.): Delhi: Surjeet Publications.

Mangal S.K. (2015) . Research Methodology in Behavioural Sciences PHI Learning
Mangal S.K. (2014). Vyavharik Vigyone Main Anusandhan Vidhiya PHI Learning
Singh, A.K.(2006). Tests, Measurements and Research Methods in Behavioral Sciences. Bharti Bhawan Publishers, Patna.
Asthana H.S. (2016). Statistics for Social Sciences (with SPSS Applications) PHI Learning.

M.A. Psychology Syllabus

A.P.S. University, Rewa (M.P.)

Course Name: Psychological Assessment

Course Code : 104

Course Objectives

Psychological assessment is done to help a psychologist better understand an individual and provide valuable insights into the individual's behavior, skills, thoughts and personality.

Unit I: Nature of psychological test: Nature and definition, characteristics, setting and purpose of tests. Characteristics of examinee, effects of examiner. Reliability and Validity: concepts and types.

Unit II: Types of Tests: Test for Intelligence and Cognition: individual and group test. Verbal and nonverbal tests.

Unit III: Personality Assessment: History and development, Evaluation of frequently used personality inventories / questionnaires. Projective tests: Inkblot test (Rorschach), TAT, Draw a person test, Sentence completion test.

Unit IV: Tests for special population: Tests for infants, motor and speech handicaps, learning disabilities, mental sub normality and learning handicapped.

Unit V: Personal Orientation Test and Rating scales: Type a behavior, locus of control. Attitude scales. Ethical Issues and Social Consideration in testing.

COURSE OUTCOME (CO)

CO1	Analyze and apply their understanding of psychological testing.
CO2	Interpret and assess the role of psychological testing.
CO3	Effectively synthesize and apply the variations in scales and tests.
CO4	Recognize the various steps in construction of a psychological test.
CO5	Organize the various steps in construction of a psychological test

Recommended Readings:

Anastasi, A. (2005). Psychological Testing. New York: McMillan.
Freeman, F.S. (1978). Theory and practice of psychological testing. Oxford.
Shalini Bharat (1996). Family measurement in India. Sage: new Delhi.

Kagan, J. & Lamb, S. (1987). The emergency of morality in young children. Chicago University Press.

Saraswathi, T.S. (1999). Culture, Socialization and human Development: theory research and applications in India. New Delhi: Sage.

Sinha, D. (1981). Socialization of the Indian child. ND: Concept.

Thompson, R.A. (Ed.) (1990). Socio-emotional development: Nebraska symposium on motivation, 1988. Lincoln: Uni. Of Nebraska Press.

Valsiner, J. (1999). Culture and human development. New development. New Delhi: Sage

105	**PRACTICAL/SEMINAR/ASSIGNMENT**	**MA Psy.105**
	Course Outcome	
CO1	Ability to administer, analyse and interpret results from various psychological tools.	
CO2	Expanded knowledge of various assessment procedures.	
CO3	Learning regarding conduction of experiments.	
CO4	Enable students to understand and concise information to presented Before the audience and discuss the issues raised in the class.	
CO5	The learning process brings out and focuses attention on many latent Attributes that do not surface in the normal class rooms situation.	
106	**COMPREHENSIVE VIVA-VOCE**	**MA 106**

SEMESTER II

Max Marks : 60

M.A. Psychology Syllabus

A.P.S. University, Rewa (M.P.)

Semester : II Min. Marks: 21
Subject : Psychology Credit: 04
Course Name: Cognitive Processes-II
Course Code : 201

Course Objectives

Cognitive psychology is the study of higher mental processes such as attention, language use, memory, perception, problem solving, and thinking. The core focus of modern cognitive psychology is on studying how people acquire, process, and store information within the complex computing system known as the human brain.

Unit I: Introduction to language and language comprehension: The nature of language. Speech perception. Basic reading processes.

Unit II: Language production and Bilingualism: Speaking, Writing, Bilingualism.

Unit III: Problem solving and Creativity: Understanding the problem. Problem- solving approaches. Factors influencing problem solving. Creativity: Definitions, approaches to creativity.

Unit IV: Deductive Reasoning: An overview of Conditional Reasoning, Difficulties with negative information and abstract reasoning problems, The belief-bias effect, Making an Illicit conversion, The confirmation Bias.

Unit V: Decision Making: The Representativeness Heuristic, The availability heuristic, The Anchoring and adjustment heuristic, The framing effect.

	Course Outcome
CO1	Getting theoretically and practically focused on concepts of attention, perception, memory, learning, thinking, concept formation, language formation.
CO2	Analyze each situation rationally and take decisions better and faster than others.
CO3	Comprehend the role of mental processing in day to day life for solving problems.
CO4	Identify the building blocks that enable students to identify their strengths and weaknesses so that they can further help others in doing so.
CO5	Cultivate cognitive skills to understand the mind and behavior.

Recommended Readings:

Matlin, M. W. (2002). Cognition. New York: Harcourt College Publishers. Best, J.B. (1998). Cognitive Psychology. New York: ITP
Solso, R. (2001). Cognitive Psychology. New Delhi: Pearson.

Max Marks : 60

M.A. Psychology Syllabus

A.P.S. University, Rewa (M.P.)

Semester : II Min. Marks : 21
Subject : Psychology Credit : 04
Course Name : Theories of Personality
Course Code : 202

Course Objectives

To develop the skills necessary to be able to draw on these theories to describe and explain an individual's personality or behavior.

Unit I: Introduction to Personality: Meaning and definition of personality, Components of personality theories, Criteria for evaluating personality theory and basic assumptions concerning human nature.

Unit II. Psychoanalytical Theories- Classical Psychoanalytic Theories; Freud, Adler and Jung. Post Freudians/ Neo Psychoanalytical Theories: Erikson, Horney and Sullivan.

Unit III: Dispositional Theories - Trait approach: Allport and Cattell. Type Approach: Eysenck.
Unit IV: Behavioral and Cognitive Theories : Behavioristic Approach : Skinner Social Learning Approach: Bandura and Rotter Cognitive Theory: Kelley
Unit V: Humanistic & Phenomenological Theories : Humanistic Approach: Maslow Phenomenological Approach: Roger. New Directions in the Discipline.

	Course Outcome
CO1	Illustrate various theories of personality.
CO2	Develop capability to apply knowledge of personality theories for self and societal growth.
CO3	It enables students to become familiar with the major theories and traditions related to the study of personality and personal growth.
CO4	Enables the student to articulate the underlined themes, methodology, and assumption of each theory to enhance understanding of personality and behavior.
CO5	Develop the skills necessary to be able to draw on these theories to describe and explain an individual's personality or behavior.

Recommended Readings:

Burger J M. (2000). Personality 5th edition, Wadswarth, Thomson Learning
Friedman H.S and Schustack M.W. Personality- Classical theories and Modern Research 3rd edition,Pearson Education.
Hall C.S, Lindzey G. and Campbell J.B (2002), Theories of Personality, 4th edition. John Wiley and sons Inc. Hjelle L.A and Ziegler D J, Personality theories- Basic Assumptions, Research and Applications 2nd edition, McGraw Hills Inc.
Pervin L.A and John O.P : Handbook of Personality: Theory and Research, 2nd edition, Guildford Publications Inc.

Max Marks : 60
Semester : II Min. Marks : 21
Subject : Psychology Credit : 04
Course Name: Research Methods-II
Course Code : 203

M.A. Psychology Syllabus

A.P.S. University, Rewa (M.P.)

Course Objectives

Research methods is undertaken both for discovery of new facts and verification of old facts. The ability to design and plan research questions and apply statistical tests would be imparted.

Unit I: Introduction to Experimental design: Its concept, Designs as control of Variance. Major types of Experimental Designs. Basic terminology of statistical analysis in designs. .Type I and Type II errors.

Unit II: Conceptual frame work of Analysis of variance. Assumptions of ANOVA. Calculating of One way and Two way ANOVA.

Unit III: Between group design: Concept and types. Within group design: Concept and types. Latin Square design.

Unit IV: Factorial Design: Concept and types. .Quasi-experimental design: Concept and types.

Unit V: Introduction to qualitative research. Ethical guidelines in behavioral research. Application of computer in psychological research, Writing research proposal and report in APA style.

	Course Outcome
CO1	Analyze & comprehend research and its application.
CO2	Design and develop the strategy, to conduct research.
CO3	Comprehend the inter relation between parameters under study.
CO4	Develop insight into procedural scientific steps of conducting a research.
CO5	Able to have skills of various methods and techniques for scientific conduct of research in psychology.

Henkle, D.E., Weissna, W., & Juss, S.G. (1979). Applied statistics for the behavioural sciences. New York: Rand McNally.

Cook, T.D., & Campbell, D.T. (1979). Quasi experimentation.

Panneerselvam R. – Research Methodology (2016) PHI Learning

Blalock, H.N. (1979). Social statistics. New York: McGraw Hill.

Mangal S.K. – Research Methodology in Behavioural Sciences (2015) PHI Learning

Mangal S.K. – Vyavharik Vigyone Main Anusandhan Vidhiya (2014) PHI Learning

Jones, R.A. (1985). Research methods in the social and behavioural sciences. Sunderland, Mass: Sinauer Ass.

Asthana H.S. – Statistics for Social Sciences (with SPSS Applications) (2016) PHI Learning

Broota, K.D. (1992). Experimental design in behavioral research. New Delhi: Wiley Eastern.

Kerlinger, F.N. (1988). Foundation of behavioral research (2nd ed.): Delhi: Surjeet Publication

Class : M.A Max Marks : 60

M.A. Psychology Syllabus

A.P.S. University, Rewa (M.P.)

Semester : II
Subject : Psychology
Course Name: Guidance and Counseling
Course Code : 204

Min. Marks : 21
Credit : 04

Course Objectives

Guidance and counseling aim is to encourage students' academic, social, emotional and personal development. The knowledge of different approaches of guidance and counseling and to deal with the people who need help would be provided.

Unit I: Nature, definition, need and principles of guidance. Areas of guidance. Implementation of guidance services and evaluation of guidance services.

Unit II: Nature, definition and goals of counseling. Skills of the counselor. Stages of Counseling process.

Unit III: Theories and approaches to counseling: Psychoanalytic, Behavioral, Client -Centered and Cognitive Approaches

Unit IV: Individual and Group counseling. Intervention areas: Family counseling, Marital counseling, School/Educational counseling.

Unit V: Ethical issues in counseling. Counseling for special groups: People with disabilities, Substance abusers, Cancer, Older adults. Prevention and wellness

	Course Outcome
CO1	Apply and develop conceptual difference between guidance counseling & psychotherapy.
CO2	Develop technique and implication of applied counseling skills in areas of practice.
CO3	Evaluate counseling theories & their application to the outside world.
CO4	Evaluate various psychotherapies and schools in counseling techniques.
CO5	Develop skills of eclectic therapeutic plans.

Recommended Readings:

R.L. Gibson and M.H. Mitchell (7th edition). Introduction to Counseling and Guidance, Pearson Education.

L.G.Baruth & C.H.Huber (1985). Counseling and Psychotherapy: Theoretical, Analysis and Skills applications Macmillian Publishing Company.

205	**PRACTICLE/SEMINAR/INTERNSHIP**	**MA Psy. 205**
	Course Outcome	
CO1	Ability to administer, analyse and interpret results from various psychological tools.	

CO2	Expanded knowledge of various assessment procedures.	
CO3	Learning regarding conduction of experiments.	
CO4	Enable students to understand and concise information to pres Before the audience and discuss the issues raised in the class.	
CO5	The learning process brings out and focuses attention on many latent Attributes that do not surface in the normal class rooms situation.	
206	**COMPREHENSIVE VIVA-VOCE**	**MA Psy. 206**

M.A. Psychology Syllabus

A.P.S. University, Rewa (M.P.)

Class : M.A
Semester : III
Subject : Psychology
Course Name: Educational Psychology
Course Code : 301

Max Marks : 60
Min. Marks : 21
Credit : 04

Course Objectives

Educational psychology as a discipline advances the principles of teaching and learning. In enables the students to know about the developmental stages and to acquaint with theories of learning.

Unit I: Educational psychology: Meaning, scope and methods. Role of psychology in education, objectives of teaching educational psychology, problems of Indian educational system.

Unit II: Characteristics of teacher. Professional growth of the teacher. Mental set of the teacher. Efficiency in studying: study guide, curriculum, Psychological projects. Co-curricular activities.

Unit III: Concept formation. Thinking. Problem solving. Creativity and discovery learning. Teaching of creativity and reasoning.

Unit IV: Motivation: Curiosity, exploration, expectancy, achievement motivation, punishment, motivation and tension reduction. Role of motivation in learning. Individual differences: nature. Intellectual development: Piaget's and Vygotsky's views and their applications in education.

Unit V: Learning environment: Maintaining effective learning environment. Classroom management: Techniques. Handling problem behavior. Disadvantaged pupil. Bilingual and culturally diverse students. Providing multi-cultural understanding.

	Course Outcome
CO1	To familiarize students with the aims of education and their psychological significance.
CO2	To help understanding the relationship between self, school and the society.
CO3	To give an overview of the ways in which children think and learn.
CO4	To understand the relationship between learning, motivation and creativity.
CO5	It will enable students how to learn and process information and look ways to improve performance.

Recommended Readings:

Behler & Snowman (1988). Psychology applied to teaching (5th Ed.) Boston: Hongton Miffin Co.
Dand Pani, A. (1988). A text book of advanced educational psychology. New Delhi Amol Publications. DeCeco (1988). The psychology of learning and instruction. William Crawlard (2nd Ed.) Dandekar (1995). Educational psychology. Mcmillan.
Ellis (1965). Educational psychology. Princeton, N.J. New York.
Pandey, J. (1988). Psychology in India: The state of art. Vol.@ New Delhi: Sage.
Woolflok, A. (2004). Educational Psychology. Singapore: Pearson Education.

Class : M.A
Semester : III

Max Marks : 60
Min. Marks : 21

M.A. Psychology Syllabus

A.P.S. University, Rewa (M.P.)

Subject : Psychology Credit : 04

Course Name: Clinical Psychology

Course Code : 302

Course Objectives

Students will the given knowledge of the scientific body of information pertaining to personality and individual differences, social bases of behavior, cognitive-affective bases of behavior and developmental bases of behavior, psychopathology and psychotherapy.

Unit I: Definition, history and field of clinical psychology. Models of clinical psychology: Psychodynamic, behavioral phenomenological, interpersonal perspective. Implications of clinical models.

Unit II: Classification of diseases: DSM IV. Causes , symptoms, and treatment of anxiety disorders: generalized anxiety disorders, Panic disorder, phobia, obsessive compulsive disorder, posttraumatic stress disorder,.

Unit III: Causes, symptoms, and treatment of schizophrenia and its types. Mood disorders: Dysthymic disorder, major depressive disorder, bipolar I disorder, bipolar II disorder, cyclothymic disorder.

Unit IV: Clinical assessment: Nature and purpose. Clinical interview, case study, mental status examination. Collecting, processing and communicating assessment findings.

Unit V: Psychotherapies: Psychoanalytic, behavioral, phenomenological, cognitive therapy.

	Course Outcome
CO1	Express the nature and scope of clinical psychology and its linkages to other fields of healthcare and management.
CO2	Analyze the current state of clinical psychology in india vis-à-vis the west.
CO3	Develop insight various categories of psychological disorders with an emphasis on diagnosis and prognosis
CO4	Illustrate and analyze the ethical issues in clinical practice.
CO5	Identify and inculcate the skills to become a professional in the field of clinical psychology.

. Recommended Readings:

Carson, R.C., & Butcher J.N. (1992). Abnormal psychology and modern life. Harper Collins. Hecker, (2003). Introduction to clinical psychology. Delhi. Pearson Korchin, S.J. (1986). Modern clinical psychology. Delhi CBS.

Nietzel, M.T. & Bernstein, D.A. (1987).introduction to clinical psychology (4th Ed.). Eaglewood Cliffs, N.J.: Prentic Hall.

Sarason, J.G. & Sarason, B.R. (2005). Abnormal psychology. Prentice Hall of India Pvt. Ltd. New Delhi.

Class : M.A Max Marks : 60

Semester : III Min. Marks : 21

M.A. Psychology Syllabus

A.P.S. University, Rewa (M.P.)

Subject : Psychology Credit : 04

Course Name: Developmental Psychology

Course Code : 303

Course Objectives

Developmental psychology will provide to explain how thinking, feeling, and behaviors change throughout life. This field examines change across three major dimensions: physical development, cognitive development, and social emotional development.

Unit I: Nature of human development. Theories of development: Psychoanalytic (Freud and Erikson), cognitive, behavioural, social-cognitive, ethological, ecological and sociocultural theories. Biological basis of development: Evolutionary perspective and genetic foundations. HereditYenvironment interaction.

Unit II: Motor development: The dynamic system theory, reflexes, development of gross motor skills and fine motor skills. Cognitive development: Piaget's and Vygotsky's theories of cognitive development. Information processing approach to cognitive development. Attention. Memory. Thinking. Metacognition.

Unit III: Language development: Defining language, development of language, biological and environmental influences on language development. Moral development: Piaget's, Kohlberg's and Gilligan's theories of moral development. Role of parenting and school in moral development. Moral development across cultures.

Unit IV: Intelligence: Nature and development. Extremes of intelligence: Mental retardation and giftedness. Emotional development: Nature of emotion, regulation of emotions, emotional competence, development of emotions. Temperament.

Unit V: Gender roles: Biological, social and cognitive influences on gender. Gender stereotyping and gender role development. Sociocultural context of development: Role of family, parenting styles, peer relations in childhood and adolescence. Friendship.

	Course Outcome
CO1	Appraise the students to the shades of development as a process.
CO2	Explain and analyze the theoretical viewpoint in relation to developmental psychology.

CO3	Develop the skills to analyze etiology, symptoms and prognosis of developmental disorders.
CO4	Developing knowledge and skills in different aspects of learning and motivation as implied in educational settings.

Baron and Byrne (1998). Social Psychology. New Delhi: Prentice Hall.

Berk, L.E. (2003). Child Development (Sixth Edition). Delhi: Low Price Edition.

Bee H. (1998). Life Span Development (Second Edition). USA. Addison-Wesley Educational Publishers Inc.

Feldman, R.S. (1985). Social Psychology. Singapore: McGraw Hill.

Santrok, J.W. (2006). A topical approach to life-span development (3rd Ed.). New Delhi: Tata McGraw Hill.

Class : M.A
Semester : III
Subject : Psychology
Course Name: Health Psychology
Course Code : 304

Max Marks : 60
Min. Marks : 21
Credit : 04

Course Objectives

The main objective is to prevent illness and investigate the effects of disease and provide critical analyses of health policies and to know about prevention of and intervention in health problems.

Unit I: Nature and scope of health psychology. What is health? Current perspectives on health and illness – Bio-psychosocial and life span perspectives. Relationship of health psychology with clinical psychology, behavioural medicine, medical sociology and medical anthropology. Physiological bases of behaviour and health.

Unit II: Models of health behaviour: Health belief model, self-regulatory model, theory of reasoned action , planned behavior model ,the precaution adoption process model and trans- theoretical model. Individual differences and health: locus of control, self-efficacy, learned helplessness and optimism.

Unit III: Health promotion and disease prevention: Behavioural risk factors – smoking, drug abuse, alcohol use and sedentary life style. Development of health habits and reduction of unhealthy behaviour. Improving nutrition and weight control, diet and exercise.

Unit IV: Stress and coping: Mechanisms of stress disease relationship. Chronic illnesses – cardio-vascular disorders, AIDS/ HIV, diabetes, hypertension and cancer. Coping with and reducing stress.

Unit V: Wider social issues: Child health, illness and family. Health care and patient behaviour. Future issues and future focuses in health psychology.

	Course Outcome
CO1	Analyzing historical perspective on health and illness.
CO2	Introduction on how theoretical and empirical findings are applied to improve the lives and development of individuals and groups with the help of health psychology.
CO3	Analyze and critically evaluating fundamental issues.
CO4	Understanding concept of adjustment, mental health, and mental hygiene.
CO5	Students will be able to develop an understanding and appreciation of the complex interplay between one's physical well-being and a variety of biological, psychological, and social factors.

Recommended Readings:

Brannon, L. and Feist, J. (2000). Health psychology: An introduction of behaviour and health (Fourth Edition). Belmont. Wadswarth.

Baum, A., Gatehel, R.J. and Krantz, D.S. (1989). An Introduction to health psychology. New York. McGraw
– Hill.

Pitts, M. and Phillips, K. (1998). The psychology of health: An introduction of health psychology (Second edition). London. Routledge.
Sarafino, E. (1998). Health Psychology: Bio psychosocial interactions (Third edition). New York: John Wiley & Sons.
Taylor, S.E. (2006). Health psychology (Sixth Edition). New Delhi: McGraw-Hill.

305	**PRACTICLE/SEMINAR/INTERNSHIP**
	Course Outcome
CO1	Ability to administer, analyse and interpret results from various psychological tools.
CO2	Expanded knowledge of various assessment procedures.
CO3	Learning regarding conduction of experiments.
CO4	Enable students to understand and concise information to presented Before the audience and discuss the issues raised in the class.
CO5	The learning process brings out and focuses attention on many latent Attributes that do not surface in the normal class rooms situation.
306	**COMPREHENSIVE VIVA-VOCE**

Class : M.A Max Marks : 60

Semester : IV Min. Marks : 21
Subject : Psychology Credit : 04
Course Name: Environmental Psychology
Course Code : 401

Course Objectives

Environmental psychology focuses on the relation between individuals and their physical environment. This includes (but is not limited to) the study of human behavior that interacts with the natural environment.

Unit I: Introduction: Nature and characteristics of Environmental Psychology. Historical overview of environmental psychology. Research methods in environmental psychology. Environmental perception, cognition and attitudes.

Unit II: Theoretical approach to Environmental Psychology: Arousal, Environmental load, Under stimulation approach, optimal stimulation, Behaviour constraint, Barker's ecological approach.

Unit III: Environmental Stress: Natural disaster and technological catastrophe, noise heat and air pollution. Crowding and urban stress.

Unit IV: Personal space, Territoriality, architecture design and behaviour.

Unit V: Changing behaviour to save the environment, Pro-environmental behaviour: Promoting proenvironmental behaviour. Environmental ethics and values.

COURSE OUTCOME (CO)

CO1	Apply an awareness, knowledge, and appreciation of the intrinsic values of environmental study and its conservation and demonstrate an integrative approach to environmental issues with a focus on its sustainability.
CO2	Develop an ability to integrate the many disciplines and fields the intersect with environmental concerns.
CO3	Implements the various theoretical concepts learnt.
CO4	Build the critical thinking skills in relation to environmental conservation
CO5	Explore the environment's effects on human wellbeing and behavior.

Recommended Readings:

Fisher, J.D., Bell, P., Baum, A. (1984). Environmental Psychology (2nd Ed.). New York: Holt, Rinehart & Winston.

Holahan, C. J. (1982). Environmental Psychology. New York: Random House.

Mirilia, B. and Gianfranco, S. (1995). Environmental Psychology: A Psycho-Social Introduction. London: Sage Publications.

Nagar, D. (2006). Environmental Psychology. New Delhi: Concept Publishing Company.

Robert, B. (1997). Environment and behaviour: An Introduction. London: Sage Publications.

Stokols, D. (1977). Perspectives in Environment and behaviour: Theory, research and application. New York: Plenum Press.

Semester : IV Min. Marks : 21
Subject : Psychology Credit : 04
Course Name: Organizational Behavior
Course Code : 402

Course Objectives

The course focuses on understanding the behavior of the employees working in the organization. It highlights the significance of challenges and opportunities of organizational behavior, perception, attribution, learning, organizational change, motivation and stress management. Group dynamics and skills required for working in groups will be explained.

Unit I: Challenges facing management, Historical background of OB: Hawthorne studies. Theoretical frame works: Cognitive, behaviouristic and social learning frame work. Emerging Organizations: Role of information technology. Total quality management. Learning organizations – its meaning and types.

Unit II: Diversity: nature and characteristics of diversity. Managing diversity. Ethics in organizations. Organizational Culture: Nature, creating and maintaining culture.

Unit III: Motivation: Meaning, types of motives. Theories of motivation: Maslow's hierarchy of needs, Herzberg's theory, and Porter-Lawler theory. Techniques for enhancing motivation, Communication: Nature, process and its types. Barriers in communication.

Unit IV: Group Dynamics: Nature and types of groups. Teams in modern organization. Leadership: Classical studies on leadership, trait theories, Group and exchange theory, contingency theory of leadership, path-goal theory.

Unit V: Organizational Stress: Causes and its consequences. OrganisationalChange: Nature and types of change. Forces of change. Managing change. Organizational Development: Nature, and techniques of O.D. Interventions.

	Course Outcome
CO1	Describe concepts of psychology in the process of manpower training.
CO2	Design training & development process of an organizations.
CO3	Apply various methods in organizational setting
CO4	Know applications of industrial psychology in various organizational settings.
CO5	It will help to analyze and compare different models used to explain individual behavior and to identify the processes used in developing communication and resolving stress.

Recommended Readings:

Luthans, F. (1995). Organizational Behaviour. Newyork: Mcgraw Hill.

Robbins, S. P.(1996). Organanizational Behaviour. New Delhi : prentice Hall of India.

Chandan, J. S. (1998) Organizational Behaviour. New Delhi : Vikas Publishing House Pvt. Ltd.

Class : M.A Max Marks : 60
Semester : IV Min. Marks : 21
Subject : Psychology Credit : 04
Course Name: Psychology of Adjustment
Course Code : 403

Course Objectives

The aim is to familiarized with terms such as adjustment, stress and coping. identify source of stress in life. show how stress affects body, emotion, cognition and to focus on how people cope with stress.

Unit I: Perspectives: Frameworks for Understanding adjustment. Behavioral science and adjustment. Adjustment and change. The role of student: Critical and Generative thinking, goal setting
Unit II: Psychological Perspectives: Psychoanalytic, Behavioral, Humanistic, Biopsychosocial
Unit III: Developmental Perspective on adjustment: Infancy, Preschool and Middle school years, Adolescence, Adulthood and Old age
Unit IV: Stress and Coping: Stress, Stressors and Coping methods. Adjustment to marriage, family ,work and retirement
Unit V: Adjustment and the environment: Psychology and the Biosphere. Critical Environmental Challenges. Adjustment in the global sense

	Course Outcome
CO1	Develop an appreciation of the differences and similarities in behavior and experience as it relates to culture and the relationship to the underpinnings of psychology as a science.
CO2	Develop an appreciation for the role descriptive and inferential statistics play in psychological research as they relate to behavior and mental processes.
CO3	Develop a critical thinking about claims people make and the issues in the discipline, particularly in the context of psychological principals as they apply to personal, social, and organizational issues.
CO4	The students will get insight into the events and psychological changes that occur and a personal acceptance of these changes; an appropriate adjustment of the perception of self; a modification of beliefs and personal goals; and the acquisition of appropriate strategies to adjust.
CO5	Familiarized with terms such as adjustment, stress and coping. identify source of stress in life. show how stress affects body, emotion, cognition and to focus on how people cope with stress.

Recommended Readings:

Cohen R.J. (1994). Psychology & Adjustment, Allyn and Bacon Publication

Martin G.L. & Osborne J.G. Psychology, Adjustment and Everyday Living, second edition

Subject : Psychology Credit : 04

Course Name: Human Resource Management

Course Code : 404

Course Objectives

The main objective is to develop effective coordination and communication within the organization and to find the right staff and developing their skills base and have the knowledge of job analysis and training and development.

Unit I: The strategic role of HRM: Definition, its importance. The changing environment of HRM. Strategic planning and HRM.

Unit II: Job analysis: Nature and methods of collection of job analysis information, job analysis techniques, writing job descriptions and job specifications. The recruitment and selection process. Employee planning and forcasting. Recruiting job candidates.

Unit III: Training & Development: Orienting employees, Training process, Training techniques. Nature and purpose of management development: Managerial on the job training, Off the job Management development techniques.

Unit IV: Performance Appraisal: Meaning, importance and methods of appraisal. Managing careers: Factors influencing career management, managing promotions and transfers.

Unit V: Labor relations and collective bargaining. Employee safety and health – causes and prevention of accidents. International human resource management.

	Course Outcome
CO1	Effectively manage and plan key human resource functions within organizations.
CO2	Examine current issues, trends, practices, and processes in HRM.
CO3	Contribute to employee performance management and organizational effectiveness
CO4	Problem solving human resource challenges
CO5	It will contribute to the development, implementation, and evaluation of employee recruitment, selection, and retention plans and processes and administer and contribute to the design and evaluation of the performance management program.

Recommended Readings:

Beardwell I. and Holden L. (1994). Human Resource Management: A Contemporary Perspective. Mac Millan India Ltd.

Dessler, G. (2003). Human Resource and Management. 9th Edition 2003. Singapore: Pearson Education.

Singh N.K.(1999): Human Resource Management. Excel Books, New Delhi.

Werther W.B and Davis K. (1993): Human Resource and Personnale Management 4th edition. McGraw Hills Inc.

405	**PRACTICLE/PROJECT/INTERNSHIP**
	Course Outcome
CO1	Provide students with opportunities to apply the concepts learnt in the class- rooms to real life situations.

CO2	Enable students to understand research and its importance in experimental learning through case study.
CO3	Expanded knowledge of various assessment procedures.
CO4	Ability to administer, analyze, and interpret results from various psychological tools.
406	**COMPREHENSIVE VIVA-VOCE**

CENTRE FOR YOGA

AND

CONSCIOUSNESS

A.P.S. UNIVERSITY, REWA (M.P.)

SYLLABUS

FOR

M.A. IN YOGA

(CHOICE BASED CREDIT SYSTEM)

I & II SEMESTER 2020-2021

III& IV SEMESTER 2021-2022

VISION OF UNIVERSITY:

To be the premier institution that offers teaching and learning programmes of the best quality, graduate students who excel and become leaders in the chosen profession contributing to the community, the nation and the world and prepare individuals of the highest moral fibre.

The vision of university to create an ideal society and an intellectual environment that initiates ,nourishes and perpetuates values of coexistence and to fulfill and achieve excellence.

The university under the dynamic leadership of our honoruable Vice chancellor is working on quite a few ambitious plans. The idea is to develop the university as a knowledge-city.

FACULTY OF CENTRE FOR YOGA AND CONSCIOUSNESS:

1.	PROF. SHREEKANT MISHRA	PROFESSOR IN CHARGE
2.	DR. ALPI SINGH	GUEST FACULTY
3.	RAJESH KUMAR SINGH	GUEST FACULTY

AIMS :

1. Developing yoga skills among the students.
2. Preparing students for yoga therapist and yoga teachers.
3. Students prepare for soft spoken spiritual skill and develop holistic health

PROGRAMME:	**M.A. YOGA**
DURATION:	**4 SEMESYTER (TWO YEAR)**
NUMBER OF SEATS :	**60**
ELIGIBILITY:	**GRATUATION**
AGE LIMIT:	**NO AGE LIMIT**

OBJECTIVE

- Creating curiosity among students to accept and implementation of yoga in their life for achieving health.
- Developing a strong will to learn yoga teaching as told in ancient yoga texts.
- Facilities the students with proper techniques of different yoga practices to avoid false methodology of doing yoga.
- To aware the students about research methodology in the field of yoga.
- To create awareness for affirmative health and personality development through yoga.
- To bring peace and harmony in the society at large by introducing the yogic way of life.
- To create yoga expert of high caliber to make the society free from stress and lifestyle disorders.
- To encourage the pupil to be a global citizen, serving the human being at large through the profession of Yoga.

Programme outcome

PO	Programme outcome
PO1	The students would be able to demonstrate yoga in scientific way to improve positive health.
PO2	After completing the program the students would be able to specialized in Yoga Health.
PO3	After finishing the program the students would be able to get employment opportunity.
PO4	After successful completion of the program students would able to establish Yoga and Health center in the service of common man.
PO5	The students would preserve and propagate ancient Indian concept of health.
PO6	Ethics: Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.
PO7	Self- directed and Life-long learning: Acquire the ability to engage in independent and life-long learning in the broadcast context of socioecological changes.

Programme Specific outcome

Program Specific Name	PSO	Programme Specific outcome
M.A. in Yoga	PSO1	After Finishing the Program the students would be able to have an integrated knowledge of the various disciplines in multidisplinary field of Yogic science.
	PSO2	At the end of the course the students will be able to understand traditional Indian yoga system the philosophy of the yoga systems and the new thought in yoga movment in the country.
	PSO3	Holistic development according to the percepts of Upanishads and Gita.
	PSO4	Understand and apply the physical and psychological benefits of Yoga.
	PSO5	Recognize, understand and develop the therapeutic skill of yoga in handling various health issues.
	PSO6	Evaluate and incorporate the traditional and modern approaches in their yogic interventions.
	PSO7	Students are able to socially responsible as they are dealing with the modern and psychosomatic diseases through their yogic therapy.

M.A. IN YOGA

EXAMINATION SCHEME (CBCS)

Semester	Paper No	Nomenclature	Type of Course	Theory/External assessment		Internal assessment		Total Marks	Credit Point
				Max.	Min.	Max.	Min.		
I	1.	Fundamentals of Yoga	C.C.	60	24	40	14	100	04
	2.	Patanjal yoga sutra	C.C.	60	24	40	14	100	04
	3.	Nutrition and health	C.C.	60	24	40	14	100	04
	4.	Yogic concepts in Principal Upanishad and Yogopanishads*	G.E.	60	24	40	14	100	04
	5.	Practical-1	C.C.	Minimum Passing marks-35				100	02
	6.	Practical-2	C.C.	Minimum Passing marks-35				100	02
	7.	Comprehensive Viva-Voce	C.C.	Minimum Passing marks-35				100	04
II	**Semeser-2**								
	1.	Human consciousness	C.C.	60	24	40	14	100	04
	2.	Text of Hathyoga	C.C.	60	24	40	14	100	04
	3.	Human anatomy and physiology	C.C.	60	24	40	14	100	04
	4.	Yoga Ethics *	G.E.	60	24	40	14	100	04
	5.	Practical-1	C.C.	Minimum Passing marks-35				100	02
	6.	Practical-2	C.C.	Minimum Passing marks-35				100	02
	7.	Comprehensive Viva-Voce	C.C.	Minimum Passing marks-35				100	04
III	**Semester-3**								
	1.	Yoga and Health	C.C.	60	21	40	14	100	04
	2.	Research Methodology	C.C.	60	21	40	14	100	04
	3.	(A) Yoga Vasistha ** Or (B) Fundamentals of Yogic psychotherapy **	D.C.E.	60	21	40	14	100	04
	4.	Yoga and physical balance*	G.E.	60	24	40	14	100	04
	5.	Practical-1	C.C.	Minimum Passing marks-35				100	02
+	6.	Practical-2	C.C.	Minimum Passing marks-35				100	02
	7.	Comprehensive Viva-Voce	C.C.	Minimum Passing marks-35				100	04
IV	**Semester-4**								
	1.	Naturopathy and Ayurveda	C.C.	60	21	40	14	100	04
	2.	Shivsamhita	C.C.	60	21	40	14	100	04
	3.	(A)Dissertation** Or (B) Essay**	D.C.E.	100	50	-	-	100	04
	4.	Value education and spirituality	G.E.	60	21	40	14	100	04
	5.	Practical-1	C.C.	Minimum Passing marks-35				100	02
	6.	Practical-1	C.C.	Minimum Passing marks-35				100	02
	7.	Comprehensive Viva-Voce	C.C.	Minimum Passing marks-35				100	04
Total								2800	96

CC-CORE COURSE, GE- GENETIC ELECTIVE, DCE-DISCIPLINE CENTRIC ELECTIVE.

*** Students may choose this course as a generic elective or may choose a course offered in other UTDs or choose a course offered by MOOCs through swayam. This course can be chosen by the students of other UTDs also.**

**** Students may choose any one course as discipline centric electives from the two-choice based specialization offered(A) or (B).**

M.A. IN YOGA एम.ए. योग

SEMESTER-1 सेमेस्टर–1

COURSE	-	**FUNDAMENTALS OF YOGA (योग के मौलिक आधार)**
TYPE OF COURSE	-	**CORE COURSE (C.C.)**
PAPER	-	**1**
MARKS	-	**60 (THEORY) + 40 (INTERNAL ASSESSMENT) =100**

Objective -

1. The students will get to know the exact face of Yoga.

2. Students would be able to understand the ancient concept of the yoga in his/her own life and through this they would improve their quality of life.

3. Students would be able to know the journey of yoga and how it varied with time by gaining the knowledge about lineages of yoga.

UNIT -1

योग – परिभाषा, महत्व एवं क्षेत्र, इतिहास, परंपराऐं (Yoga - Definition, Importance and Scope, History, Traditions)

UNIT -2

दार्शनिक परंपरा में योग – वेद और उपनिषद्, भगवद्गीता, बौद्ध धर्म, जैन धर्म (Yoga in philosophical Tradition - Vedas and Upanishads, Bhagvadgeeta, Buddhism, Jainism)

UNIT -3

योग के शास्त्रीय संप्रदाय – भक्तियोग, ज्ञानयोग, कर्मयोग, राजयोग, मंत्रयोग, (Classical School of Yoga, Bhakti Yoga, Jnana Yoga, Karma Yoga, Raj Yoga, Mantra Yoga)

UNIT -4

समकालीन योगियों के यौगिक आदर्श – स्वामी विवेकानन्द, श्रीअरविन्द, स्वामी शिवानन्द, स्वामी कुवलयानन्द, स्वामी दयानन्द सरस्वती (Swami Vivekanand, Shri Aurobindo and Swami Shivananda, Swami Kuvalyananda, Swami Dayananda Saraswati)

UNIT -5

योग की शैक्षणिक पद्धति – शिक्षण के सिद्धांत, शिक्षण एवं सीखने की अवधारणा एवं दोनो के बीच सम्बंध, विभिन्न आयुवर्ग के लिए योग अभ्यास, योग शिक्षक की भूमिका एवं कुशल योग शिक्षक/योग गुरु के गुण, (Teaching methodology of Yoga - Principle of teaching, Teaching and Learning concept and their relationship, Practice of Yoga at different age group, Role of Yoga teacher and quality of perfect yoga teacher or Yoga Guru)

अनुशंसित पुस्तकें –

1. योग विज्ञान – स्वामी विज्ञानानन्द सरस्वती, योग निकेतन ट्रस्ट, म ुनि की रेती, ऋषिकेश,2017 ।
2. वेदों में योग विद्या – योगेन्द्र पुरूषार्थी, यौगिक शोध संस्थान, ज्वालापुर, 1983 ।
3. भगवद्गीता – गीता प्रेस गोरखपुर, 2018 ।
4. कल्याण (योगांक) – गीता प्रेस गोरखपुर, 1992 ।
5. भारतीय दर्शन की रूप–रेखा – डॉ. हरेन्द्र प्रसाद सिन्हा, मोतीलाल बनारसीदास,2018 ।
6. The Fundamentals of contemporary yoga and yoga therapy - Prof. R.H. Singh, Chaukhambha prakashan, 2018.
7. Teaching method for yogic practices - Dr. M.L. Gharote , Kaivlyadham samiti, Loanavala, 2001.

COURSE OUTCOMES-

1. Students of the PG course will have an understanding about origin, history and development of yoga and Introduction about yoga according to various yogic texts.

2. Students would be able to know the journey of yoga

3. How it varied with time by gaining the knowledge about lineages of yoga.

4. Learn quality of perfect teacher.

5. Learn about different type of Yoga school.

M.A. IN YOGA एम.ए. योग

SEMESTER-1 सेमेस्टर–1

COURSE	-	**PATANJAL YOGA SUTRA**
TYPE OF COURSE	-	**CORE COURSE(C.C.)**
PAPER	-	**2**
MARKS	-	**60 (THEORY) + 40 (INTERNAL ASSESSMENT) =100**

OBJECTIVE

1. Student would be able to know the introduction of Patanjali yoga sutra.
2. Student would be able to know Vritti of mind and calm
3. The mind by eliminating the different Vritti, Yoga antrays, Astanga Yoga.
4. Student would be able to understand human's psychology as Patanjali had explained.

UNIT -1

महर्षि पतंजलि का व्यक्तित्व एवं कृतित्व, पातंजल योगसूत्र का स्वरूप – समाधि पाद, साधनपाद, विभूतिपाद, कैवल्यपाद, पातंजल योग दर्शन का महत्व योग की परिभाषा, चित्त का स्वरूप, चित्तभूमियाँ, चित्तवृत्तियाँ : प्रकार एवं वृत्ति निरोध के उपाय,चित्त प्रसाधन के उपाय – मैत्री, करुणा, मुदिता, उपेक्षा ((Personality and Artistry of Rishi Patanjali, Nature of Patanjal Yoga sutra-Samadhipada,Sadhanapada,Vibhutipada,Kaivlyapada,Importance of Patanjal Yoga Philosophy) Definition of Yoga, Nature of Chitta, Chittabhumies, Chittavrities : Types and Techniques of Vrittinirodh, Measures of Chitta Prasadhana - Maitri, Karuna, Mudita, Upeksha)

UNIT -2

अभ्यास–वैराग्य, क्रियायोग, क्लेश – स्वरूप, अविद्या, अस्मिता, राग, द्वेष एवं अभिनिवेश (Abhyasa-Vairagya, Kriyayoga, Klesha - Nature, Avidya, Asmita, Raga, Dvesha and Abhinivesha)

अष्टांग योग : यम – लक्षण, प्रकार एवं सिद्धि, नियम – लक्षण, प्रकार एवं सिद्धि, आसन – लक्षण एवं सिद्धि, प्राणायाम – लक्षण, प्रकार एवं सिद्धि (Ashtanga Yoga : Yama - Characteristics, Types and Result, Niyam - Characteristics, Types and Result, Posture - Characteristis and result, Pranayama : Characteristis, Types and Result)

UNIT -3

प्रत्याहार – लक्षण एवं सिद्धि, धारणा – लक्षण एवं सिद्धि, ध्यान – लक्षण एवं सिद्धि, समाधि – लक्षण, प्रकार एवं सिद्धि, बहिरंग साधन एवं अन्तरंग साधन (Pratyahara - Characteristics and Result, Dharna - Characteristics and Result, Dhyana - Characteristics and Result, Samadhi - Characteristics, Types and Result, Bahiranga Sahana and Antaranga Sadhana)

UNIT -4

संयम : स्वरूप, फल, योग की विभूतियाँ, योग अन्तराय, चतुर्व्युहवाद,कैवल्य – स्वरूप, जीवनमुक्ति एवं विदेहमुक्ति, कर्म – स्वरूप, भेद, कर्माशय ((Samyama - Nature, Result, Vibhuties of Yoga, Yoga Antaraya, Chaturvyuhavada ,Kaivalya - Nature, Jivanmukti and Videhamukti, Karma - Nature, Types, Karmashaya)

UNIT -5

समाधि – सबीज, निर्बीज, धर्ममेघ समाधि, ईश्वरप्रणिधान, प्रतिप्रसव, ऋतम्भरा प्रज्ञा, विवेकज्ञान, संस्कार, समग्र स्वास्थ्य की अवधरणा, पातंजल योगसूत्र एवं स्वास्थ्य – शारीरिक, मानसिक, सामाजिक एवं आध्यात्मिक (Samadhi - SabijA, NirbijA, Dharmamegha Samadhi,Ishwar Pranidhan, Pratiprasava, Ritambhara Prajnan, Vivek Jnana, Samskar,Concept of Holistic Health, Patanjal Yoga Sutra and Health - Physical, Mental, Social and Spiritual)

अनुशंसित पुस्तकें –

1. योगदर्शन – हरिकृष्णदास गोयनका, गीताप्रेस गोरखपुर, 2018।
2. पातंजल योग प्रदीप – स्वामी ओमानन्द तीर्थ, गीताप्रेस गोरखपुर,सं0 2062।
3. श्रीमद्भगवद्गीता – गीता प्रेस गोरखपुर,2018।
4. राजयोग – स्वामी विवेकानंद, श्रीरामकृष्ण आश्रम, नागपुर,2004।
5. योग दर्शन – आचार्य श्रीराम शर्मा, वेदमाता गायत्री ट्रस्ट,शान्तिकुंज,2000।

Course Outcomes-

1. After completion of course students will be able to understand various modification of mind and the means of inhibiting them. Students will have an understand about the essence of SAMADHI, SADHANA, VIBHUTI and KAIVALYA pada.
2. Student would be able to know the introduction of Patanjali yoga sutra.
3. Control on Indriya .
4. Knowledge of samadhi.
5. Holistic health through Patanjal yoga sutra.

M.A. IN YOGA एम.ए. योग

SEMESTER-1 सेमेस्टर–1

COURSE	-	**Nutrition and Health (पोषण और स्वास्थ्य)**
TYPE OF COURSE	-	**Core Course (C.C.)**
PAPER	-	**3**
MARKS	-	**60 (THEORY) + 40(INTERNAL ASSESSMENT) =100**

OBJECTIVE-

1.Student will learn to apply good habits in his daily routine, which in result improve the health status.
2. Student would be able to understand the reason behind arising the disease and to cure them by Yogic diet and Yogic dincharya.
3.Student would be able to design a healthy diet plan which helps in getting all the necessary nutrients for the body.

Unit-1

आहार के नियम– आहार का महत्व, आहार की परिभाषा, संतुलित आहार, योगिक आहार की संकल्पना,पथ्य व अपथ्य आहार (घेरण्ड संहिता,हठ प्रदीपिका और भगवद्गीता के अनुसार),शरीर प्रकृति के अनुसार आहार– वात,पित्त और कफ (Principles of diet-Their importance, Definition of Diet, Balance Diet, Concept of Yogic Diet, Pathya and Apathya ahar(According to Gheranda Samhita, Hath Pradipika and Bhagavad Geeta),Diet according to body Prakriti-Vata,Pitta and Kapha).

Unit -2

आहार के घटकःकार्बोहाड्रेट– वर्गीकरण, कार्य, स्त्रोत, प्रोटीन – वर्गीकरण, कार्य, स्त्रोत, वसा– वर्गीकरण, कार्य, स्त्रोत ,पोषण तत्वों की आवश्यकता(कार्बोहाड्रेट, प्रोटीन और वसा), विटामिन और खनिज तत्व– प्रकार, स्त्रोत, कार्य, आवश्यकता और कमी, अम्ल–क्षार संतुलन, जल और विद्युत अपघट्य संतुलन(Components of diet: Carbohydrates- Classification, functions, source. Proteins- Classification, functions, source. Fat- Classification, functions, source. Nutritional requirement (Carbohydrates, Proteins and Fat), Vitamins and Minerals -Types, source, function, requirement and deficiency, Acid base balance, Water and Electrolyte balance).

Unit-3

पोषण की अवधारणा, व परिभाषा ,कुपोषण का प्रभाव व निवारण, शारीरिक संरचना मापन की तकनीक, शारीरिक स्वस्थ्यता, कार्य अनुसार पोषण की माँग एवं कार्य क्षमता पर विशिष्ट पोषक तत्वों का प्रभाव, (Concept and definition of Nutrition, Effect and prevention of Malnutrition Technique of measuring body composition, Physical fitness, Nutritional demands during work and effect of specific nutrients on work performance).

Unit-4

स्वास्थ्य और तन्दुरुस्ती के प्रबंधन के लिए समग्र दृष्टिकोण, सहनशक्ति और शक्तिपूर्ण गतिविधि के लिए विभिन्न ऊर्जा प्रणाली की समीक्षा,चिकित्सकीय पोषण– मोटापा, उच्च रक्तचाप, मधुमेह,कैंसर, कब्ज और वजन नियत्रंण (Holistic approach to the management of health and fitness, Review of different energy systems for endurance and power activity, Therapeutic nutrition- Obecity, High B.P., Diabetes, Cancer, Constipation and Weight control).

Unit-5

योग चिकित्सा में पथ्य के नियम, आहार व स्वास्थ्य का संबंध,जीवन के विभिन्न स्तर में पोषण – बचपन, युवावस्था, वयस्क और वृद्ध , गर्भावस्था में पोषण, शाकाहारी पोषण के लाभ (Dietetics in yoga therapy, Food and health relationship, Nutrition during different stages of life- Childhood, Adolsence, Middle age and aged, Nutrition during pregency, Benefit of vegetarian nutrition).

अनुशंसित पुस्तकें

1. Textbook of Nutrition and Dietetics- Kumud Khanna, Elite publishing house Pvt.Lltd., 2016.
2. A textbook of Foods, Nutrition and dietetics- Raheena Begum, Sterling publishers private limited,2019.
3. Handbook of Food and Nutrition- Dr. M. Swaminathan, Bappco publication, 2010.
4. आहार विज्ञान और पोषण–डा0 वृन्दा सिंह,पंचशील प्रकाशन,2019.

Course Outcomes-

1. This course will make the students to understanding of Ahara and Mitahara.
2. Concept of diet and yogic diet
3. Pathya and apathya in traditional Yogic texts.
4. Knowledge of Tridosha .
5. Student would be able to design a healthy diet plan which helps in getting all the necessary nutrients for the body.

M.A. IN YOGA एम.ए. योग

SEMESTER-1 सेमेस्टर–1

COURSE	-	**Yogic concepts in Principal Upanishad and Yogopanishads (मौलिक उपनिषद् और योगोपनिषद् में योग अवधारणा)**
TYPE OF COURSE	-	**Generic Elective (G.E.)**
PAPER	-	**4**
MARKS	-	**60 (THEORY) + 40(INTERNAL ASSESSMENT) =100**

OBJECTIVE

1.Student would understand the Upanishadic philosophy.

2.Student would be able to describe the Yogic concept in Principal Upanishad and Yogaupanishads.

3. Student would be able to know to Atanga yoga, Om,Atma,Panchakosha on Upanishad.

Unit-1

उपनिषद् का परिचय, औपनिषदकीय दर्शन का परिचय, उपनिषदों की प्राचीनता, प्रस्थानत्रयी

(Introduction to Upanishads, An introduction to Upanishadic philosophy, Antiquity of Upanishads, Prasthantrayi).

Unit-2

उपनिषदों का सार भाग–1 : ऐतरेय उपनिषद, ईश उपनिषद, माण्डूक्य उपनिषद, मण्डूक उपनिषद, तैतेरिय उपनिषद (Essence of Upanishads-1 :-Aitreya Upanishad, Isha Upanishad, Mandukya Upanishad,Manduka Upanishad, Taitreya Upanishad)

Unit-3

उपनिषदों का सार भाग–2 : कठ उपनिषद, केन उपनिषद, बृहदआरण्यक उपनिषद,छान्द्योग्य उपनिषद, प्रश्न उपनिषद, श्वेताश्वेतर उपनिषद (Essence of Upanishad-2:-Katha Upanishad, Kena Upanishad,Brahadarankya Upanishad, Chandogya Upanishad, Prashna Upanishad, Swetaswetara Upanishad).

Unit-4

योगोपनिषदों में योग तत्व भाग–1, योग की परिभाषा, योगोपनिषदों में अष्टांग योग– यम,नियम,आसन,प्राणायाम (Yogatattva in Yogaupanishads-1,Definition of Yoga, Ashtanga yoga in Yogaupanishads-Yama, Niyama, Asana, Pranayama).

Unit-5

योगोपनिषदों में योग तत्व भाग–2, प्रत्याहार, धारणा,ध्यान और समाधि (Yogatattva in Yogaupanishad-2,Ashatanga Yoga in Yogaupanishads-Pratyahara, Dharana, Dhyana and Samadhi)

अनुशंसित पुस्तकें

1. The Message of Upanishads- Swami Rangnathananda, Published by Bhartiya Vidya Bhavan, Bombay,2016.
2. उपनिषद अंक – कल्याण, गीता प्रेस, गोरखपुर, 2017।
3. ईशादिनौपनिषद– गीता प्रेस, गोरखपुर, 2013।

OUTCOMES-

1. Students will be able to Understand each Upanishad and the role of it in our day to day life.
2. Introduction essence of major Principal Upanishad.
3. Student would be able to describe the Yogic concept in Principal Upanishad and Yogaupanishads.
4. Astanga yoga on yoga Upanishad.
5. Prasthantrayi.

M.A. IN YOGA एम.ए. योग
SEMESTER-1 सेमेस्टर–1

COURSE	-	**PRACTICAL -1 (प्रायोगिक–1)**
Type of Course	-	**Core COURSE(C.C.)**
PAPER	-	**5**
MARKS	-	**100((Minimum passing marks=35)**

OBJECTIVE

1.Students would be familiar with the procedure of yoga abhyasa.
2. Students would be familiar with benefits of the Suryanamaskara.
3. Students would be acknowledged about the variety of basic asanas- pranayama-Mudra-Bandha-Meditation and about their effect on body.

प्रायोगिक अभ्यास

1. **सूक्ष्म व्यायाम**
2. **सूर्य नमस्कार**
3. **आसन –**

i.	शीर्षासन	ii.	विपरीतकरणी	iii.	मत्स्यासन	iv.	धनुरासन
v.	नाभ्यासन	vi.	वक्रासन	vii.	अर्धमत्स्येन्द्रासन	viii.	गोरक्षासन
ix.	जानुशीर्षासन	x.	उष्ट्रासन	xi.	आकर्ण धनुरासन	xii.	पादांगुष्ठासन
xiii.	बकासन	xiv.	एकपाद स्कंधासन	xv.	चक्रासन	xvi.	ताड़ासन
xvii.	वातायनासन	xviii.	उत्कटासन	xix.	गरूडासन	xx.	पद्म–बकासन

4. प्राणायाम – सहित प्राणायाम, अनुलोम–विलोम, उज्जायी
5. मुद्रा – ब्रह्ममुद्रा, योगमुद्रा
6. क्रिया – कपालभाति, जलनेति, रबरनेति, नौलि, वस्त्रधौति, दण्डधौति
7. बंध – उड्डियान, जालधर, मूलबंध
8. ध्यान – 30 मिनट (सविता की ध्यान धारणा)
9. ध्यानात्मक आसन – सिद्धासन, स्वस्तिकासन, पद्मासन

PRACTICAL EXCERCIES

1 JOINT LOOSING EXERCISE 2 SURYA NAMSKAR 3 ASANAS i. Shirsasana ii.Viparitkarni iii.Matsaysana iv.Dhanurasana v.Nabhyasana vi.Vakrasana viiArdhamatesyendra asana viii.Gorakshasana ix. Janushirsasana x. Ustrasana xi.Akarnadhanurasana xii.Padangusthasana xiii. Bakasana xiv. Ekapadaskandasana xv.Cakrasana xvi.Tadasana xvii. Vatayanasana xviii.Utakatasana xix.Garunasana xx.Padmabakasa

4. Pranayama - Sahita Pranayama, Anuloma Viloma , Ujjyayi
5. Mudra – Brahma mudra, Yogamudra
6. kriya -Kapalbhati,Jalaneti,Rabarneti,Nauli,Vastradhauti,Dandadhauti
7. Bandha - Uddiyan,Jaladhara,Moolbandha
8. Dhyana - 30min (Savita ki Dhyana Dharana)
9. Meditative asana - Sidhasana, Swastikasana, Padmasana

COURSE OUTCOMES-

1. Students will have understanding of the concept and principle of asana, breathing practice and shatkarma.
2. Learner would be able to attain Physical , Mental and emotional wellbeing.
3. Students would be familiar with the procedure of yoga abhyasa.
4. technique of dhyan..
5. Purification through shatkarma.

M.A. IN YOGA एम.ए. योग
SEMESTER-1 सेमेस्टर–1

COURSE	-	**PRACTICAL -2 TEACHING PRACTICE (प्रायोगिक–2 शिक्षण अभ्यास)**
TYPE OF COURSE	-	**Core COURSE(C.C.)**
PAPER	-	**6**
MARKS	-	**100(Minimum passing marks=35)**

Objective

1. Students would be able to learn different soft skills and Yoga skills through yoga class.
2. Students would able to conduct or organize the yoga class.
3. Students would know the factors, definition and types of physical parameters as described in the Classical Yoga Texts.

अध्यापन अभ्यास –

कक्षाओं का प्रबंध, अध्यापन विधियाँ एवं पाठ योजना प्रबंधन पर व्याख्यान, कक्षा में अभ्यास पाठों का आयोजन, योग ग्रंथों के संदर्भ में विविध योग प्रक्रियाओं की विशेषताओं पर व्याख्यान, विभागाध्यक्ष/शिक्षकों के निर्देशानुसार विद्यार्थी को आवंटित योग विषयों पर निर्धारित दिनांक को पाठ योजनाऐं प्रस्तुत करनी होगी, मूल्यांकन आंतरिक होगा।

Teaching Practice

Class Management, teaching Methods, Conducting Lecture on Lesson Plan Management, Conducting the practice lesson plan in the class, Lecture on Various yoga techniques according to various text, Presentation of Lesson Plan on the Yoga Subject for allocating students instructed by HoD and teachers, Internal Evaluation.

Outcomes –

1. After completion of course students will be able to understand the Principles and practice of teaching methods of Yoga.
2. Students would able to conduct or organize the yoga class.
3. Students would know the factors, described in the Classical Yoga Texts.
4. Presentation skill.
5. Learning Lesson plan .

M.A. IN YOGA एम.ए. योग

SEMESTER-1 सेमेस्टर–1

COURSE	–	**COMPRAHENSHIVE VIVA-VOCE**
TYPE OF COURSE	-	**CORE COURSE(C.C.)**
PAPER	-	**7**
MARKS	-	**100(Minimum passing marks=35)**

Objective

Students will be able to learn communication skills through viva-voce.

Comprehensive viva-voce will be based on entire course of M.A. yoga (1st semester)

विशद् मौखिक परीक्षा एम. ए. प्रथम सेमेस्टर योग के सम्पूर्ण पाठ्यक्रमों पर आधारित होगी ।

Outcomes –

1. Students will find themselves prepare for interview.
2. Student learn communication skills through viva-voce.

M.A. IN YOGA एम.ए. योग
SEMESTER-2 सेमेस्टर–2

COURSE - **HUMAN CONSCIOUSNESS (मानवीय चेतना)**
TYPE OF COURSE - **Core Course(C.C.)**
PAPER - **1**
MARKS - **60 (THEORY) + 40(INTERNAL ASSESSMENT) =100**
O**BJECTIVE**

1. Student would know the meaning, definition and concept of Human consciousness as per Indian philosophy.
2. Student would be able to understand the need of study of Human consciousness and different mysteries of Human consciousness.
3. Student would familiarize with the concept of Human consciousness according to modern science.

UNIT -1

चेतना : अवधारणा, परिभाषा एवं विकास, परम चेतना, व्यक्तित्व चेतना, उनके आंतरिक संबंध, चेतना तथा जागरूकता में अंतर (Consciousness: Concept, Definition and Development, Absolute consciousness, Individual consciousness, their inter-relationship, Difference between awareness and consciousness)

UNIT -2

उपनिषदों में चेतना, योग एवं सांख्य में चेतना (द्रष्टा या पुरूष) का स्वरूप, पुरूष बहुलवाद, योग दर्शन में ईश्वर का स्वरूप। (Consciousness in Upanishadas, Nature of Consciousness (Drashta or Purusha) in Yoga and Samkhya, Plurality of Purusha, Nature of God in Yoga Philosophy)

UNIT -3

जैनदर्शन : चेतना (जीव) एवं अजीव की अवधारणा, जैन दर्शन में ध्यान की विधि, बौद्ध दर्शन में चेतना, क्षणिकवाद, अनात्मवाद, बौद्ध दर्शन में ध्यान की विधि (Jainism : Concept of Consciousness (Jiva) and Ajiva, Method of Meditation in Jainism, Consciousness in Buddhism, Kshanikavada, Anatmavada, Method of Buddhist Meditation)

UNIT - 4

न्याय–वैशेषिक दर्शन : चेतना का स्वरूप, मीमांसा दर्शन : चेतना का स्वरूप, अद्वैत वेदान्त : चेतना का स्वरूप, साक्षी का स्वरूप, ब्रह्म का स्वरूप (Nyaya-Vaisheshika Philosophy : Nature of Consciousness, Mimamsa Philosophy : Nature of Consciousness, Advaita Vedanta : Nature of Consciousness, Nature of Sakshi, Nature of Brahman)

UNIT - 5

सांख्य–योग दर्शन – प्रकृति का स्वरूप, सिद्धि, गुण–सिद्धान्त, प्रकृति – पुरुष संयोग, सर्ग (विकासवाद) (Samkhya-Yoga Philosophy - Nature of Prakriti, Siddhi, Guna Siddhanta, Purush-Prakriti Samyoga, Sarga (Vikasvada).

अनुशंसित पुस्तकें –

1. भारतीय दर्शन – आचार्य बलदेव उपाध्याय, चौखम्बा ओरियन्टालिया,वाराणसी 2004।
2. योग दर्शन योग औपनिषदीय दृष्टिकोण – स्वामी निरंजनानंद सरस्वती,योग पब्लिकेशन ट्रस्ट, मुंगेर,2002।
3. विवेकानंद साहित्य सम्पूर्ण भाग – स्वामी विवेकानन्द, अद्वैत आश्रम, 2010।
4. विवेकचूड़ामणि – शंकराचार्य, गीता प्रेस गोरखपुर।
5. Indian Philosophy - Dr. Radhakrishnan, Oxford,2008.
6. Yoga Mind and Body - Swami Shivananda, DK publisher, 2010.

7- Teach your self-Philosophy -Bharti Bhavan publication,2014.

Course Outcomes-

1. After completion of the course students will be able to understand the necessity and significance of Human consciousness.
2. Students will be able to understand human behavior with regard to Yoga therapy.Buddh
3. knowledge about consciousness .
4. knowledge about Shakshi bhav.
5. knowledge about Ishwer.

SEMESTER-2 सेमेस्टर–2

COURSE	-	**TEXTS OF HATHA YOGA (हठ योग – ग्रन्थ)**
Type of Course	-	**CORE COURSE (C.C.)**
PAPER	-	**2**
MARKS	-	**60 (THEORY) + 40 (INTERNAL ASSESSMENT) =100**

OBJECTIVE

1.The goal of teaching texts of Hathyoga is to provide them with knowledge of the yogic practices quoted in yoga texts and their values and benefits.
2. Student shall be able to learn the misconceptions about Yoga practices and familiar with Nath sects and their contribution.
3. Students would know the importance of Hathyoga for better health and success of life.

UNIT -1

गोरक्ष संहिता – स्वरूप, ऋषि परम्परा, गोरक्ष संहिता में वर्णित हठयोग का स्वरूप (Nature, Tradition of Rishis, Nature of Hatha Yoga According to Goraksha Samhita).

UNIT -2

घेरण्ड संहिता – स्वरूप, षट्कर्म – धौति, बस्ति, नेति, त्राटक, नैलि , कपालभाति एवं आसन (Gheranda Samhita - Nature of Gheranda Samhita and Contribution in yoga, Shatkarma in G.S.-Dhauti, Basti, Neti, Trataka, Nauli, Kapalbhati and Asana)ण

UNIT -3

घेरण्ड संहिता –मुद्रा एवं बन्ध, प्रत्याहार : भेद एवं फल, प्राणायाम : भेद एवं फल, ध्यान : भेद एवं फल, समाधि : भेद एवं फल (Gheranda Samhita - Mudra and Bandha, Pratyahara : Types and Benefits Pranayama : Types and Benefits, Meditation : Types and Benefits, Samadhi : Types and Benefits)

UNIT -4

स्वामी स्वात्मारामकृत हठप्रदीपिका का स्वरूप, हठयोग : परिभाषा एवं स्वरूप, साधक व बाधक तत्व, हठयोग सिद्धि का लक्षण, हठप्रदीपिका के अनुसार योगांगों का वर्णन –आसन, प्राणायाम् मुद्रा, नादानुसंधान (Nature of Hatha Pradipika by Swami Swatmarama, Hathayoga :- Definition and Nature, Sadhaka and Badhaka Tattva , Characterstics of Hathayoga Siddhi, Discription of yogang according to Hathapradipika - Asana, Pranayam, Mudra, Nadanusandhan)

UNIT -5

हठप्रदीपिका – यौगिक षट्कर्म : अर्थ एवं महत्व, शुद्धिक्रियाओं की विधि – सावधानियाँ व लाभ, धौति, बस्ति, नेति, त्राटक, नौलि एवं कपालभाति, बंध व मुद्राए (Hatha Pradipika - Yogic Shatkarma:- Meaning and Importance, Methods of Shuddhikriyas - Precaution and Benefits, Dhauti, Basti, Neti Trataka, Nauli and Kapalbhati, Bandha and Mudra)

अनुशंसित पुस्तकें –

1. गोरक्ष शतकम – कैवल्यधाम श्रीमन्माधव योगमन्दिर समिति, लोनावला, 2018।
2. घेरण्ड संहिता – कैवल्यधाम श्रीमन्माधव योगमन्दिर समिति, लोनावला,2010
3. घेरण्ड संहिता – स्वामी निरंजनानंद सरस्वती, योग निकेतन ट्रस्ट, मुंगेर, 2017।
4. हठप्रदीपिका – कैवल्यधाम, कैवल्यधाम श्रीमन्माधव योगमन्दिर समिति, लोनावला,2012
5. आसन प्राणायाम मुद्रा बंध – स्वामी सत्यानन्द सरस्वती, योग निकेतन ट्रस्ट, मुंगेर, 2017।
6. योगासन – स्वामी कुवलयानंद , कैवल्यधाम श्रीमन्माधव योगमन्दिर समिति, लोनावला,2012।
7. प्राणायाम – स्वामी कुवलयानंद, कैवल्यधाम श्रीमन्माधव योगमन्दिर समिति, लोनावला,2012।

COURSE OUTCOMES-

1. Students will have an understanding about pre-requisites, principle about hatha yoga .
2. Student shall be able to learn the misconceptions about Yoga practices and familiar with Nath sects and their contribution.
3. knowledge about chakra.
4. knowledge about Basic nadis.
5. knowledge about Nada.

M.A. IN YOGA एम.ए. योग

SEMESTER-2 सेमेस्टर–2

COURSE	-	**HUMAN ANATOMY AND PHYSIOLOGY (मानव शरीर रचना एवं क्रिया विज्ञान)**
Type of Course	-	**CORE COURSE(C.C)**
PAPER	-	**3**
MARKS	-	**60 (THEORY) + 40 (INTERNAL ASSESSMENT) =100**

OBJECTIVE

1. Students would be able to understand structure and functions of human body.
2. Students would be able to explained the physiological aspects of normal growth and development.
3. Students will familiarize with yogic concept of human anatomy and physiology on the basis they would apply ancient techniques of yoga therapy.

UNIT -1

मानव शरीर – कोशिका, ऊतक, पेशी, अंतःस्त्रावी ग्रंथियाँ – प्रकार एवं संरचना, पीयूष ग्रन्थि, अग्नाशय, एड्रिनल ग्रन्थि, जनन ग्रन्थि, थायरॉइड ग्रन्थि, अंतःस्रावी ग्रंथियों के स्राव पर यौगिक अभ्यास का प्रभाव (Human body - Cells, Tissues, Muscles, Endocrine glands - Types and Structure, Pituitary Gland, Pancreas, Adrenal, Reproductive glands, Thyroid, Effect of Yogic Practices on endocrine gland secretion)

UNIT -2

तंत्रिका तंत्र – मुख्य अवयव एवं कार्य, तंत्रिका तंत्र एवं प्राणायाम, मेरूरज्जु – संरचना एवं मस्तिष्क से समन्वय, परिवहन तंत्र – संरचना एवं कार्य (Nervous system - Main Components and function, Nervous system and prarayama, Spinal Cord - Structure and Coordination with brain. Circulatory system - Structure and function)

UNIT -3

पाचन तंत्र – अवयव एवं कार्यकी, उत्सर्जन तंत्र – अवयव एवं कार्यकी, श्वसन तंत्र – अवयव एवं कार्यकी, प्रजनन तंत्र – अवयव एवं कार्यकी (Digestive System - Components and Physiology, Excretory System - Components and Physiology, Respiratory System - Components and Physiology, Reproductive System- Components and Physiology)

UNIT -4

योग में मानवीय शरीर की संकल्पना – कारण शरीर, सूक्ष्म शरीर, स्थूल शरीर, पंचकोश, प्राण, मर्म स्थान एवं योग के संदर्भ में इनका अनुप्रयोग (Concept of the Human body in yoga, Causal body, Subtle body, Physical body, Panchakosha, Prana, Secret location and their application in Yoga,

UNIT -5

चक्र – अवधारणा, स्थान, ग्रन्थियाँ – ब्रम्हा, विष्णु एवं रुद्र, नाड़ी, कन्द, मानवीय शरीर में तत्व संकल्पना – स्थान तथा यौगिक अभ्यासों में उनका अनुप्रयोग (Chakras - Concept, location, Glands - Bramha, Vishnu and Rudra, Nadi, Kanda, Concept of Tattva in Human body - Location and application in yogic practices)

अनुशंसित पुस्तकें –

1. गायत्री महाविज्ञान – श्रीराम शर्मा आचार्य, युग निर्माण योजना,मथुरा,2018।
2. पातंजल योग प्रदीप – स्वामी ओमानंदतीर्थ, गीताप्रेस गोरखपुर, सं0–2061।
3. वशिष्ठ संहिता – कैवल्यधाम श्रीमन्माधव योगमन्दिर समिति, लोनावला,2009।
4. प्राणायाम – स्वामी कुवलयानन्द कैवल्यधाम श्रीमन्माधव योगमन्दिर समिति, लोनावला,2012।
5. शरीर विज्ञान एवं योग अभ्यास– डॉ. एम.एम. गोरे , ड्रोलिया पुस्तक भण्डार, हरिद्वार।
6. सम्पूर्ण योग विद्या – राजीव जैन त्रिलोक, मन्जूल पब्लिशिंग हाउस प्रा0 लि0, 2013।
7. Anatomy of Hathayoga – David Coulter,Body and Breath, 2010.
8. Anatomy & Physiology of Yogic Practices - Dr. M.M. Gore, New Age books, 2017.
9. Kundlini Yoga - Swami Shivananda, The Divine life society, Rishikesh, 1999.
10. Light on Yoga – B.K.S. Iyengar, Schoken Books, 1995.

Outcomes-

1.Students will have understanding of anatomy – physiology and will be able to experience the involvement of their body parts while practicing various postures of yoga.

2. Students will familiarize with yogic concept of human anatomy and physiology on the basis they would apply ancient techniques of yoga therapy.

3. knowledge about yogic anatomy and physiology.

4. knowledge about Kanda.

5. Technuqe of Yoga therapy.

M.A. IN YOGA एम.ए. योग

SEMESTER-2 सेमेस्टर–2

COURSE	–	**Yoga Ethics (योग एवं नीतिशस्त्र)**
Type of Course	-	**Generic Elective (G.E.)**
PAPER	-	**4**
MARKS	-	**60 (THEORY) + 40 (INTERNAL ASSESSMENT) =100**

OBJECTIVE

1. Student would understand concept of Ethics and moral value.
2. Student would know the different basic elements to develop the Yoga Ethics.
3. Student would be able to learn the basic principle of ethics on Yoga Texts.

Unit-1

नैतिकता और नैतिक मूल्य की अवधारणा, नीति शास्त्र का इतिहास , नीति शास्त्र का अर्थ व स्वरूप ,समाज में नैतिक मूल्य और नैतिकता की आवश्यकता (Concept of Ethics and Moral Values, History of ethics, Meaning and Nature of Ethics, Need of ethical values and Morality in society).

Unit-2

समाज में नैतिक पतन का कारण– जैविक कारण, मनोवैज्ञानिक कारण, शैक्षणिक कारण (Causes of Moral Degradation in society,-Biological Causes, Psychological causes, Educational causes).

Unit-3

विभिन्न योग ग्रन्थ में नैतिक मूल्य का स्वरूप– योग सूत्र में नैतिक मूल्य, योग वशिष्ठ में नैतिक मूल्य, भगवद्गीता में नैतिक मूल्य (Nature of Ethical values in various Yoga Texts- Ethical value in Yoga Sutra, Ethical value in Yoga Vasistha, Ethical value in Bhagavadgeeta).

Unit-4

योग नैतिकता के अनुप्रयोग– व्यवहार परिवर्तन एवं व्यवहार संशोधन में योग नैतिकता के अनुप्रयोग (Application of Yoga Ethics- Application of Yoga Ethics in attitudinal change and Behavioral modifications).

Unit-5

हिंसा से बचने के लिए योग नैतिकता के अनुप्रयोग, सामाजिक शांति स्थापित करने में योग नैतिकता का अनुप्रयोग (Application of Yoga Ethics in to avoid violence, Application of Yoga ethics to Establish social peace).

अनुशंसित पुस्तकें

1. The science of Yoga- I.K. Taimini,Quest books ,1961.
2. Moral Principles in Education- Dewey John,Book jungle, 2008.
3. पातंजल योग प्रदीप– स्वामी ओमानन्दजी, गीताप्रेस, गोरखपुर, सं0 – 2061।
4. भगवद्गीता– गीताप्रेस गोरखपुर,2018।
5. योग वशिष्ठ – गीताप्रेस गोरखपुर,2018।

Course Outcomes-

1. After completion of this course students will have deeper understanding of human health and yoga ethics.
2. Student would be able to learn the basic principle of ethics on Yoga Texts.
3. Students will have deeper understanding of Yoga ethics to Establish social peace.
4. students will have deeper understanding of Value in Yoga Vashistha.
5. students will have deeper understanding of BhagavadGeeta.

M.A. IN YOGA एम.ए. योग
SEMESTER-2 सेमेस्टर–2

COURSE	-	**PRACTICAL-I (प्रायोगिक–1)**
Type of Course	-	**CORE COURSE(C.C.)**
PAPER	-	**5**
MARKS	-	**60 (THEORY) + 40 (INTERNAL ASSESSMENT) =100**

OBJECTIVE

1.Students would be familiar with the procedure of yoga abhyasa.
2. Students would be familiar with the benefits to mind-body of the asanas and Pranayama.
3. Students would be acknowledged about the variety of basic asanas- Pranayama-Mudra-Bandha-Meditation and about their effect on body.

प्रायोगिक अभ्यास

1 प्रार्थना एवं प्रथम सेमेस्टर के सभी अभ्यास

2 गोरक्ष संहिता, घेरण्ड संहिता, हठ प्रदीपिका के अनुसार यौगिक अभ्यास – आसन, प्राणायाम, बन्ध, मुद्रा इत्यादि

3 प्रेक्षा ध्यान एवं सोहम् जप

Practical Exercises

1. Prayer and all Exercises of 1st Semester

2. Yogic exercise according to Goraksha Samhita, Gheranda Samhita and Hatha Pradipika - Asana, Pranayama, Bandha, Mudra etc.

3. Preksha Meditation and Soham Japa

Outcomes –

1. After completion of course students will be able to demonstrate each practice skillfully and able to explain the procedure, precaution, benefits and limitation of each practice.
2. Students would be acknowledged about the variety of basic asanas- Pranayama-Mudra-Bandha-Meditation and about their effect on body.

M.A. IN YOGA एम.ए. योग
SEMESTER-2 सेमेस्टर–2

COURSE	-	**PRACTICAL-II Teaching Skills (प्रायोगिक–2 शिक्षण कौशल)**
TYPE OF COURSE	-	**CORE COURSE(C.C.)**
PAPER	-	**6**
MARKS	-	**100 (Minimum passing marks=35)**

OBJECTIVE

1.Students would learn and enhance their language skill, specially writing skill through preparing the notebook of Yoga Asanas and Pranayama.

2. Student would be able to demonstrate yoga practical with the help of chart or oral presentation.

3. Student would learn difference between general and therapeutic classes.

पाठ योजना एवं उसका महत्व, सामान्य एवं चिकित्सात्मक कक्षाओं में अंतर, विभागाध्यक्ष/शिक्षकों के निर्देषानुसार विद्यार्थी को चिकित्सा से संबधित रोगी के जीवन इतिहास पर योजना बनाकर अध्ययन कर उसका विष्लेशण प्रस्तुत करना होगा। इसका मूल्यांकन आंतरिक होगा।

Lesson Plan and its Importance, Difference between general and therapeutic Classes, Submit the case study of a patient related with yoga therapy instructed by HoD /teachers. Internal evaluation.

Outcomes-

1. After completion of the course students will be able to record the data every day in a clinical setup and analyze the same for the presentation of the case.

2. Student would learn difference between general and therapeutic classes.

M.A. IN YOGA एम.ए. योग

SEMESTER-2 सेमेस्टर–2

COURSE	–	**COMPRAHENSHIVE VIVA-VOCE**
TYPE OF COURSE	-	**CORE COURSE(C.C.)**
PAPER	-	**7**
MARKS	-	**100(Minimum passing marks=35)**

Objective

Students will be able to learn communication skills through viva-voce.

Comprehensive viva-voce will be based on entire course of M.A. yoga (2nd semester)

विशद् मौखिक परीक्षा एम. ए. द्वितीय सेमेस्टर योग के सम्पूर्ण पाठ्यक्रमों पर आधारित होगी ।

Outcomes – 1. Students will find themselves prepare for interview.
2. learn communication skills through viva-voce.

M.A. IN YOGA एम.ए. योग
SEMESTER-3 सेमेस्टर–3

COURSE	–	**YOGA AND HEALTH (योग एवं स्वास्थ्य)**
Type of Course	–	**Core Course (C.C.)**
PAPER	-	**1**
MARKS	-	**60 (THEORY) + 40 (INTERNAL ASSESSMENT) =100**

OBJECTIVE

1. Students would be able to define, differentiate between different factors and to know about the goal of health.
2. Students will understand the concept of swasthavritta and exercise and use these concepts in enhance life span.
3. Student would be able to apply and heal the common disease through yoga therapy.

UNIT -1

स्वास्थ्य – परिभाषा एवं घटक तत्व, स्वास्थ्य शिक्षा, पर्यावरण और स्वास्थ्य, स्वास्थ्य के निर्धारक तत्व (Health - Definition and Component, Health Education, Environment and Health, Determinants of Health)

UNIT -2

योग एवं ध्यान के चिकित्सात्मक आधार, यौगिक जीवन शैली तथा स्वास्थ्य (आहार–विहार, निद्रा, ब्रह्मचर्य, पंचकोश), मनोशरीर क्रिया विज्ञान – प्रकृति एवं कार्य (Therapeutic basis of yoga and meditation, Yogic life style and health (Ahar-Vihar, Sleep, Celibacy, Pancha Kosha), Psycho Physiological science - Nature and Function)

UNIT -3

आहार एवं पोषण, पथ्य एवं अपथ्य आहार, संतुलित भोजन, दिनचर्या एवं ऋतुचर्या (Diet and Nutrition, Pathya and Apathya Diet, Balanced diet, Dincharya and Ritucharya)

UNIT -4

योग के अनुसार व्याधि, यौगिक अभ्यास एवं रोग प्रबंधन, महिलाओं के लिए योग, सामान्य बीमारियों के लिए योगाभ्यास (Vyadhi according to Yoga, Yogic Practices and Disease Management, Yoga for woman, Yogic Practices for Common Diseases

UNIT -5

शरीर के विभिन्न अंग तंत्रों के ऊपर योग का चिकित्सात्मक प्रभाव, योग का मानसिक स्वास्थ्य पर प्रभाव (Therapeutic effect of yoga in various systems of Body, Effect of Yoga on metal health)

अनुशंसित पुस्तकें –

1. योग एवं योग चिकित्सा – प्रो. रामहर्ष सिंह,चौखम्बा पब्लिकेशन,2014।
2. स्वस्थवृत्त विज्ञान – प्रो. रामहर्ष सिंह, चौखम्बा संस्कृत प्रतिष्ठान,2013।
3. आसन प्राणायाम मुद्रा बंध – स्वामी सत्यानंद सरस्वती, योग पब्लिकेशन ट्रस्ट, मुंगेर,2006।
4. Principles of Yoga Therapy - Swami Kuvalyananda, Kaivlyadham Yogamandir samiti , Lonavala,2008.
5. A Text book of Human Physiology - A.K. Jain, Avichal publishing compopany,2017.

6- Human consciousness and Yogic science- Kamkhya kumar, D.k. printworld,2015.

7- Yogic management of common diseases, Yoga publication trust, Munger, 2001

Course Outcomes-

1. After completion of course students will be able to understand about yogic concept of health and healing.
2. Students will understand the concept of swasthavritta and exercise and use these concepts in enhance life span.
3. Students will have deeper understanding of balance diet and diet chart.
4. Students will have deeper understanding of Adhi vyadhi on Yogic text.
5. Students will have deeper understanding of therapeutic effect of Yoga.

M.A. IN YOGA एम.ए. योग
SEMESTER-3 सेमेस्टर–3

COURSE	-	**RESEARCH METHODOLOGY (शोध प्रविधि)**
TYPE OF COURSE	-	**CORE COURSE(C.C.)**
PAPER	-	**2**
MARKS	-	**60 (THEORY) + 40 (INTERNAL ASSESSMENT) =100**

OBJECTIVE

1. Student will learn the nature, scientific method and importance of research in the field of yoga and came to know scientifically that how yoga affects human body.

2. Student would be able to design a research study scientifically.

3. Student will understand the role of statistical data for a research study especially in the field of yoga.

UNIT -1

शोध प्रविधि – परिचय, शोध का अर्थ, उद्देश्य, योग दर्शन में अनुसंधान का महत्व, शोध की समस्या (Research Methodology – Introduction, Meaning and Objectives, Significance of Research in the areas in Yoga Philosophy, Research Problems)

UNIT -2

अनुसंधान विधियां – निरीक्षण विधि, सह सम्बन्धात्मक विधि, प्रयोगात्मक विधि, क्षेत्र विधि, विवरणात्मक विधि, परिकल्पना, प्रतिदर्श (Methods of Research – Observation Method, Correlation Method, Experimental Method, Field Method, Descriptive Method, Hypothesis, Sample)

UNIT -3

सांख्यिकी – परिभाषा एवं महत्व, आंकड़ों का संग्रह, आवृत्ति वितरण, केन्द्रीय प्रवृत्ति, मध्यमान, मध्यिका, बहुलक, विचलन (Statistics – Definition and Importance, Data Collection, Frequency Distribution, Central Tendency, Median, Mean, Mode, Deviation)

UNIT -4

सह संबंध विश्लेषण – प्रकार, कार्ल पियर्सन विधि, अनुक्रम अंतर विधि, सहसंबंध गुणांक, अनुमान की प्रामाणिक त्रुटि, प्रतीपगमन विश्लेषण, प्रतीपगमन गुणांक (Correlation Analysis - Types, Karl Pearson Method, Rank Difference Method, Correlation Coefficient, Probable error, Regression Analysis, Regression Coefficient.

UNIT -5

काई स्ववेयर परीक्षण, टी. परिमापन, शोध लेखन – प्रारूप, प्रकार एवं महत्व, निष्कर्ष की विधियाँ (Chi Square test, T Test Interpretation, Report writing – Format, Meaning and Significance, Mthods of Conclusion)

अनुशंसित पुस्तकें –

1. अनुसंधान विधियाँ – एच.के. कपिल,भार्गव बुक हाउस,2015।
2. मनोविज्ञान समाजशास्त्र तथा शिक्षण में शोध विधियां – अरूण कुमार सिंह,मोतीलाल बनारसीदास,2017।
3. मनोविज्ञान शिक्षा एवं सामाजिक विज्ञानों में सांख्यकी – मोहम्मद सुलेमान,मोतीलाल बनारसीदास, 2006।
4. Foundation of Behavioral Research – Kerlinger, S.Chand(G/L)& Company,1999.
5. Statistics in psychology and education – Garratt, Paragon international publishers,2005.
6- Research Methodology Method and Technique – C.R. Khothari,New age publication,2014.

Course Outcomes-

1.After completion of course students will be able to understand the concept of research and its methodology for carrying minor and major research.

2. Students will be able to feed, analyze, organize and represent the data.
3. Students will have deeper understanding of statistics.
4. Students will have deeper understanding of Research report writing.
5. Students will have deeper understanding of methods of research.

M.A. IN YOGA एम.ए. योग

SEMESTER-3 सेमेस्टर–3

COURSE	–	**Yoga Vasistha (योग वशिष्ठ)**
Type of Course	-	**DISCIPLINE CENTRIC ELECTIVE (D.C.E.)**
PAPER	-	**3 (OPTIONAL 'A')**
MARKS	-	**60 (THEORY) + 40(INTERNAL ASSESSMENT) =100**

OBJECTIVE

1. Student would know the importance of Yoga Vasistha for better holistic health and success in life.
2. Students would be able to understand the yogic concept of Yoga Vasistha and he would become able to compare it with modern time yoga.
3. Student would be able to know samadhi on Yoga vasistha.

Unit-1

योग की अवधारणा – योग वशिष्ठ का परिचय और मुख्य बिन्दु,योग की परिभाषा और योग वशिष्ठ में योग की प्रासंगिकता (Concept of Yoga- Introduction and Highlights of Yoga vashistha, Definition of Yoga in and their relevance in Yogavasitha).

Unit-2

मन की अवधारणा, विश्व–मन की संकल्पना, मन प्रसमन के उपाय, अभ्यास और वैराग्य द्वारा मन पर नियंत्रण(Concept of Mind- World is the Project of Mind, Manh Prashamanah upayah, Mind control through abhyasa and Vairagya).

Unit-3

ज्ञान की अवधारणा, ज्ञान सप्तभूमि, ज्ञान का महत्व, ज्ञान के प्रकार, मन और भावनाओं का संचालन, निर्णय (विवेक) लेने की क्षमता को बढाना (Concept of Jnana- Jnana Sapatabhumi, Importance of knowledge ,Types of knowledge, Handling the mind and emotions, Enhancing the power of discrimination (Viveka).

Unit-4

प्राण और प्राणायाम, श्वसनिक नियंत्रण, काकभूषूंडी का वर्णन (कहानी), आधि और व्याधि की अवधारणा (Prana and Pranayama, Breath control, the story of kakabhusundi, concept of Adhi and Vyadhi).

Unit-5

समाधि और मोक्ष की अवधारणा, अच्छी संगति, स्व–अनुसंधान (समीक्षा), सत्वगुण (सदाचार) का विकास, ध्यान के आठ अंग (Concept of Samadhi and Moksha, Good association, self-enquiry, Development of Satvvaguna (virtues), Eight Limbs of Meditation).

अनुशंसित पुस्तकें

1. योग वशिष्ठ – गीताप्रेस गोरखपुर,2018।
2. पातंजल योग प्रदीप– स्वामी ओमानन्दजी, गीताप्रेस, गोरखपुर, सं0 – 2061।
3. भगवद्गीता– गीताप्रेस गोरखपुर,2018।

Outcomes-

1. After completion of course students will be able to understand the concept of Yoga Vashistha and the role of Yoga vashistha for healing.
2. Students would be able to understand the yogic concept of Yoga Vasistha and he would become able to compare it with modern time yoga.
3. Student would be able to know samadhi on Yoga vasistha.
4. Students will have deeper understanding of satvvaguna.
5. After completion of the course students will develop broad knowledge of eight limbs of dhayan.

M.A. IN YOGA एम.ए. योग
SEMESTER-3 सेमेस्टर–3

COURSE – **FUNDAMENTAL OF YOGIC PSYCHOTHERAPY (योगिक मनोचिकित्सा के आधार)**
Type of Course – **Discipline Centric Elective (D.C.E.)**

PAPER - **3 (OPTIONAL 'B')**
MARKS - **60 (THEORY) + 40 (INTERNAL ASSESSMENT) =100**

OBJECTIVE
1. Student will familiarize with yogic concept of human psychology on their basis they would apply ancient techniques of yoga psychotherapy.
2. Student would be able to understand the concept of mental health and understand the different psychological theories.
3. Student would be able to characterize the different stages of mind.

UNIT -1
मनोविज्ञान – परिभाषा, प्रकृति, क्षेत्र, मनोविज्ञान की पद्धतियाँ, मनोवैज्ञानिक मापदण्ड की विशेषताएँ (Psychology - Definition, Nature, Scope, Methods of Psychology, Characteristics of psychologycal criteria)

UNIT -2
व्यक्तित्व – अर्थ एवं परिभाषा, व्यक्तित्व मापन, व्यक्तित्व के घटक, व्यक्तित्व सम्बंधी सिद्धांत – फ्रायड, युंग, आलपोर्ट (Personality :- Meaning and Definition, Personality measurements, component of personality, personality theories - Freud, Jung, Allport)

UNIT -3
संवेगात्मक एवं अभिप्रेरणात्मक व्यवहार की दैहिकी, स्मृति, बुद्धि, चिन्तन, संवेग – प्रकृति एवं प्रकार (Physiology of Emotional and Motivational Behaviour, Nature and types of Memory, Intelligence, Thinking, Emotion)

UNIT -4
योग मनोविज्ञान, व्यक्तित्व की यौगिक संकल्पना, योग के द्वारा व्यक्तित्व विकास, स्वयं की यात्रा (Yoga psycholoogy, yogic concept of personality, Personality development through yoga ,Journey of Self .

UNIT -5
योगिक मनोचिकित्सा के आधार, परामर्श चिकित्सा, तनाव–द्वन्द्व–दुश्चिन्ता–अवसाद–कुण्ठा का प्रबंधन (Fundamentals of Yogic Psychotherapy, Counseling Therapy, Management of Tension-Conflict-Anxiety-Depression-Frustration)

अनुशंसित पुस्तकें –

1.
2. व्यक्तित्व – आराधना शुक्ला, राधा पब्लिकेशन,2007।
3. उच्चतर सामान्य मनोविज्ञान – अरूण कुमार सिंह,मोतीलाल बनारसीदास पब्लिशर्स,2015।
4. योग एवं मानसिक स्वास्थ्य – रणजीत सिंह भोगाल,कैवल्यधाम योगसमिति, लोनावाला,2012।
5. व्यक्तित्व का मनोविज्ञान – अरूण कुमार सिंह, मोतीलाल बनारसीदास पब्लिशर्स,2010।
6. Indian Psychology - Raghunath Sajaya,Munshiram Manoharlal publishers, 2009.
7. Yoga and Psychotherapy- Swami Rama,Rudolph Ballentine,Swami Ajaya ,Himalyan institute press,2013.
8. Yoga Psychology- Swami Abhedananda, Ramakrishna Vedanta Math, 1999.

Outcomes-

1. After completion of course students will have knowledge of various physiological tools like Personality, Behavior, Intelligence, Memory and Context of Yoga Psychotherapy.
2. Student would be able to characterize the different stages of mind.
3. Student would be able to understand the concept of mental health and understand the different psychological theories.
4. Students will have deeper understanding of Yogic personality.
5. Students will have deeper understanding of Emotional control.

M.A. IN YOGA एम.ए. योग

SEMESTER-3 सेमेस्टर–3

COURSE	–	**Yoga and Physical balance (योग और शारिरिक संतुलन)**
Type of Course	-	**GENERIC ELECTIVE(G.E.)**
PAPER	-	**4**
MARKS	-	**60(THEORY)+40(INTERNAL ASSESSMENT) =100**

OBJECTIVE

1. **Students would be able to describe the concept of Malkhambh, Mallavidya, Gymnastic and archery and effect of yoga on them.**
2. **Student would be able to know physical education and its classification.**
3. **Student would be able to characterize the different techniques of Meditation.**

UNIT-1

मलखम्भ– अर्थ एवं परिभाषा, इतिहास, महत्व एवं क्षेत्र, प्रकार, मलखम्भ में योग की भूमिका (Malkhambh – Meaning and Definition, History, Imporetance and Scope, Types, Role of Yoga in Malkhambh).

UNIT-2

मल्लविद्या– अर्थ एवं परिभाषा, इतिहास, प्राचीन एवं वर्तमान अवधारणा, मल्ल विद्या में योग की भूमिका (Mallavidya- Meaning and Definition, History and scope, Ancient and Modern Concept, Role of Yoga in Mallavidya).

UNIT-3

जिम्नास्टिक – अर्थ, इतिहास एवं क्षेत्र, आधारभूत ज्ञान, सावधानी, जिम्नास्टिक में योग की भूमिका (Gymnastic- Meaning, History and Scope, Basic knowledge, Precaution, Role of Yoga in Gymnastic).

UNIT-4

तीरन्दाजी– इतिहास, सिद्धान्त और संसाधन, प्राचीन एवं वर्तमान अवधारणा, तीरन्दाजी में योग की भूमिका, लक्ष्य भेदन एवं योग (स्वामी विवेकानन्द के अनुसार) (Archery- History, Basic Principle and equipment, Ancient and Modern concept, Role of Yoga in Archery, Lakshya bhedhan and Yoga (Acc. To Swami Vivekananda).

UNIT-5

ध्यान– ध्यान की परम्पराऐं, प्रकृति, ध्यान की तकनीक (भारतीय एवं पाश्चात) ।

शारिरिक शिक्षा के विकास में योग का महत्व (Meditation- Traditions of Meditation, Nature, Meditation techniques (Indian and Modern).Importance of Yoga in development of Physical Education).

अनुशंसित पुस्तकें

1. Bhgavad Purana-Geeta press, Gorakhpur,2016.
2. Bhagvad Geeta- Geeta press, Gorakhpur,2015.
3. Ramayan – Amish Tripathi, Penguin classics,2017.
4. शारिरिक शिक्षा : एक समग्र अध्ययन – डॉ0 श्याम नारायण सिंह ,जेनेरिक पब्लिकेशन,2019।

Course Outcomes-

1. After completion of course students will have the knowledge of concept of Malkhambh, Mallavidya, Archery, Gymnastic and role of yoga.
2. Student would be able to know physical education and its classification.
3. Students will have deeper understanding of types of meditation.
4. Students will have deeper understanding of Archey and yoga.
5. Students will have deeper understanding of yoga on sports activity.

M.A. IN YOGA एम.ए. योग
SEMESTER-3 सेमेस्टर–3

COURSE	–	**PRACTICAL – I (प्रायोगिक –1)**
TYPE OF COURSE	-	**CORE COURSE (C.C.)**
PAPER	-	**5**
MARKS	-	**100 (MINIMUM PASSING MARKS = 35)**

OBJECTIVE

1. Students would be familiar with the procedure of Nadayoga.
2. Students would be familiar with the benefits to mind-body of Yoganidra.
3. Students would be acknowledged about the variety of advanced asanas- Pranayama-Mudra-Bandha-Meditation and about their effect on body.

प्रायोगिक अभ्यास

1 प्रथम एवं द्वितीय सेमेस्टर के योगाभ्यास

2 अन्य प्रायोगिक अभ्यास – आसन– शीर्षासन में पद्मासन, हलासन, अर्धचक्रासन, कपोतासन, उग्रासन, पादांगुष्ठासन, कूर्मासन, त्रिकोणासन, शिरःपादांगुष्ठासन, पद्मयूरासन,

प्राणायाम – शीतली, भ्रामरी , मुद्रा– विपरीतकरणी, सिंहमुद्रा

- क्रिया – शंक्षप्रक्षालन
- योगनिद्रा (बिहार स्कूल ऑफ योग)
- नाद योग

Practical Exercises

1. Yogic Practices of First and Second Semester

2. Other Yogic Practices -

- Padmasana in Shirshasana, Halasana, Ardhacakrasana, Kapotasana, Ugrasana, Padanguathasana, Kurmasana, Trikonasana, Sirpadangusthasana, Padmamyurasana
- Pranayama- Sitali,Bhramari
- Mudra-Viparitkarni,Sihmamudra
- Kriya- Sankhprashalan
- Yoganidra (Bihar School of Yoga)
- Nadayoga

Outcomes-

1. After completion of this course students will be able to importance of shatkarma, asana and pranayama. Students will have knowledge of Nadayoga and Yoganidra.
2. Students would be acknowledged about the variety of advanced asanas- Pranayama-Mudra-Bandha-Meditation and about their effect on body.

M.A. IN YOGA एम.ए. योग
SEMESTER-3 सेमेस्टर–3

COURSE	–	**PRACTICAL – 2 TEACHING SKILL (प्रायोगिक –2 शिक्षण कौशल)**
TYPE OF COURSE	-	**CORE COURSE(C.E.)**
PAPER	-	**6**
MARKS	-	**100 (MINIMUM PASSING MARKS =35)**

OBJECTIVE

1. Student would learn yogic class management.
2. Student would be familiar with lesson plan management.
3. The different soft skills and hard skills would be improved through the Educational tour .

कक्षाओं का प्रबंध, अध्यापन विधियां एवं पाठयोजना प्रबंधन पर व्याख्यान, योग ग्रंथों के संबंध में विविध योग प्रक्रियाओं की प्रमुख विशेषताएँ, विभागाध्यक्ष/शिक्षकों के निर्देशानुसार विद्यार्थी द्वारा विभाग एवं बाह्य स्थान पर योग प्रशिक्षण हेतु बीस कक्षाओं का आयोजन किया जाएगा, **शैक्षणिक भ्रमण :–** शैक्षणिक सत्र के दौरान विद्यार्थियों को शैक्षणिक भ्रमण की पात्रता होगी। जिसे सुविधानुसार पूर्ण शैक्षणिक सत्र सेमेस्टर के दौरान कराया जा सकेगा। इसका मूल्यांकन आंतरिक होगा।

Class Management, conducting lecture on teaching method and lesson plan management, Characteristics of Various Yoga Technique reference with necessary yoga texts, Activity of minimum 20 Lesson plan in department and outer place Guided by HoD/ Teachers, Students during the session shall be entitled to educational tours which will be made during the convenience academic session. Educational tour is included compulsory. Internal Assessment.

Outcomes –

1. After completion of the course students will got exposer to various activity conducted by reputed Yoga Institutes/University/College.
2. The different soft skills and hard skills would be improved through the Educational tour.

M.A. IN YOGA एम.ए. योग

SEMESTER-3 सेमेस्टर–3

COURSE	**–**	**COMPRAHENSHIVE VIVA-VOCE**
TYPE OF COURSE	**-**	**CORE COURSE(C.C.)**
PAPER	**-**	**7**
MARKS	**-**	**100 (Minimum passing marks = 35)**

Objective

Students will be able to learn communication skills through viva-voce.

Comprehensive viva-voce will be based on entire course of M.A. yoga (3rd semester)

विशद् मौखिक परीक्षा एम. ए. तृतीय सेमेस्टर योग के सम्पूर्ण पाठ्यक्रमों पर आधारित होगी ।

Outcomes –

1. Students will find themselves prepare for interview.
2. Students learns communication skills through viva-voce.

M.A. IN YOGA एम.ए. योग

SEMESTER-4 सेमेस्टर–4

COURSE	–	**NATUROPATHY AND AYURVEDA (प्राकृतिक चिकित्सा तथा आयुर्वेद)**
TYPE OF COURSE	-	**CORE COURSE (C.C.)**
PAPER	-	**1**
MARKS	-	**60 (THEORY) + 40(INTERNAL ASSESSMENT) =100**

OBJECTIVE

1. Student would be able to understand the root reason on which naturopathy work to heat the human body.

2. Student would be able to describe the concept of ayurveda.

3. Student would be able to know the phenomenon of doing panchkarma and the concept of their application on body.

UNIT -1

प्राकृतिक चिकित्सा – अवधारणा, इतिहास, मूल सिद्धांत, आकृति निदान, (Naturopathy - Concept, History, Main Principles, Shape Diagnosis)

UNIT -2

जल चिकित्सा – सावधानियाँ व लाभ, सूर्यचिकित्सा – सावधानियाँ व लाभ, रंग चिकित्सा – सावधानियाँ व लाभ, वायु चिकित्सा – सावधानियाँ व लाभ, मिट्टी चिकित्सा – सावधानियाँ व लाभ (Water Therapy - Precaution and Benefit, Sun Therapy - Precaution and Benefit, Air Therapy - Precaution and Benefit, Mud therapy - Precaution and Benefit)

UNIT -3

आयुर्वेद के मूल सिद्धान्त – स्वस्थवृत्त, स्वास्थ्य के लक्षण, त्रिदोष, सप्तधातु, मल, ऋतु–चर्या, दिन–चर्या (Main Principles of Ayurveda - Swasthavritta, Health Symptoms, Tridosha, Saptadhatu, Mala, Ritu charya, Dincharya)

UNIT -4

पंचकर्म चिकित्सा – प्रकृति, पंचकर्म के प्रकार – स्नेहन, स्वेदन, वमन कर्म, विरेचन कर्म, वस्ति कर्म, नस्य कर्म, रक्तमोक्षण कर्म (Panchakarma therapy - Nature, Types of Panchakarma - Snehan (Lubrication), Swedana (Sudation), Vamana Karma (Vomiting), virechan karma, Basti karma, Nasya Karma, Raktamokshan Karma.

UNIT -5

आहार चिकित्सा – प्राचीन एवं आधुनिक अवधारणा, आहार के घटक द्रव्य, प्राकृतिक आहार – दुग्धाहार, फलाहार, अपक्वाहार, उपवास चिकित्सा – स्वरूप, प्रकार, एवं सावधानियाँ (Diet Therapy - Ancient and Modern Concept, Components of Diet, Natural Diet - Dugdhahara, Fruit Diet, Apkavahar (Sprouts), Upavas (Fasting) Therapy - Nature, Types and Precaution)

अनुशंसित पुस्तकें –

1. वृहद प्राकृतिक चिकित्सा – डॉ. ओ.पी. सक्सेना,हिन्दी सेवा सदन,मथुरा,
2. स्वस्थवृत्त विज्ञान – प्रो. राम हर्ष सिंह,चौखम्बा संस्कृत प्रतिष्ठान,2013।
3. चरक संहिता – डॉ. प्रियव्रत शर्मा, चौखम्बा ओरियन्टायला,2000।
4. प्राकृतिक आयुर्विज्ञान – डॉ. राकेश जिन्दल,आरोग्य सेवा प्रकाशन,2010।
5. योगिक चिकित्सा – स्वामी कुवल्यानंद, कैवल्यधाम योगसमिति, लोनावाला,2012।
6. जीवनशैली –विकारों का यौगिक प्रबन्धन – डॉ. ईश्वर भारतद्वाज,सत्यम पब्लिशिंग हाउस,2017।
7. Concept of Prakriti & Life style - Prof. H. Shubhas Ranade,Choukhambha vidyabhavan,2004.
8. Body, Mind, Spirit, Integrative Medicine in Ayurveda Yoga and Nature Cure - Prof. R.H. Singh, Choukhambha surbharti prakashan,2009.

Outcomes-

1. After completion of course students will have the knowledge of concept of health according to Ayurveda and naturopathy and its utility in health promotion and prevention.
2. **S**tudent would be able to understand the root reason on which naturopathy work to heat the human body.
3. Student would be able to know the phenomenon of doing panchkarma and the concept of their application on body.
4. Students will have deeper understanding of milk therapy, fruit therapy.
5. Students will have deeper understanding of Ritucharya.

M.A. IN YOGA एम.ए. योग

SEMESTER-4 सेमेस्टर–4

COURSE	–	**SHIVASAMHITA (शिवसंहिता)**
TYPE OF COURSE	-	**Core Course (C.C.)**
PAPER	-	**2**
MARKS	-	**60(THEORY) + 40 (INTERNAL ASSESSMENT) =100**

OBJECTIVE

1. The students shall be appreciating the real values of yogic practices as mentioned in Shivasamhita.
2. Understand the classical yogasana and their components mentioned in Shivasamhita.
3. Students would be able to understand the major concepts described in Shivsamhita.

UNIT -1

शिवसंहिता का स्वरूप, कर्मकाण्ड एवं ज्ञानकाण्ड, चैतन्य का स्वरूप, चैतन्य एवं संसार, मोक्ष (Nature of Shivasamhita, Karmakandada and Jnanakanda, Nature of Chaitanya, Chaitanya and Universe, Moksha)

UNIT -2

मेरुदण्ड एवं नाडियाँ, जीव एवं ब्रह्म, गुरु महिमा, योग सिद्वि के आवश्यक तत्व (Spinal cord and Nadis, Jiva and Brahman, Guru Mahima, Important Elements of Yoga Siddhi)

UNIT -3

आसन, नाडी शुद्वि, प्राणायाम, सिद्वि की चार अवस्थाएं – आरंभ, घट ,परिचय, निष्पत्ति, रोग निवारण में वायु साधना का महत्व (Asanas, Nadi shuddhi, Pranayama, Four Stages of Siddhi - Arambha, Ghata, Parichaya, Nispatti, Pathological significance of air (Vayu) practice)

UNIT -4

योनिमुद्रा का महत्व, कुण्डलिनी जागरण हेतु दस मुद्राऍं, त्रिबंध (Importance of Yoni Mudra, Ten Mudras for Kundalini Jagrana, Tribandha)

UNIT -5

चक्र –रूप, स्थान तथा ध्यान का प्रभाव, मंत्र साधना, मुक्ति के पथ में बाधक तत्व, साधक के प्रकार (Chakra - Nature, Place and Effect of Meditation, Mantra Sadhana, Disruptive Elements in the Path of Mukti, Types of Sadhaka)

अनुशंसित पुस्तकें –

1. शिव संहिता – कैवल्यधाम योगसमिति लोनावला,2009।
2. शिव संहिता – राघवेन्द्र शर्मा, चौखम्बा प्रकाशन,2017।
3. योग सिद्धांत एवं साधना – डॉ. हरिकृष्ण शास्त्री, चौखम्बा विद्या भवनए 1998।
4. षट्चक्रनिरूपरणम् – श्री भारत भूषण, चौखम्बा संस्कृत प्रकाशन ,2013।
5. The Shiv Samhita - Rai Bahadur, Indian Mind,2012.

OUTCOMES-

1. Students will be able to understand the essence of Shivsamhita and how to put them into practice.
2. Students would be able to understand the major concepts described in Shivsamhita.
3. Students will have deeper understanding of Bdhak and sadhak tatvva in shiv Samhita.
4. Students will have deeper understanding of Chakra on shivsamhita.
5. Students will have deeper understanding of Kundalini jagarn.

M.A. IN YOGA एम.ए. योग
SEMESTER-4 सेमेस्टर–4

COURSE	–	**DISSERTATION (लघु शोध प्रबंध)**
TYPE OF COURSE	-	**Discipline Centric Elective (D.C.E.)**
PAPER	-	**3 (OPTIONAL 'A')**
MARKS	-	**60 (THEORY) + 40(INTERNAL ASSESSMENT) =100**

OBJECTIVE

1. The students will get to know about the style of dissertation writing.
2. The students will be able to interpret the data and draw a conclusion from it.
3. Understand various scientific experiments design, sampling, techniques and disseminate research findings.

लघुशोध प्रबंध के लिए विषय विभागाध्यक्ष/शिक्षकों द्वारा आवंटित किये जायेंगे तथा लघुशोध प्रबंध का विकल्प केवल उन्ही विद्यार्थियों के लिए होगा जो पूर्व सत्रों में 60 प्रतिशत अंक प्राप्त करेंगे।

Topic for the Dissertation will be allotted by HoD/Teachers of the Department and the option for dissertation will be given to only those students who have secure 60% marks in previous decisions.

Outcomes-

1. After completion of the course students will develop an understanding of how to do effective research (Pilot study).
2. The students will get to know about the style of dissertation writing.
3. The students will be able to interpret the data and draw a conclusion from it.

M.A. IN YOGA एम.ए. योग
SEMESTER-4 सेमेस्टर–4

COURSE	–	**ESSAY WRITING (निबंध लेखन)**
TYPE OF COURSE	-	**Discipline Centric Elective (D.C.E.)**
PAPER	-	**3 (OPTIONAL 'B')**
MARKS	-	**60 (THEORY) + 40(INTERNAL ASSESSMENT) =100**

OBJECTIVE

1. The skills of expressing thoughts through writing would be developed among the students.

2. The student would know the different important concept of yoga.

3. The students would be able to know about different yogic and their role in the field of yoga and they may accept them as their role model.

निम्नलिखित विषयों में से निबंध हेतु पॉच प्रश्न दिए जाएँगे जिनमें से एक विषय पर विस्तार से निबंध लिखना होगा।

1 पातंजलयोग

2 सांख्ययोग

3 श्रीमद्भगवद्गीता

4 भारतीय दर्शन

5 हठयोग परंपरा

For Essay Writing five questions will be given in following topics. One question will be attempt in details.

1 . Patanjal Yoga

2. Samkhya - Yoga

3. Shrimad Bhagwadgeeta

4. Indian Philosophy

5. Tradition of Hatha yoga

Outcomes-

1. After completion of course students will be able to understand the path of yoga with in-depth understanding. Students will be able to understand the Principle and conceptualize each stream.
2. The students would be able to know about different yogic and their role in the field of yoga and they may accept them as their role model.
3. The students will get to know about differet Yoga school and parmpara.
4. The students will get to know about Indian philosophy.
5. The students will get to know about hatha yoga.

M.A. IN YOGA एम.ए. योग
SEMESTER-4 सेमेस्टर–4

COURSE – **VALUE EDUCATION AND SPIRITUALITY (मुल्य शिक्षा और आध्यात्मिकता)**
TYPE OF COURSE - **GENERIC ELECTIVE (G.E.)**
PAPER - **4**
MARKS - **60 (THEORY) + 40 (INTERNAL ASSESSMENT) =100**

Objective

1. Student would be able to describe the meaning, definition and need of value education to improve social health.
2. Student would understand the value education and counselling for enhancing the skills in yoga.
3. Student would be able to learn the basic principles of teaching yoga and spirituality.

Unit-1

मुल्य शिक्षा और मुल्य शिक्षा का परिचय, मुल्य शिक्षा का क्षेत्र और आवश्यकता, मुल्य शिक्षा का महत्व (Introduction to value education and spirituality, Need and scope of value education, Importance of value education)

Unit-2

मुल्य की अवधारणा ,परिभाषा और वर्गीकरण,सात आध्यात्मिक नियम,मानव अधिकार,योग के माध्यम से महिलाओं को सशक्त बनाना (Concept, Definition, and classification of values, seven spiritual laws, Human rights, Empowering women through yoga).

Unit-3

दस आधार मुल्य, सहयोग, स्वतंत्रता, प्रसन्नता, मानवता, प्रेम–शांति, उत्तरदायित्व, सहिष्णुता और एकता (Ten core values, cooperation, Freedom, Happiness, Humanity, Love-peace, Responsibility, Tolerance and unity).

Unit-4

मुल्यपरक जीवनशैली, व्यक्तित्व विकास, स्व–विश्लेषण, आत्म–सम्मान, आत्म–अवधारणा (संकल्पना) (Value based life skills, Personality development, self-analysis, self Esteem, Self-concept).

Unit-5

योग और आध्यात्मिकता की भुमिका,योग द्वारा आध्यात्मिक विकास,योग के प्रकार और महत्व,एस.डब्ल्यू.ओ.टी. विश्लेषण(बल,दुर्बलता,अवसर और खतरा) (Role of yoga and spiritualty, spiritual development through yoga, Type of Yoga and its Importance, SWOT Analysis (Strength, Weakness, Opportunity and Threat)

अनुशंसित पुस्तकें

1. Value education- Brahmakumaries- education wing, Mount abu.
2. Light on life: The yoga journey to wholeness, inner peace and ultimate freedom- B.K.S.Iyenger, Yellow kite,2019
3. Swami Vivekananda & human excellence -Swami Ranganathananada, The Ramkrishna mission institute of culture, Advaita Ashram,1994.
4. Value education- Jagdish chand, Shipra publications,2007, New Delhi

OUTCOMES-

1. Students will understand spirituality and its impact on value education.
2. Students will have an understating about our social responsibility.
3. The students will get to know about Ten core values.
4. The students will get to know about value based life skills.
5. The students will get to know about SWOT analysis.

M.A. IN YOGA एम.ए. योग
SEMESTER-4 सेमेस्टर–4

COURSE	–	**PRACTICAL-I(प्रायोगिक –1)**
TYPE OF COURSE	-	**Core Course (C.C.)**
PAPER	-	**5**
MARKS	-	**100 (MINIMUM PASSING MARKS=35)**

OBJECTIVE

1.Students would be familiar about Yoga Competitions.
2. Students would know about the equipment needed for organizing yoga competition camp.
3. student would be able to prepare themselves for the yoga camp on external location.

परियोजना कार्य

योग ग्रंथों के संबंध में विविध योग प्रक्रियाओं की प्रमुख विशेषताएँ, अभ्यास पाठों का आलोचनात्मक निरीक्षण, अभ्यास पाठों के आयोजन के अन्तर्गत विभागाध्यक्ष/शिक्षकों के निर्देशानुसार प्राणायाम, षट्कर्म एवं ध्यान पर विद्यार्थी द्वारा बाह्य स्थानों पर तीस कक्षाओं का आयोजन किया जाएगा। इसका मूल्यांकन आंतरिक रहेगा।

PROJECT WORK

Chief specialty of multiple yoga process regarding yoga text, Critical inspection of Practical Lessons, as per the directive issued by HOD/Teachers regarding conduction of Practice lesson, thirty (30) Classes will be organized by students on external location on Pranayama, Shatkarma and Dhyan, it will be internally evaluated.

Course Outcomes-

1. After completion of the course students will develop broad knowledge of yoga in various fields.
2. After completion of the course students will develop broad knowledge of conduct yoga camp.

M.A. IN YOGA एम.ए. योग
SEMESTER-4 सेमेस्टर–4

COURSE	–	**PRACTICAL-I(प्रायोगिक –2)**
TYPE OF COURSE	–	**Core Course (C.C.)**
PAPER	-	**6**
MARKS	-	**100 (MINIMUM PASSING MARKS = 35)**

OBJECTIVE

1. Student would be familiarizing with the techniques of Yoga teaching.
2. Students would be able to take practical yoga class.
3. Student would improve their presentation skill and different exercise of yoga.

प्रायोगिक अभ्यास

- प्रथम द्वितीय एवं तृतीय सेमेस्टरों के योगाभ्यास एवं अन्य यौगिक अभ्यास
- आसन – मयूरासन, कुक्कुटासन, कूर्मासन, उत्तानकूर्मासन, बद्ध कोणासन, बद्धपदमासन, गर्भासन,
- प्राणायाम– शीतकारी, भस्त्रिका
- मुद्रा– हठप्रदीपिका एवं घेरण्ड संहिता अनुसार
- बंध – त्रिबंध
- ध्यान– भवातीत ध्यान, श्रीअरविंद के अनुसार ध्यान

Practical Exercises

- Yogic Practices of First, Second and Third semester and Others Yogic Practices
- Asana - Mayurasana,Kukkutasana,Uttankurmasana,Bandhakonasana,Garbhasana
- Pranayama-Sitakari,Bhastrika
- Mudra- According to Hathapradipika and Gheranda Samhita
- Bandha - Tribandha
- Dhyana - Bhavateet Dhyana according to Shri Aurobindo

Outcomes-

1. After completion of the course students will develops skill in yogic management of various disorders.
2. After completion of the course students will develop broad knowledge of Bhavateet dhyan.

M.A. IN YOGA एम.ए. योग
SEMESTER-4 सेमेस्टर–4

COURSE	**–**	**COMPRAHENSHIVE VIVA-VOCE**
TYPE OF COURSE	**-**	**CORE COURSE (C.C.)**
PAPER	**-**	**7**
MARKS	**-**	**100 (Minimum passing marks = 35)**

Objective

Students will be able to learn communication skills through viva-voce.

Comprehensive viva-voce will be based on entire course of M.A. yoga (4th semester)
विशद् मौखिक परीक्षा एम. ए. चतुर्थ सेमेस्टर योग के सम्पूर्ण पाठ्यक्रमों पर आधारित होगी ।

Outcomes –

1. Students will find themselves prepare for interview.
2. After completion of the course students will develop broad knowledge of Yoga and yoga therapy.

MBA

(INDUSTRIAL RELATIONS & PERSONNEL MANAGEMENT)
FULL TIME FOUR SEMESTER PROGRAMME

CHOICE BASED CREDIT SYSTEM (CBCS)

AS PER ORDINANCE 14, APPROVED BY CO-ORDINATION COMMITTEE

SYLLABUS FOR MBA (IR & PM) Semester – I & II 2022 – 2023 onwards
SYLLABUS FOR MBA (IR & PM) Semester – III & IV 2023 – 2024 onwards

PROGRAMME OUTCOME

MBA

(INDUSTRIAL RELATIONS & PERSONNEL MANAGEMENT)

PO#	**PROGRAMME OUTCOME**
PO1	**Critical Thinking**: This program places a strong emphasis on the value of being conscious of our presumptions, challenging their accuracy, and approaching concepts and choices from several angles. It entails having the capacity to recognize, assess, and make sensible choices based on logical reasoning.
PO2	**Effective Communication:** This program helps participants improve their communication skills and makes sure they can express themselves accurately in written, spoken, and technological mediums. It also encompasses the capacity to link individuals, concepts, literature, media, and technology, as well as the capacity to communicate effectively and interpret the world.

PO3	**Social Interaction:** It emphasizes on the capacity to solicit the opinions of others, resolve conflicts, and aid in reaching decisions in group settings. It entails having the capacity to collaborate with others, forge agreement, and settle disputes.
PO4	**Effective Citizenship:** The necessity of sympathetic social concern and equity-focused national development is emphasized. It entails being aware of the problems that society faces, being involved in civic affairs via volunteering, and behaving in a way that reflects a thorough understanding of these problems.
PO5	**Ethics:** It emphasizes the significance of appreciating many value systems, comprehending the moral implications of choices, and taking accountability for them. It entails being conscious of ethical concerns and basing judgments on ethical principles.
PO6	**Environment and Sustainability:** Understanding environmental surroundings and sustainable development are the main objectives. It entails being conscious of how human behavior affects the environment and acting to advance sustainability.
PO 7	**Self-directed and Life-long Learning:** gaining the capacity to participate in independent, ongoing learning in light of socio-technical developments. It entails having the capacity to learn on one's own, adjust to new technology, and consistently acquire new abilities and information.

PROGRAMME SPECIFIC OUTCOME MBA (IR & PM)

PSO #	. PROGRAMME SPECIFIC OUTCOME
PSO 1	To provide knowledge of basic concepts and techniques essential to understand the basics of Personnel Management.

PSO 2	To develop basic skills required by the managers for maintaining good Industrial Relations and Personnel Functions of a professional organisation.
PSO 3	To create abilities to take and execute practical decisions related to labour management.
PSO 4	. To install the Human Relations approach in managing the activities of an organisation.

COURSE OUTCOME(COs)

Semester I

S.No.	Course Code	Course Name		Course Outcome
1.	**1.1**	**Principles & Practices of Management**	CO1	To Understand various concepts of management, functions &practices.
			CO2	Learning about Planning & Decision making.
			CO3	Understanding basic concepts of organizing.
			CO4	Understanding different Leadership styles & importance of leadership.
			CO5	Understanding controlling , cooperation & coordination for working.

2.	**1.2**	**Organisational Behaviour & Industrial Psychology**	CO1	To understand concept of Organisational behaviour & Industrial Psychology.
			CO2	To understand motivation & to be self motivated for doing work.
			CO3	To increase leadership skills & influencing ability with people.
			CO4	To Understand stress, monotony & Fatigue with their solution.
			CO5	To examine yourself in a group & understand conflict with it's resolution.
3.	**1.3**	**Research Methodology & Statistical Techniques**	CO1	Learning about the research & it's types.
			CO2	To understand sample design, sample size.
			CO3	To make them understand about data collection methods & use of measures of central tendency.
			CO4	Helping to learn and analyze scaling techniques & report writing.
			CO5	To learn them Anova, Chi square test and other important tests.
4.	**1.4**	**Business Communication**	CO1	Learning about the various aspects of verbal and non-verbal communication.
			CO2	Improve their communication through various strategies.
			CO3	Helping students in Public speaking & to remove their hesitation.
			CO4	To learn them do's and don'ts of public speaking.
			CO5	Learning to effectively write a report , minutes and proposal.
5.	**1.5**	**Personnel Management**	CO1	To understand & learn the concept of Personnel management with it's objectives.
			CO2	To help students for the learning of Human resource planning.
			CO3	Learning about Promotion, transfer, Job

				enlargement.
			CO4	To help students for the learning of Human resource accounting & human resource information system.
			CO5	Learning about Personnel policies & organizational politics.
6.	**1.6**	**Labour Welfare & Quality of work life**	CO1	To make them understand about statutory welfare measures with welfare objectives & it's scope.
			CO2	Learning about appointment & role of welfare officer.
			CO3	Understanding labour welfare agencies.
			CO4	To understand International labour organization, it's objectives and functions.
			CO5	Learning about Quality of work life, it's dimensions,objectives.
7.	**1.7**	**Comprehensive Viva – Voce**	CO1	To judge Subjective knowledge, communication skills and command in subjects.

COURSE OUTCOME (COs)

Semester II

S.No.	Course Code	Course Title		Course Outcome
1.	**2.1**	**Human Resource Management & Total Quality Management**	CO1	Gaining insights about HRM & it's concepts, functions, objectives.
			CO2	Understanding the significance of Career planning & performance appraisal.
			CO3	Learning about wage & salary administration, Job evaluation & fringe benefits.
			CO4	Acquainting the participants with the basics of Kinds of separation & productivity.
			CO5	This will also cultivate Total quality management & Concept of kaizen.

2.	**2.2**	**Computer Application**	CO1	Well known about computer, It's types, Generations.
			CO2	Use of Input & Output devices in the work place.
			CO3	To learn them Flowcharts , operating system.
			CO4	Learning about Widows.
			CO5	Gaining knowledge about Internet, networking.
3.	**2.3**	**Industrial Law - I**	CO1	Gaining knowledge about objectives, scope of Factories act-1948.
			CO2	Understanding & knowledge about Minimum wages act 1948, Payment of wages act, 1936.
			CO3	Developing the knowledge about compensation act 1923,Emplyee provident fund, 1952,Equal remuneration act-1926.
			CO4	Learning about Industrial dispute act-1947.
			CO5	Developing & learning the knowledge about Payment of Gratuity act-1972,Bonus act – 1975.
4.	**2.4**	**Managerial Economics & Business Environment**	CO1	Graduates will improve their knowledge of Managerial Economics.
			CO2	To know about Economic growth & Business Cycle.
			CO3	Learning to know about new economic policy & Direct & Indirect taxes.
			CO4	To understand Political, Cultural, Social Technological Environment.
			CO5	Developing an awareness about Equal Employment opportunity & Globalisation.
5.	**2.5**	**Management of Trade Union**	CO1	To know about rise & growth of trade union, objectives, concept & theories.
			CO2	Understanding the trade union movement.
			CO3	Improved understanding of marketing concepts and principles:
			CO4	Developing strategies to promote products or services to target customers.
			CO5	Understanding of how these decisions are made and how to make informed decisions that align with your business goals.
6.	**2.6***	**Labour Costing & Compensation Management**	CO1	Gaining the knowledge about cost accounting, management accounting & Financial Accounting.
			CO2	Getting awareness about labour control & material control.
			CO3	Exposing the participants towards Wage theories & Wage structure.

			CO4	The course will acquaint the participants with Budgetary control, kinds of Budget, Budget manual.
			CO5	Learning about operating cost transport costing, power house costing & canteen costing.
7.	**2.7**	**Behaviour Lab & Project Viva - Voce**	CO1	Understanding & Learning about Practical approach towards Reasearch & Methods of data collection with statistical toots.

COURSE OUTCOME (COs)

Semester III

S.No.	**Course Code**	**Course Title**		**Course Outcome**
1.	**3.1**	**Business Legislation**	CO1	To increase knowledge about company law.
			CO2	Learning and understanding types of shares.
			CO3	Taking appropriate knowledge about Consumer protection act-1986 & Standing order act 1946.
			CO4	To know about Contract law 1872.
			CO5	To develop the understanding about Negotiable Instrument act-1881.
2.	**3.2**	**Training & Development**	CO1	This Unit provides a valuable insight on Assessment of training needs.
			CO2	This unit helps to understand about how to deliver and start a training programme.
			CO3	This unit provides effective knowledge about functions & competencies of a trainer.
			CO4	To understand executive development, it's methods.
			CO5	Well known about Appropriate management training system.
3.	**3.3**	**Knowledge management & Business Ethics**	CO1	Acquiring knowledge about knowledge management, it's evolution.
			CO2	Refining the knowledge life cycle.
			CO3	Learning of an unstable environment, a complex environment.
			CO4	To know about business ethics – tools,

				determinants.
			CO5	To learn about meaning, features, objectives of public sector undertakings.
4.	**3.4 A ****	**Applied Management**	CO1	To know about marketing mix, marketing environment, market segmentation.
			CO2	To develop the knowledge about marketing strategies of Product,Price,Place & Promotion.
			CO3	To understand service marketing & Consumer behaviour.
			CO4	To know Financial functions of management & concept and function of production management.
			CO5	To understand meaning & role of Management information system.
5.	**3.4 B ****	**Employee Counselling**	CO1	Understanding need, nature & concept of employee counselling.
			CO2	To understand psychoanalytic theory & Procedure of counselling.
			CO3	To know about person centred therapy.
			CO4	To understand behaviour couselling & behaviour therapy.
			CO5	Learning about the Professional counselling & Transactional analysis.
6.	**3.5 ***	**Labour Management**	CO1	Demonstrating the labour problems in developing economy.
			CO2	To understand causes & effects of unemployment.
			CO3	To learn & develop knowledge about Rationalisation & Automation.
			CO4	Understanding causes and types of Absenteeism & Measurement of labour turnover.
			CO5	Learning and understanding objectives and scope of national labour policy & Factors and barriers of empowerment.
7.	**3.6**	**Summer Internship dissertation & Viva-Voce**	CO1	To know about the practical approach of research based analysis for making a project report on a particular topic.

COURSE OUTCOME (COs)

Semester IV

S.No.	Course Code	Course Title		Course Outcome
1.	**4.1**	Industrial Relations	CO1	The Unit gives a picture about scope, objectives of Industrial relations & causes & effect of industrial dispute.
			CO2	This unit helps to understand about grievance handling procedure & Aspects of discipline.
			CO3	This will develop knowledge about conciliation machinery and arbitration.
			CO4	This will develop and understand about Negotiation & collective bargaining.
			CO5	The graduates will be able to analyze and understand worker's participation in management.
2.	**4.2**	**Strategic Management**	CO1	Understanding the Nature, importance & purpose of strategic management.
			CO2	To help students to know about environmental appraisal & environmental scanning.
			CO3	To learn strategies about diversification, modernization & integration.
			CO4	To make students understand about issue of strategy implementation.
			CO5	T**o** give knowledge about nature & importance of strategic evaluation.
3.	**4.3**	**Industrial Law II**	CO1	The graduates will be able to learn about Employees state insurance act-1948.
			CO2	To understand about Contract labour act-1972 & Maternity benefit act-1961.
			CO3	This unit will help to understand about Employment exchange act & Apprentices act-1962.
			CO4	This will also helpful to understand Essential commodities act & Child labour act.
			CO5	Developing the knowledge about Industries development & regulation act-1951.
4.	**4.4 A ****	**Human Resource Management in International Global Environment**	CO1	The participants will acquire knowledge about Evolution & emerging challenges in HRM.
			CO2	They can easily understand Six Sigma & quality mantra.
			CO3	To know about the difference between domestic HRM & IHRM.
			CO4	To understand American model, Parochialism & Universality.
			CO5	Ability to enhance Japanese model & Features of

				Japanese management.
5.	**4.4 B ****	**Safety & Service Management**	CO1	This unit offers understanding of various remedial issues of safety and basic facts and importance of safety organization.
			CO2	The students will learn about occupational hazards and risks with occupation diseases.
			CO3	This unit suggests that how to maintain Accident reports & records , & to know about industrial injury.
			CO4	The graduates will be acquire knowledge about Environment protection act-1986.
			CO5	This unit helps to understand Air & Water prevention & control of pollution act.
6.	**4.5 ***	**Management of Organizational change**	CO1	This unit provides knowledge about types of change, reasons & responses to change.
			CO2	To know about resistance to change & how to overcome resistance to change.
			CO3	To understand organizational culture with OCTAPACE.
			CO4	The graduates will know about Organizational development from this unit.
			CO5c	To learn and understand Kaizen, Benchmarking & Quality consciousness.
7.	**4.6**	**Comprehensive Viva - Voce**	CO1	To measure the skills, knowledge, Ability with the communication of students.

Course Structure MBA (I.R. & P.M.)

		Distribution of Marks			
SEMESTER I	**Course Type**	**Theory Paper**	**Internal Ass.**	**Maximum Marks**	**Credits**
Course Code & Name					
1.1 Principles and Practices of Mgmt.	CC	60	40	100	4
1.2 Organizational Behaviour and Industrial Psychology	CC	60	40	100	4
1.3 Research Methodology and Statistical Techniques	CC	60	40	100	4
1.4 Business Communication	CC	60	40	100	4
1.5 Personnel Mangement	CC	60	40	100	4
1.6* Labour Welfare and Quality of work life	**G E**	60	40	100	4
1.7 Comprehensive Viva Voce	CC			100	4
SEMESTER TOTAL				**700**	**28**
		Distribution of Marks			
SEMESTER II	**Course Type**	**Theory Paper**	**Internal Ass.**	**Maximum Marks**	**Credits**
Course Code & Name					
2.1 Human Resource Management & Total Quality Management	CC	60	40	100	4
2.2 Computer Application	CC	60	40	100	4
2.3 Industrial Law – I	CC	60	40	100	4
2.4 Managerial Economics & Business Environment	CC	60	40	100	4
2.5 Management of Trade Union	CC	60	40	100	4
2.6* Labour Costing & Compensation Management	**G E**	60	40	100	4
2.7 Behavioural Lab Project & Viva Voce	CC	60	40	100	4
SEMESTER TOTAL				**700**	**28**
		Distribution of Marks			
SEMESTER III	**Course Type**	**Theory Paper**	**Internal Ass.**	**Maximum Marks**	**Credits**
Course Code & Name					
3.1 Business Legislation	CC	60	40	100	4
3.2 Training & Development	CC	60	40	100	4
3.3 Knowledge Management & Business Ethics	CC	60	40	100	4
3.4** Applied Management **(A)** & Employee Counselling **(B)**	**D C E (A or B)**	60	40	100	4
3.5* Labour Management	**G E**	60	40	100	4
3.6 Summer Internship Dissertation & Viva Voca	CC			100	8
SEMESTER TOTAL				**600**	**28**
		Distribution of Marks			
SEMESTER IV	**Course Type**	**Theory Paper**	**Internal Ass.**	**Maximum Marks**	**Credits**
Course Code & Name					
4.1 Industrial Relations	CC	60	40	100	4
4.2 Strategic Management	CC	60	40	100	4
4.3 Industrial Law – II	CC	60	40	100	4
4.4** Human Resource Management in International Global Environment **(A)** & Safety and Service Management **(B)**.	**D C E (A or B)**	60	40	100	4
4.5* Management of Organizational Change & Development	**G E**	60	40	100	4
4.6 Comprehensive Viva Voce	CC			100	4
SEMESTER TOTAL				**600**	**24**

CC : Core Course GE : Generic Elective DCE : Discipline Centric Elective

* Students may choose this course as a Generic Elective **(GE)** or may choose a Generic Elective course offered by other UTDS.

* The students are required to choose any one Disciplile Centric Elective **(DCE)** course (A or B).

CREDIT DISTRIBUTION

SEMESTER	CORE COURSES	ELECTIVE COURSES		COMPREHENSIVE VIVA / DISSERTATION	TOTAL CREDITS
		GENERIC	DISCIPLINE CENTRIC		
SEMESTER I	20	04	00	04	28
SEMESTER II	20	04	00	04	28
SEMESTER III	12	04	04	08	28
SEMESTER IV	12	04	04	04	24
Total	**64**	**16**	**08**	**20**	**108**

SCHEME OF EXAMINAION

1- Semester End Theory Paper : Each theory paper of 60 marks will have following questions.

Type of Questions	Number of Questions	Marks allotted to each question	Total Marks
Short Answer Type	5	4	20
Long Answer Type	5	8	40

There will be two questions of each type from each UNIT in all the question papers.

2- Internal Assessment : The internal assessment of 40 marks shall be based on the two Written Tests of 20 marks each and one Test of 20 marks based on Assignment, Presentation & Class Participation of the student with following details. Marks will be awarded on the basis of best of the two Test Score.

Type of Assessment	Marks	Remarks
Class Test	20 Marks	Two assessments of 20 Marks Each on the basis of evaluation of Answer scripts of the student.
Assignment	05 Marks	Assessment based on Written Assignment submitted by the student within due date on the allotted topic.
Presentation	10 Marks	Assessment based on Oral Presentation given by the student within due date on the allotted topic.
Class Participation	05 Marks	Assessment based on attendance and active participation of the student in the class debates, discussions, quiz etc.

The University Teaching Department reserves all rights to make necessary changes in the above Internal Assessment valuation system in case of any contingencies.

Computation of Letter Grade, Grade Points, Credit Points, SGPA & CGPA

1- Grade Letter & Grade Points

The grade letter and grade points will be assigned as per the following table.

Letter Grade	Grade Points	Description	Range of Marks (%)
0	10	Outstanding	90-100
A+	9	Excellent	80-89
A	8	Very Good	70-79
B+	7	Good	60-69
B	6	Above Average	50-59
C	5	Average	40-49
P	4	Pass	35-39
F	0	Fail	00-35
Ab	0	Absent	Absent

2- Credit Points

The credit points will be computed by multiplying course credit with grading points in each course. Total Credit Points of the semester will be calculated by adding the credit points of all the courses of the concerned semester.

3- SGPA

Semester Grading Point Average will be calculated by dividing the total credit points of the semester by sum of credits allotted to that semester.

SGPA (Si) = $\sum(\text{Cix} \times \text{Gi}) / \sum \text{CI}$ (SGPI) will be expressed up to two decimal places by rounding off).

4- CGPA

Cumulative Grading Point Average will be calculated by taking the ratio of total credit points scored by the student and sum of total credits in all courses studied till the semester end. CGPA will be expressed up to two decimal places by rounding off.

An illustration of computing letter grade, grade points, credit points, SGPA & CGPA.

Course Code	Course Title	Credits	Grade	Grade Point	Credit Points (Credits × Grade Point)
1.1	Principles and Practices of Mgmt.	4	B+	7	4 × 7 = 28
1.2	Organizational Behaviour and Industrial Psychology	4	A	8	4 × 8 = 32
1.3	Research Methodology and Statistical Techniques	4	C	5	4 × 5 = 20
1.4	Business Communication	4	B+	7	4 × 7 = 28
1.5	Personnel Management	4	B+	7	4 × 7 = 28
1.6	* Labour Welfare and Quality of work life	4	B	6	4 × 6 = 24
1.7	Comprehensive Viva Voce	4	C	5	4 × 5 = 20
	Total Credit Points	28			180
Semester I		SGPA = 180/28 = 6.42			
Course Code	Course Title	Credits	Grade	Grade Point	Credit Points (Credits × Grade Point)
2.1	Human Resource Management & Total Quality Management	4	A	8	4 × 8 = 32
2.2	Computer Application	4	A	8	4 × 8 = 32
2.3	Industrial Law – I	4	B	6	4 × 6 = 24
2.4	Managerial Economics & Business Environment	4	B+	7	4 × 7 = 28
2.5	Management of Trade Union	4	A+	9	4 × 9 = 36
2.6	* Labour Costing & Compensation Management	4	B	6	4 × 6 = 24
2.7	Behavioural Lab Project & Viva Voce	4	B+	7	4 × 7 = 28
	Total Credit Points	28			204
Semester II		SGPA = 204/28 = 7.28			

	Semester I	Semester II	Semester II	Semester IV
Credit Points	180	204		
Credits	28	28		
SGPA	6.42	7.28		
CGPA	6.42	7.28		

Conversion of CGPA in to Percentage :

% = CGPA × 10%

Example

6.42 × 10 = 64.2

7.28 × 10 = 72.8

MBA

(INDUSTRIAL RELATIONS & PERSONNEL MANAGEMENT)

FULL TIME FOUR SEMESTER PROGRAMME

CHOICE BASED CREDIT SYSTEM (CBCS)

AS PER ORDINANCE 14, APPROVED BY CO-ORDINATION COMMITTEE

SYLLABUS

PROGRAMME STRUCTURE, SYLLABUS & SCHEME

(SESSION 2022-23 ONWARDS)

DEPARTMENT OF PSYCHOLOGY
A.P.S. UNIVERSITY, REWA (M.P.)

MBA (I.R. & P.M.)
SEMESTER – I
CC 1.1 : Principles and Practices of Management

Course Credit : 4
Max Marks – 60
Minimum Pass Marks : 21 (35%)

Objective - To acquaint students with the managerial knowledge & skills and to enhance their abilities that are essential for success in management careers.

Course Contents :

Unit – I Basic concepts of management, role, responsibility & importance of management in modern society, distinction between management and administration, functions of management, Principles of management, History of management thought (Classical School, Neo-classical school and modern school)

Unit – II Planning : Nature, process, types, principles and significance, Planning vs Forecasting, Objective : Meaning, types, MBO : Process & significance, Decision Making : Meaning, principles, significance and process.

Unit – III Organizing : Nature, concept and process of organizing organizational structure, Delegation of Authority : meaning principles and advantages.

Unit – IV Direction : Meaning, elements of directing, principles and techniques of directing, Leadership : Meaning, Importance & Styles, Qualities of a good leader, Motivation : Meaning and Significance.

Unit – V Co-ordination : Nature, importance, principles and techniques of co-ordination.

Controlling : Meaning, Principles, process and prerequisite of effective control.

Outcome - Able to perform self analysis and improve knowledge and skills with a self development profile.

Books Recommended :

1- Principles & Practices of Management – Saxena
2- Management – Stoner.
3- Principles and Practice of Management – Shejwalkar P. C. & Ghanekar A. A.
4- Principles of Function of Management – Jain, J. K.
5- Principles of Management – Agrawal, R. D.
6- P. P. M. – Chabra, T. N.

MBA (I.R. & P.M.)
SEMESTER – I
CC 1.2 : Organizational Behaviour & Industrial Psychology

Course Credit : 4
Max Marks – 60
Minimum Pass Marks : 21 (35%)

Objective – To study human behaviour and to suggest various ways and means to improve the efficiency of workers in industries.

Course Contents :

Unit – I Organizational behaviour : Definition, Importance of studying organizational behaviour in industry, Scope of industrial psychology in an organization, Different models of organizational behaviour i.e. Autocratic Custodial, Supportive, Collegial.

Unit – II Motivation : Concept of motivation, motivation and behaviour, theories of motivation, MC Clelleland's Theory, Douglas, MC Gregors Theory, Maslow's and Herzbergs Models. Alderferls (ERG) theory, Important elements of sound motivational system.

Unit – III Leadership : Definition, concept importance of leadership style in organization, models of leadership Fielder's contingency model, Black and mounton's managerial Grid, Path and Goal theory, Linkert's management system.

Unit – IV Definition of monotony, fatigue, causes of fatigue, monotony, Concept of stress, Effect of stress and stress management.

Unit – V Organizational conflict : Concept, types of conflict, causes of conflict and approaches to resolve conflict.

Group Dynamics : Types of Group, Behavioural model and Techniques, process of group formation.

Outcome – Motivated employees, working willingly and to best ability to increase productivity.

Books Recommended :

1- Organizational behaviour –Prasad L. M.
2- Organizational behaviour – Stephen P. Robbins.
3- Organizational behaviour – Sekheran Uma
4- Organizational Theory at work – Keith & Davis.

5- Human Relations & Organizational Behaviour – Dwivedi R. S.

MBA (I.R. & P.M.)
SEMESTER – I
CC 1.3 : Research Methodology & Statistical Techniques

Course Credit : 4
Max Marks – 60
Minimum Pass Marks : 21 (35%)

Objective - To enhance theoretical, methodological and analytical skills to conduct research or evaluation.

Course Contents :

Unit – I Meaning of Objectives of Research, Types of Research, Social Research – Importance, scope and limitations in concept of personnel functions.

Unit – II Research Design – Problem formulation, Defining Hypothesis, Basic principles of experimental design, Sampling Design – Characteristics of a good sample design, Concepts of population, sample, sampling unit, sample size and methods of sampling.

Unit – III Methods of data collection – Primary data, Secondary data, Observation, surveys, questionnaire, interview, Measures of central tendency, Dispersion, Presentation of data by charts, graphs and diagrams.

Unit – IV Measurement and scaling techniques, Errors in measurement – tests of sound measurements, Scaling and scale construction techniques, Interpretation of data and Report Writing.

Unit – V Correlation and Regression, Testing of Hypothesis – Large sample and small sample tests, chi-square test and their types (simple, 2×2 fold chi-square in contingency tables) T –Test and Anova.

Outcome - Able to design research questions and apply appropriate methods.

Books Recommended :

1- Research Methodology – Kothari C. R.
2- Methodology and Techniques of Social Research – Bhandarkar, Wilkinson.
3- Introduction to Research Procedure in Social Science – Gopal M. H.
4- Statistical Method – Gupta S. P.

MBA (I.R. & P.M.)
SEMESTER – I
CC 1.4 : Business Communication

Course Credit : 4
Max Marks – 60
Minimum Pass Marks : 21 (35%)

Objective – The course aim to develop all forms of communication skills of the student to enable them to conduct well in any business process without any communication barrier. This course will help student in understanding the principles techniques of business communication.

Course Contents :

Unit – I Meaning, Definition, Importance of Business Communication, Types : Verbal & Non-Verbal Communication, Process and Elements of Communication Principle of Communication and Channels of Communication.

Unit – II Communication Media, Network, Barrier's in effective communication, strategies for improving communication effectiveness.

Unit – III Drafting of various personnel communication – Memos, Notices, Circulars, Press conference, Trade fairs, Correspondence with Govt. Authorities, Principles of Public Speaking, Guide Lines for preparing a speech.

Unit – IV Function of Public Relation Department, Different forms of Business letter, Application, Enquiry Replies, Quotations, Sales letters, Committee, Group discussion, Conference, Essential feature of interview, Preparation of curriculum vitae, Do's and Don't Public Speaking.

Unit – V Report writing : Types, Techniques and Importance, Agenda and Minutes writing, Proposal writing.

Outcome - To develop writing skills so as to enable students to write in a clear concise persuasive audience centered manner and develop ability to communicate effectively with the help of electronic media.

Books Recommended :

1- Business Communication – Rai & Rai
2- Effective Business Communication – Murphy
3- Business Communication – Sinha K. K.
4- Essentials of Business Communication – Pal R.
5- Business Correspondence and Report Writing – Mohan Sharma

MBA (I.R. & P.M.)
SEMESTER – I
CC 1.5 : Personnel Management

Course Credit : 4
Max Marks – 60
Minimum Pass Marks : 21 (35%)

Objective - To enhance the knowledge of personnel management and its application and to develop their professional skills in this area.

Course Contents :

Unit – I Personnel Management : Definition, Concept of personnel Management, objective, principles, Role of a personnel manager with special reference to personnel management only. Structure of personnel department, Difference between personnel administration and personnel management.

Unit – II Human Resource Planning : Definition, Scope, Need, Objective and methods Role of employment exchange, recruitment plan and selection of employees, Placement, orientation and induction programme

Unit – III Concept of promotion and promotion policy, Concept of transfer, Job analysis, Job enlargement, Job enrichment and Job rotation.

Unit – IV Recent Types of Techniques of H. R. M. and Human Resource Accounting (Record), Adult and Human Resource Information System (HRIS).

Unit – V Personnel policy and personnel objectives : Definition, Scope and Development, Need, Concept, Organization politics and human capital.

Outcome - Able to examine current issues, trends ,practices and processes in personnel management.

Books Recommended :

1- Dynamic Personnel Administration – Rudrabaswvraj M. N.
2- Personnel / Human Resource Management – Decenzo David A. & Stephen P Robbins.
3- Personnel Management – Monnapa Arun & Saiydain Mirza S.
4- Personnel Management and IR – Nair N. G. & Nair Lata

MBA (I.R. & P.M.)
SEMESTER – I
GE 1.6 : * Labour Welfare and Quality of Work Life

Course Credit : 4
Max Marks – 60
Minimum Pass Marks : 21 (35%)

Objective - To understand the concept and requirement of the labour welfare and to see government efforts in this field.

Course Contents :

Unit – I Labour Welfare : History, Principle, concept, objectives and scope, Statutory provision of labour welfare.

Unit – II Role, Qualification, functions and appointment of labour welfare officer, Impact of industrialization on labour welfare.

Unit – III Labour Welfare Agencies : Role of Trade Union, Govt. Employer's Municipalities and Social Agencies.

Unit – IV ILO : Aims, objectives, structure and functions of ILO social responsibilities of industries, impact of industrialization in developing economy, on pollution, urbanization, education, employment and health.

Unit – V Meaning and concept of quality of work life, Principles & strategies to Q. W. L., factor's that led to Q. W. L.

Outcome - Students will be able to explore the welfare measures provided by the government and the companies and its impact on labour.

Books Recommended :

1- Human Resource & Personnel Management – Aswathappa K.

2- Aspects of Labour Welfare & Social Security – Sharma A. M.

3- Economics of Labour – Bhagaliwal T. N.

4- Labour Welfare, Trade Unionism and Industrial Relations – Punekar S. D.

MBA (I.R. & P.M.)
SEMESTER – II
CC 2.1 : Human Resource Management & Total Quality Management

Course Credit : 4
Max Marks – 60
Minimum Pass Marks : 21 (35%)

Objective – Ensuring availability of resources, easy aware to data and to create an understanding the various policies and practices of human resource management.

Course Contents :

Unit – I Human Resource Management v/s Personnel Management : feature, Objective, Function scope, Role and Responsibility of HRM, Challenges of HRM, Effect of Globalization of HRM.

Unit – II Performance Appraisal : Definition, Concept, Process and Techniques of performance appraisal, Career planning : Definition, Object, Elements and Benefits, Importance of Human Re-engineering.

Unit – III Wage and Salary Administration : Wage determination process and factors influencing wage and salary administration, Types of wage : Minimum wage, Fair wage, Living wage, Money and real wage, Method of wage Payment, Method of job evaluation and job satisfaction, Fringe benefit : objective & classification.

Unit – IV Kind of separation : Resignation, Discharge, Dismissal, Suspension, Retirement, Lay off, Golden hand shake, VRS.

Productivity : Meaning, Definition, Elements, Measurement, Factors affecting productivity and ways of improving productivity.

Unit – V TQM & HRM : Kaizen, HRM in Public sector, Incentive schemes : Meaning, Types.

Outcome – Develop skilled manpower and their usage to management.

Books Recommended :

1- Managing Human Resource – Dwivedi R. S.

2- Human Resource Management – Michael B. P.

3- Personnel Management – Bagaliwal T. N.

4- Personnel Management – Mamoriya C. B.

5- Personnel Management – Subba Rao P.

6- Dynamic Personal Administration – Rudrabasvraj M. N.

MBA (I.R. & P.M.)
SEMESTER – II
CC 2.2 : Computer Application

Course Credit : 4
Max Marks – 60
Minimum Pass Marks : 21 (35%)

Objective - The objective of this course include developing knowledge of difference of software and hardware system available in the industry among the employees with the special reference to the commercial data processing systems

Course Contents :

Unit – I Introduction : History, Characteristics, Generations, Types of computers, Component of computers.

Unit – II Input and output devices, Computer software and its types.

Unit – III Operating system : Need and meaning, Introduction to MS – DOS and simple internal and external commands, Flow charts meaning, advantage and preparation of simple flow charts.

Unit – IV Window : Introduction, components of windows screen, feature of windows : Programme manager and application, file manager and application, print manager and application accessories and control panel.

Unit – V MS Office : Introduction and office tools, computer network and internet impact of computer on society.

Outcome - Able to understand the computer usage in the business organisation.

Books Recommended :

1- Computer Fundamental – Sinha P. K.

2- Windows – Taxali

3- PC Software made easy – Taxali

4- Fundamentals of computers – Rajaraman V.

MBA (I.R. & P.M.)
SEMESTER – II
CC 2.3 : Industrial Law – I

Course Credit : 4
Max Marks – 60
Minimum Pass Marks : 21 (35%)

Objective - To learn the laws relating to the industrial relations wage legislations, social security, industrial dispute etc.

Course Contents :

Unit – I Factory Act 1948 : Object, Scope, Definition, Inspecting staff and power's provision of health, Safety and welfare, Working hours employment of women and child labour.

Unit – II Minimum Wages 1948 : Objective, Definition, Fixation and Revision of wages, payment of minimum wages.

Payment of Wages Act 1936 : Objective, Definition regarding wages, Authorized deduction from wages, Amount of deduction offences & penalties.

Unit – III Workmen compensation Act 1923 : Definition, Object Scope, Types of disability and Amount of compensation.

Employee Provident Fund Act 1952 : Object, Scope, Employees provident fund scheme.

Equal Remuneration Act 1976 : Object, Scope, Definitions and Important provisions of the Act.

Unit – IV Industrial Dispute Act 1947 : Object, Scope and Definitions, Concepts of strike, Lock-out, Lay-off and Retrenchment, Machinery for settlement of Industrial dispute.

Unit – V Payment of Gratuity Act 1972 : Object, Scope, Calculation of Gratuity, Mode of payment.

Bonus Act 1965 : Object, Scope, Definition, Calculation of Bonus, (Set on set off)

Outcome - Able to know the silent features of labour law and judicial setups of labour laws.

Books Recommended :

1- Industrial Relation – Chabra T. N.
2- Mercantile Law – Garg & Chawala
3- Labour Law – Kapoor N. D.
4- Labour Law – Taxman

MBA (I.R. & P.M.)
SEMESTER – II
CC 2.4 : Managerial Economics and Business Environment

Course Credit : 4
Max Marks – 60
Minimum Pass Marks : 21 (35%)

Objective – The objective of this course is to develop the ability to apply the concepts tools and technique of economics in analysing and interpreting business decision and to understand various environmental issues related with business

Course Contents :

Unit – I Introduction of Managerial Economics : Meaning, Scope, Nature, Importance, Role and Responsibility of managerial Economics, Demand and supply : Meaning Definition, Concept & Significance.

Unit – II Meaning and Phase of Business cycle, Govt. role in private business, Determinants of economic growth, Industrial policy in India, Growth and role of Small Scale Industries in Indian Economy.

Unit – III Taxes : Direct and Indirect taxes, New economic policy, Monetary policy, Meaning, Scope, Quantitative and Qualitative measures of monetary control.

Unit – IV Business Environment : Concept and Nature of Technological, Political, Economic, Social, Cultural and Natural Environment, Important provisions of constitution of India affecting business.

Unit – V Equal Employment Opportunity (EEO), Globalization : Meaning, Process and Purpose of globalization.

WTO : Structure, India's commitments to WTO.

GATT : Concept and Impact.

Outcome - To understand the benefit and impact of economics and environment at globalized level.

Books Recommended :

1- Business Environment – Aswasthappa K.
2- India Economy – Agarwal A. N.
3- Indian Economy – Dutta and Sunderam
4- Managerial Economics – Mehta P. L.
5- Managerial Economics – Sinha V. C.
6- Managerial Economics – Chopra O. P.
7- Business Economics – Adhikari M.

MBA (I.R. & P.M.)
SEMESTER – II
CC 2.5 : Management of trade Union

Course Credit : 4
Max Marks – 60
Minimum Pass Marks : 21 (35%)

Objective - To be able to understand the role, its different functioning and impact of trade unions in business.

Course Contents :

Unit – I Trade Union : Concept, Types, Theories rise and growth of Trade Unionism, Union leadership : Problems of leadership, inter and intra union rivalry.

Unit – II Labour Movement : Meaning, Concept and Impact of Globalization and Liberalisation on labour union movement, Changes after new economic reforms 1991.

Unit – III Trade Union Act 1926 : Object, Scope, Definition, Registration, Rules of trade union and cancellation, Appeal, Dissolution and Amalgamation of trade union, Offences and Penalties under act.

Unit – IV Role, Status and Function of trade union in present scenario, Difficulties and defects of Indian Trade Unionism.

Unit – V Labour Management Co-operation and Code of discipline Recommendations of National Commission of Labour.

Outcome - Able to understand Trade union and its importance in business.

Books Recommended :

1- Trade Union Movement in India – Mathur A. S. & Mathur J. S.

2- Industrial Relation – Sharma A. M.

3- Industrial Relation – Memoria C. B.

4- Labour Economics and Social Welfare – Dr. Tyagi B. P.

5- Labour Management Relation in India – Vaid K. N.

MBA (I.R. & P.M.)
SEMESTER – II
GE 2.6 : * Labour Costing & Compensation Management

Course Credit : 4
Max Marks – 60
Minimum Pass Marks : 21 (35%)

Objective - To understand the cost concepts and techniques that are applied in manufacturing and service organisations.

Course Contents :

Unit – I Nature and Significance of Cost Accounting : Introduction – Cost Accounting, Financial Accounting, Management Accounting, Difference between Cost and Financial Accounting, Management Accounting vs Cost Accounting, Advantages of Cost Accounting, Relationship of cost Department to other departments, Limitations of a cost system.

Unit – II Labour Cost Control : Introduction, Difference between Material Control and Labour Control, Labour Cost Control Factors, Labour Productivity, Labour Performance, Pricing of material issued – Cost price method – FIFO, LIFO, HIFO, Average price method, Market price method, Inflated price method.

Unit – III Labour Remunerating : Wage theories, Wage structure, Monetary and Non-Monetary incentives, Method of Remuneration – Time rate, Piece – Rate System (Taylor differential) Gantt Task Bonus Scheme, Emerson Efficiency Bonus Scheme, Bedaux Scheme, Accelerated Premium Schemes, Halsey Premium Schemes.

Unit – IV Budgetary Control : Introduction – Definition, Budget objectives, Budgetary control, Budget manual, Budget factor kind of budgets, Zero-base budget, Function – wise budget.

Unit – V Operating Costing: Introduction – Operating Cost, Transport Costing, Power House Costing, Canteen Costing, Canteen Cost Statement, Hotel Costing.

Outcome - Able to understand various techniques available to measure labour productivity and able to motivate labour towards organisational goals.

Books Recommended :

1- Cost Accounting – Agrawal M. L.
2- Cost Accounting – Principles & Practices – Jawaharlal
3- Cost Accounting – Principles & Practices – Jain S. P.

MBA (I.R. & P.M.)
SEMESTER –II
CC 2.7 : Behavioural Lab Project & Viva-voce

Course Credit : 4
Max Marks – 60
Minimum Pass Marks : 21 (35%)

Objective - To enable students to understand various management aspects through different tests.

Course Contents :

1- Measurement of Intelligence.
2- Measurement of Personality.
3- Vocational Interest Bland (Record).
4- Occupational Stress Index.
5- Employees Motivation Schedule.
6- Measurement of Adjustment.
7- Measurement of Job Satisfaction.
8- Measurement of Anxiety.
9- Study of Organizational Climate.
10- Measurement of Moral.
11- Leadership Scale.
12- Appraisal Scale.
13- Measurement of Fatigue.
14- Personal Encouragement Scale.
15- Achievement Motive Scale.
16- Business Communication.
17- Managerial Practices.
18- Leadership Training.
19- Interpersonal Relations.
20- Computer Application in Management.
21- Communication Skill.

Any ten out of above.

Outcome - It enhance the knowledge and improve the understanding of the employees behaviour in the business.

MBA (I.R. & P.M.)
SEMESTER – III
CC 3.1 : Business Legislation

Course Credit : 4
Max Marks – 60
Minimum Pass Marks : 21 (35%)

Objective - It is designed to expose the students to the Indian legal system and its affect on business activities.

Course Contents :

Unit – I Company Law : Meaning, Characteristics of a company, Kinds of companies, Incorporation of a Company, Memorandum and Articles of association.

Unit – II Types of shares, Management, Meetings and Winding-up of Company.

Unit – III Consumer Protection act 1986 : Definition, consumer dispute redressal agencies, Procedure for making complaint, remedies available under the act and penalties.

Standing order act 1946 : Needs, Appeals, posting of standing orders, Duration and modification, powers of certifying officers.

Unit – IV Contract Law 1872 : Definition, essential of contract, kinds of contract, Formation of contract : Offer, Acceptance and consideration, Discharge of contract and its remedies, Partnership Act, 1932 : Definition, types, Rights and Duties of partner, Registration & Dissolution of Partnership firm.

Unit – V Negotiable Instrument Act 1881 : Meaning, Essential Ingredients, Special Characteristics of a Negotiable Instrument, Promissory notes, Bill of exchange and cheques, Dishonor and discharge of Negotiable Instrument.

Outcome - Increase understanding of the legal environment in the business sector.

Books Recommended :

1- Company Law – Singh Avtar

2- Mercantile Law – Garg and Chawla

3- Business Law for Managers – Tuteja S. K.

4- The Negotiable Instrument Act – Khergarmwala J. S.

MBA (I.R. & P.M.)
SEMESTER – III
CC 3.2 : Training and Development

Course Credit : 4
Max Marks – 60
Minimum Pass Marks : 21 (35%)

Objective - To acquaint the students with the training and development knowledge and to gain new knowledge or information that helps employees to do their job well.

Course Contents :

Unit – I Training : Meaning, Need for Training Objective, Assessment of Training Needs, Training contents, Principles of Learning and Training, areas of Training and Distinction between Training, Education and Development.

Unit – II Training Programme : Delivering the training programme, Arrival of the participants, Beginning an active programme, Making the training group functional, Empowering the group, delivering the programme.

Unit – III Training Methods : Types, Procedure, Contribution of training, Selection of trainees, Functions and Competencies of a trainer.

Unit – IV Development : Meaning, Objectives, Essential of Development programme, Techniques of management development programme, Concept of Executive / Management development, Factors for selection of Training and Development method.

Unit – V System Approach : Concept, Components, Need, Appropriate Management Training System Design (AMTS), Assumption of appropriate training system.

Outcome - To trained employees that helps to do their job well.

Books Recommended :

1- HRD – Tripathi P. C.

2- HRM – Rao Subba

3- Personnel Management – Bhagoliwal T. N.

4- System approach to Training and Development – Sah A. K.

MBA (I.R. & P.M.)
SEMESTER – III
CC 3.3 : Knowledge Management & Business Ethics

Course Credit : 4
Max Marks – 60
Minimum Pass Marks : 21 (35%)

Objective - To make students realise the importance of capturing knowledge elements and its structure, applications as a competitive advantage to business and to understand the concept of business ethics in business.

Course Contents :

Unit – I Knowledge Management : Evolution, Meaning, Definition, K.M. : Why now, Organizational Knowledge Management : The need, Approaches, Core issues, Need to be taken in the account in order to develop and deploy KM System, organizational KM components and functions.

Unit – II Basic types of knowledge, Organizational knowledge : Types, Classification, Knowledge life cycle, organisational knowledge : Sources and process.

Unit – III Generating new knowledge : Mentoring, situated learning, complexity at work and learning to be knowledge productive, learning in an unstable environment, learning in a complex environment, what if complexity is not accepted as normal? Facilitating knowledge productivity, developing awareness.

Unit – IV Business Ethics : Introduction, Meaning, Nature, Importance of managerial ethics, Determinants, tools, Ethical issues faced by managers.

Unit – V Management of Public Sector Undertakings : Meaning, Features, Objectives, Types, Autonomy and public accountability, control over public undertakings, Evaluation of performance of public sector undertaking in India, Drawbaks of public sector undertakings suggestions for improvement.

Outcome - Able to understand that knowledge management and business ethics are key ingredients in an organisation's ability.

Books Recommended :

1- Principles and functions of management – Jain J. K.
2- Knowledge management & organisational design – Pauls, Myers
3- Knowledge management – Sudhir warier, Vikas publishing
4- Beyond Knowledge management – Bob Garvey & Bill Willianson. Financial Times / Prentice Hall

MBA (I.R. & P.M.)
SEMESTER – III
DCE 3.4 A : ** Applied Management

Course Credit : 4
Max Marks – 60
Minimum Pass Marks : 21 (35%)

Objective - To help the students to get aware towards different fields of management.

Course Contents :

Unit – I Marketing Management : Definition, Concepts, Process, Marketing mix elements, Market Segmentation, Marketing Environment, product life cycle, Marketing v/s Selling.

Unit – II Marketing Strategies : Product strategies, Pricing strategies, Distribution Management and Promotion Strategies, International Marketing, Rural Marketing, Internet Marketing.

Unit – III Service marketing, Marketing mix of services, Difference between service marketing and product marketing, Consumer behaviour.

Unit – IV Finance : Meaning and Objectives, Financial functions of the Manager, Needs of Working Capital and its Determinants.

Production : Concept and Function of Production Management, Types of Production System, Classification and Function of Inventories.

Unit – V MIS : Meaning and role of MIS, Classification of MIS, Information system for decision making, System approach and application of system to organisation.

Outcome - Able to understand different fields of management like Marketing Finance, MIS & Production.

Books Recommended :

1- Fundamentals Management – Agrawal R. D.

2- Marketing Management – Kotler Philip.

3- Windows – Khanna O. P.

4- Information System for Modern Management – Merdick & James.

5- Marketing Management – Sontaki

6- Personnel Management – Bhagoliwal T. N.

MBA (I.R. & P.M.)
Semester – III
DCE 3.4 B : ** Employee Counselling

Course Credit : 4
Max Marks – 60
Minimum Pass Marks : 21 (35%)

Objective - To help employees to improve their mental health and develop self confidence.

Course Contents :

Unit – I Nature and concept of counseling, Need of employee counseling, Fields of application, Employee counseling by Personnel Managers.

Unit – II Psychoanalytic Theory and Employee Counselling : The topographical and Psychodynamic aspects of human mind, Conflicts, Need for counseling, Counseling procedure, Emotional Reeducation.

Unit – III Person Centred Therapy and Employee Counselling : Conception of man, Actualizing tendency, Development of self concept, Counselling procedure.

Unit – IV Behavioural Counselling : The development of behavioural counselling, Behavioural therapy, Criteria for counseling goals, Strategies : Systematic Desensitization, Social modeling, Assertive training, Aversion therapy, Cognitive behaviour modification.

Unit – V Professional counselling for employees : Need and significance, Transactional analysis and professional counselling of employees, Directive and non-directive approaches, Reality therapy, Rational emotive therapy, Gestalt counselling and eclectic counselling.

Outcome - To make employee able for self control and to work effectively.

Books Recommended :

1- Employee Counseling – Sinha A. K. P., Prachi Pub. & Dist. Pvt. Ltd. New Delhi, 1930
2- Counseling for Career Development – Tolbert E. L. New York, McGraw Hill.
3- Introduction to Counseling – Tolbert E. L. New York, McGraw Hill.

MBA (I.R. & P.M.)
SEMESTER – III
GE 3.5 : * Labour Management

Course Credit : 4
Max Marks – 60
Minimum Pass Marks : 21 (35%)

Objective - To minimise exploitation of workers and provide them maximum facilities for more Turnover.

Course Contents :

Unit – I Evolution of the Labour Problem, Labour Problems in Developing Economy, Labour migration & Labour market, Supply and Demand of Labour in India, Employment of workers in Organized and Unorganized Sector.

Unit – II Unemployment : Meaning and kinds of Unemployment, Causes and Effects of Unemployment, Measures to Reduce, Unemployment, Recommendation of I.L.O. on Unemployment.

Unit – III Rationalization and Automation : Definition, Aim and Objects, Advantages, Concept and Characteristics of Rationalization and Automation, Attitudes of Employers and Employees towards Rationalization and Automation.

Unit – IV Absenteeism : Concept, Effect, Causes, Types and Prevention of Absenteeism.

Labour Turnover : Meaning, measurement of Labour turnover, Effect, Causes and Methods to Reduce Labour Turnover.

Unit – V National Labour Policy : Scope, Aim, Objectives and Five Year Plans.

Empowerment : Introduction, Concept, Factors and Barriers of Empowerment.

Outcome - To improve productivity and minimise rate of absenteeism in the industry.

Books Recommended :

1- Labour Economics and Social Welfare – Dr. Tyagi B. P.

2- Personnel Management and Industrial Relations – Bhogoliwal T. N. (1996) Sahitya Bhavan Agra.

3- Labour Problems – Memoriya N. (1996).

4- Labour Problems and Social Welfare – Saxena R. C. (1996).

5- Personnel Management & I. R. – Nair N. G. & Nair Latha

MBA (I.R. & P.M.)
SEMESTER –III
CC 3.6 : Summer Internship Dissertation & Viva Voce

Course Credit : 8
Max Marks – 100
Minimum Pass Marks : 50 (50%)

A candidate has to undergo a field visit Industrial Training Programmes to submit a project report in Semester III of the course based on practical training in any subject relating to Personnel Management (HRM) and Industrial Relations in a Business firm for a period of 4 to 6 weeks in II Semester from 15th may to 30th June.

The work done under the project must indicate the analytical and critical ability of the candidate in relation to the problem, which he / she has identified during the period of the training.

Student will be required to submit a project report to the department for the work under taken during this period within 3 weeks of the commencement of the third semester for the purpose of evaluation in third semester.

The project work will carry 60 marks and viva for 40 marks. The report will be evaluated by one internal and external examiner.

MBA (I.R. & P.M.)
SEMESTER – IV
CC 4.1 : Industrial Relations

Course Credit : 4
Max Marks – 60
Minimum Pass Marks : 21 (35%)

Objectives – To provide better work environment with redressal of grieveness in the industries and apply the concept of industrial relations and the system in which it operates.

Course Contents :

Unit – I Introduction : Meaning, Definition, Concept and Scope, objective / Purpose and Elements of I.R.
Industrial Conflict & Disputes : Meaning, Types, Causes and Effect of industrial dispute.

Unit – II Major determinants of I.R., Grievance : Meaning, Concept, Nature, Source of Grievances, Grievances handling procedure, **Discipline :** Meaning & definition, Aspects of discipline, Importance disciplinary procedure, The Red Hot Stove Rule, Indiscipline and Types of Punishment.

Unit – III Conciliation Mediation : Necessity, Meaning and Procedures, Types and Limitations, Role of conciliation officer and Conciliation machinery.
Arbitration : Meaning, methods and Appointment of Arbitrator and Arbitration in India.

Unit – IV Negotiation and Collective Bargaining : Meaning, Purpose, Scope, Process, Function, Level, Procedure and Forms of Coll. Bargaining and Negotiation, Collective Bargaining in U. K.

Unit – V Worker's participation in Management : Meaning, Need, Concept, Objective and Determinants of WPM, WPM in India, WPM scheme of 1975 i.e. in Industry, in Public Sector and Barriers in Workers participation.

Outcome – Students would be aware of present state of industrial relations issues related to collective bargaining, worker's participation, dispute resolution in the organisation.

Books Recommended :

1- H.R.M. & I.R. – Subba Rao P.
2- Industrial Relation – Chabra T. N.
3- Personnel Management & Industrial Relation – Nair & Latha Nair
4- Industrial – Monappa Arun
5- Labour Economics & Social Welfare –Dr. Tyagi B. P.
6- Dynamics Industrial Relation – Memoria C. B.

7- HRM – Bhatia S. K.

MBA (I.R. & P.M.)
SEMESTER – IV
CC 4.2 : Strategic Management

Course Credit : 4
Max Marks – 60
Minimum Pass Marks : 21 (35%)

Objective - To understand the basic concepts, principles associated with strategy formulation and implementation.

Course Contents :

Unit – I Nature, Importance, Purpose and Objectives of Business Policy, process of strategic management, Components of strategic management : Mission, Policy, Purpose, Objective and Goal.

Unit – II Environmental appraisal : Internal, External, Micro and Macro environmental appraisal.

Environmental Scanning : Factors, Approaches, Sources, Method and Techniques for Environment Scanning.

Unit – III Strategic Alternative : Grand Strategies, Strategies for Modernisation, Diversification and Integration, Merger, Take over and Joint Venture, Turn around, Disinvestment, Liquidation and Combination Strategies.

Unit – IV Issue of Strategy Implementation, Project and procedural implementation structure for strategies, Functional plan and Policies, Financial plans and policies, Marketing plans and Policies, Operational and personnel plans and policies, Social Responsibility and strategic management.

Unit – V Nature and Importance of strategic evaluation, Participants and Barriers in in evaluation, Strategic and Operational control, Techniques of strategic evaluation and control, Role of organisational system in evaluation.

Outcome - Able to understand the crucially important role of strategic management in the success of any organisation.

Books Recommended :

1- Business Policy – Kazmi Azhar

2- Business Policy – Ghosh P. K.

3- Business Policy – Cherunilum Francis

MBA (I.R. & P.M.)
SEMESTER – IV
CC 4.3 : Industrial Law – II

Course Credit : 4
Max Marks – 60
Minimum Pass Marks : 21 (35%)

Objective - To enhance the broad knowledge in business laws in management.

Course Contents :

Unit – I ESI Act 1948 : Definition, Object, Scope, Benefit under the act, Mines Act : Definition, Object, Provision for health, Safety welfare and hours of work.

Unit – II Contract Labour Act 1972 : Scope, Definitions, Welfare and Health of contract labour.

Maternity Benefit Act 1961 : Important Provisions under the act.

Unit – III Employment Exchange Act (Compulsory Notification of Vacancies Act) Various provisions for notification of vacancies.

Apprentices Act 1962 : Definition object and general provisions of the act.

Unit – IV Essential Commodities Act : Definition, Objective and Important Provisions and Punishment.

Child Labour Act : Definition, Object, Scope, Important Provision of the act.

Unit – V IDRA 1951 : Object and Applicability, Definitions, Establishment of council, Regulation of scheduled industries, Powers of Central Government, Offence and Penalties.

Outcome - Students will develop critical thinking and have ability to understand broadly industrial law.

Books Recommended :

1- Factories Act – Shrivastava K. D.

2- Handbook of Industrial Law, Lucknow, Eastern Book 1995 – Malik P. L.

3- Mercantile Law – Garg & Chawla.

4- Industrial Relation – Chabra T. H.

5- Labour Law – Taxman

MBA (I.R. & P.M.)
Semester – IV
DCE 4.4 A : ** Human Resource Management in International Global Environment

Course Credit : 4
Max Marks – 60
Minimum Pass Marks : 21 (35%)

Objective - To build a knowledge base of the contemporary practices and issues of HRM in International Global Environment.

Course Contents :

Unit – I Introduction of HRM : Meaning, Definition, Evolution, Difference in HRM & Personnel Management, Emerging challenges in HRM.

Unit – II Six Sigma : Making Six Sigma initiative – The quality mantra, Six Sigma process approach in HR, Gaining control, Six Sigma is more than cultural change and has challenges.

Unit – III International Human Resource Management : Domestic HRM and IHRM compared, growing internet in IHRM, Managing International HR activities.

Unit – IV The Competent Organization : The American model, Why American theories might not apply abroad, Parochialism and Universality, Management competences approach, Different degrees of Internationalization of companies.

Unit – V The Motivating Organization : The Japanese model – Corporate commitment, Task, Job, Career and organizational incentives, Features of Japanese Management.

Outcome - Able to understand how different countries are dealing with HRM

Books Recommended :

1- HRM – S. K. Bhatia
2- HRM – K. Aswathappa
3- International HRM – Terence Jackson

MBA (I.R. & P.M.)
SEMESTER – IV
DCE 4.4 B : ** Safety and Service Management

Course Credit : 4
Max Marks – 60
Minimum Pass Marks : 21 (35%)

Objective - To interpret and apply legislative requirements and industry standards applied in Indian organisations.

Course Contents :

Unit – I Concept of Industrial Health and Safety : Basic facts and importance, Safety organisation, Basis of safety programme and policy, Remedial issues of safety, Industrial Health : Importance and provision under Factories Act 1948 as preventive measures.

Unit – II Occupational Safety and Health : Nature, Scope, Importance occupational hazards and Risks, Occupational Disease, Protection against health hazards, safety in ports and docks, Safety in mines and National safety council.

Unit – III Industrial Accident and Industrial Injury : Definition, Nature, Causes of accident, Cost of accidents, Accident report ad records, Steps for prevention of accident.

Unit – IV The Environment Protection Act 1986 : Object, Scope, Definition, General power's of the Central Govt. power to appoint officer's and their powers and functions, Power to make rules to regulate environmental pollution, Furnishing of information, Power of entry and inspection, to take sample, Environment laboratories offences by companies and Govt. Department.

Unit – V The Air and Water (Prevention and Control of Pollution) Act : Short title, Definition, Constitution, Function and power of Central and State Board, Funds, Accounts and Audit of the Board, Offences and Penalties under air (Prevention and control of pollution) act.

Outcome - Able to understand various legislative requirements which are applied in Indian organisations.

Books Recommended :

1- Human Resource Management – Dessler Gery
2- Industrial Relation and Personnel Management – Nair and Latha Nair
3- Guide to Environmental Laws in India – Jain P. C.
4- Mercantile Law – Garg and Chawala
5- Labour Economics & Social Welfare – Tyagi B. P.
6- Personnel Management – Memoria C. B.

MBA (I.R. & P.M.)
SEMESTER – IV
GE 4.5 : * Management of Organisational Change & Development

Course Credit : 4
Max Marks – 60
Minimum Pass Marks : 21 (35%)

Objectives – To execute strategy and speed awareness about change for betterment of an organisation.

Course Contents :

Unit – I Organisational Change : Concept, Types, Reasons, Responses to change, Principles, Evaluation and Implementation.

Unit – II Acceptance of change, pre-requisites of organisational change, Resistance to change and steps taken by management to overcome and strategies for change.

Unit – III Organisational Climate of Culture : Components, Determinants, Procedure to maintain types, Societal culture, HRD culture / climate.

Unit – IV Organisation Development and Effectiveness : Meaning, Definition, Characteristics, Nature, Objectives, OD, Change agents, Interventions, OD in Indian Industries and criticism of OD.

Unit – V Emerging Concepts of Kaizen, Bench marking, Quality consciousness, Learning organisations, Rensis Likers approach to understanding and evaluation of organisational effectiveness.

Outcome – Able to students towards the field of innovation and novelty.

Books Recommended :

1- HRD – Tripathi P. C.

2- HRM – Saiyadain Mirza

3- HRM – Subha Rao P.

DEPARTMENT OF PSYCHOLOGY

A.P.S. UNIVERSITY, REWA (M.P.)

POST GRADUATE DIPLOMA IN GUIDANCE AND COUNSELLING (2004-05)

1. Scope:

The P.G. Diploma in Guidance and Counselling is meant for those service oriented persons, who intend to take up position of employment officer, Director of Guidance Bureau, School counselor, Career Master, Rehabilitation Officer, Family/ Marriage Counselor and such other position in private and public setting's. It is also meant for those persons who intend to start their own guidance and counselling centres or consultancy services. The main purpose of this job-oriented course is to enable the student to understand the psychodynamics involved in the problems of human adjustment and their effective management.

2. Examination System: Annual

A. Theory Papers	Max. Marks	Min. Pass Marks
Paper I: Psychological Guidance	100	40
Paper II: Counselling Theories & Techniques	100	40
B. Paper III: Field Exploration 1 – Field Internship – 30 2 – Case study Report – 70 & Viva	100	40
C. Paper IV: Laboratory Practical 1- Construction of Guidance tool – 30 2- Psychological testing - 70	100	40
Grand Total	400	160

Note: Candidates securing at least 40 Percent marks of the aggregate in (a) theory paper in (b) Field exploration and (c) Lab. Practical, Separately shall be declared successful at the examination. Candidates obtaining 60 Percent marks or more in total suggestion shall be declared to have passed with First Division merit and those obtaining 40 Percent or more but less than 60 Percent marks shall be declared as passed in second division.

PAPER – I

PSYCHOLOGICAL GUIDANCE

This paper has five units. At least two questions are to be set from each unit candidate is required to attempt five questions in all selecting one question from each.

UNIT – I

The Guidance:

Meaning and functions of Guidance, The bases of present Guidance approach Basic Principle and assumption of Guidance. Guidance services. Difference between Guidance & counselling.

UNIT - II

Techniques of Guidance: -

Understanding individual; (use of interviews and questionnaires). Appriasals of Aptitude for guidance Appraisal of personal qualities & interest: (test and inventories). Rating scale, behaviour descriptions. Anecdotal Records. Sociometric devices, evaluation of achievement, cumulative Records, Case study and follow ups.

UNIT - III

Essentials of Launching Guidance Programmes Organization and Conduct of Guidance, Organization of Guidance services-Types of Organization, Implementation and conduct of organized guidance programmes, Physical equipment and budgetary considerations

UNIT – IV

Guidance Services for children; Guidance of young children, Elementary School Children, Junior high school children, Adolescents.

UNIT – V

Guidance services to Adults; vocational guidance, Guidance of Adults, guidance towards family life, guidance in personal adjustments, guidance to deviates, guidance in group situation appraisals of guidance programmes, Emerging Trends in guidance.

Book Recommended:

- Traxler, E. Arthur and north D. Robert (1966), Techniques of Guidance III rd Edition Halper & Row, Publishers New York and London.
- Crow, L. and Crow, A. (1962), An Introduction to Guidance IInd Ed. Eurasia Publishing house (P) Ltd.
- Asch, M. (2000) Preyipals of Guidance and counselling. 1st Edn. Sarup & sons New Delhi.

- Jones, J. Arthur, etal (1952) Principals of Guidance 6th ed. Tata McGraw Hill Publishing Coimpany.
- Gupta, S.K. (1985) Gjuidance and counselling in Indian education 1st Ed. Mittal Publishers Tri Nagar Delhi.

PAPER – II

CONSELLING THEORIES AND TECHNIQUES

This paper has five units. At least two questions are to be set from each unit. Candidate is required to attempt five questions from each unit.

UNIT – I

COUNSELLING: The Art and Science of helping

a. Meaning, Purpose and Goals of Counselling with special reference to India.
b. Professional issues, ethics, education and training of the counsellor.
c. Counselling relationship.

UNIT – II

COUNSELLING PROCESS: Theories and Techniques of Counselling

a. Psychodynamic Approach; Freudian, Neo Freudian, Modern.
b. Humanistic Approach: Existential Client centred.

UNIT – III

a. Cognitive Approach: Rational emotive, Transaction analysis.
b. Behavioural Approach: Operant conditioning, Behaviour modification.
c. Indian contribution – Yoga and Meditation.

UNIT – IV

COUNSELLING APPLICATION - I

a. Counselling in schools.
b. Carer counselling
c. Alcohol and Drug Abuse.
d. Group Counselling
e. Crises Intervention Counselling – Case studies for each of the above types of counselling applications, counselling interview.

UNIT – V

COUNSELLING APPLICATION – II

Management of

(a) Shyness, (b) Smoking, (c) Depression, (d) Stress, (e) Marital maladjustment, (f) Old age problems, (g) Eurenesis, (h) Phobias, (e) Fear of interview, (j) Fear of stage performance, (k) Problems in decision making.

Books Recommended:

Windy, D.(1988)(Ed) Counselling in Action New York; Sage Publication.

Nelson, J.(1982) The theory and practice of counselling Psychology. New York: Rinehart and Winston.

Belkin, G.S.(1988) Introduction to counselling. W.G. Brown Publishers.

PAPER – III

FIELD EXPLORATION (INTERNSHIP PROGRAMME): 100 Marks.

1- For this purpose candidates would be required to go to the field at least one's in a week, to identity the problem and diagnosis cases related to the field chooser by him/her and prepare case study reports of 2 cases under the Guidance of the supervisor.

2- A case study report shall carry to 70 marks & it will be evaluated by both internal and external examination, each examiner awarding marks out of 35, as per rules of the university

The internship evaluations will carry 30 marks.

i. Presentation of the report – 15 marks.
ii. Attendance for the programme – 15

PAPER IV

Lab Practical

1. Construction of guidance tools related to the area of specialization – 30
2. Psychological Testing: -
3. Candidates would be required to administer, score and interpret at least 10 Psychological tests – 50 marks.
4. Practical Record book – 10 marks.
5. Viva-Voce 10 marks.

AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

STRUCTURE FR SYLLABUS FOR Ph.D. COURSE WORK (PSYCHOLOGY) 2018-19 ONWARDS

(AS PER ORDINANCE NO. 11 DOCTOR OF PHILOSOPHY)

Paper Code	Name of Theory Papers	Credits	Maximum marks (Theory + Internal Assessment)	Minimum Passing Marks
Ph.D. 101	RESEARCH METHODOLOGY	4	100 (80+20)	55
Ph.D. 102	REVIEW OF PUBLISHED RESEARCH IN THE RELEVANT FIELD	3	100	55
Ph.D. 103	COMPUTER APPLICATIONS	3	100 (80+20)	55
Ph.D. 104	RECENT TRENDS IN PSYCHOLOGY	3	100 (80+20)	55
Ph.D. 105	COMPREHENSIVE VIVA-VOCE	3	100	55
	TOTAL CREDITS	**16**		

AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

Syllabus

for

Pre- Ph.D. Course Work

Psychology

wef 2018-19 and onwards

Publisher
Registrar
A.P.S. UNIVERSITY, REWA (M.P.)
AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

Structure of Syllabus of Pre- Ph.D. Course Work Psychology

(w.e.f. Session 2018-19 Onwards)

Syllabus adopted by the Board of Studies in Psychology, A.P.S. University, Rewa.

Pre- Ph.D. Course Work Psychology Examination Scheme

Paper Code	Name of Theory Papers	Credits	Maximum marks (Theory) + Internal Assessment)	Minimum Passing Marks
I	RESEARCH METHODOLOGY	4	100 (80+20)	55
II	REVIEW OF PUBLISHED RESEARCH IN THE RELEVANT FIELD	4	100	55
III	COMPUTER APPLICATIONS	4	100 (80+20)	55
IV	RECENT TRENDS IN PSYCHOLOGY	4	100 (80+20)	55

Prof. Anjali Srivastava

AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

Pre- Ph.D. Course Work Psychology

Paper - I

RESEARCH METHODOLOGY

Unit-I

Social Research: Meaning, Objectives, Characteristics and Qualities of Good Research. **Social Work Research** - Meaning, Scope and Importance, **Types of Research:** Pure & Applied, Longitudinal & Cross sectional and Qualitative & Quantitative. **Basic Concepts of Research:** Theory, Facts, Variables, Research Problem and Hypothesis.

Unit-II

Research Design: Exploratory and Formulative; Descriptive & Diagnostic and Experimental, Evaluation Research, Case study, Rural Participatory Research.

Unit-III

Social Survey: Concept, Scope, Advantages and Disadvantages of Social Survey, social survey and social research - Techniques of sampling. Sources of Data: Primary and Secondary sources. Tools of data collection: Observation, Schedule, Questionnaire and Interview.

Unit IV

Skills of Doing Research: Formulation of research problem, Review of literature, Data Analysis and interpretation, Preparation of Bibliography, References and Footnotes.

Unit-V

Statistics in Social Work Research: Frequency Distribution, Measures of Central Tendency, Measures of Dispersion, Correlation, Chi-square test, 't' test and Analysis of variance.

AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

Pre- Ph.D. Course Work Psychology

Paper - III

COMPUTER APPLICATIONS

Unit - I: Introduction to Computer:

History, Characteristics of Computer, Classification: Digital, Analog, Hybrid, Micro, Mini, Main and Super, Components of Computer System, Block Diagram, I/O and auxiliary storage devices. Only preliminary concepts (definition) of software, hardware, low level and high level language, Introduction to Internet Technology, Web Browser, Research Gateways.

Unit - II: Introduction to Operating System:

Needs, Functions, Control Programs, OS Supervisor, Job control programs concurrent OS; Popular OS for PC's Introduction to DOS-Internal commands, External commands (TREE, UNDELETE, CHKDSK, FDISK, FC, BACKUP, RESTORE, FORMAT, UFFORMAT, JOIN, XCOPY)

Unit - III: Introduction of Windows:

Programe manager, File manager, Customizing windows with control panel, Print Manager, The PIF editors, sharing Information among applications (OLE-object Linking and Embedding)

Unit - IV: **Introduction to Microsoft Office:**

The office manager, Sharing Information with Microsoft office, The clip board, Editing Linked Information, Editing embedded objects, Components of Microsoft Office-Word, Excel, Power Point, Word Processing with Wood; Word basics: Undo, Redo, Repeat, Insert Text, Replace Text, Formatting Text, Copying from now Word Document to other, Printing, Auto format, Autocorrect.

Unit - V: Introduction of Statistical Package for Social Sciences:

Using MS-Excel/Statistical Package for Social Sciences for Analysing the Descriptive Statistics Mean Median Mode, Standard Derivation and Graphical Representation and Analysis of Data.

AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

Pre- Ph.D. Course Work Psychology

Paper - IV

Recent Trends in Psychology

I	Human needs and motivation: Meaning and Types of motivation Attitude: Content, Function, Formation of attitude and Attitude change, Persuasive communication, Prejudice and discrimination: Stereotypes in Indian Context.
II	Emotional intelligence - Concepts their utilities and applications in daily life. Problem solving and creativity: theoretical approaches of creativity, Factors influencing creativity.
III	Mental Health: meaning, components and factors influencing mental health; Models of mental health interventions Stress: Nature, determinants and coping strategies.
IV	Personality: Nature, types and determinants; Personality theories of Sigmund Freud; R.B. Cattell; Carl Rogers; Gordon W. Allport and Abraham Maslow.
V	Current and their types Social Problems: Poverty; Socio-Economic Deprivation; Pollution; Castism; Beggary; Mental Tension and Illiteracy.

STUDY CENTRE FOR SOCIAL WORK

COURSE STRUCTURE

for

M.S.W.

Four Semesters (Two Years)

Programme

Based on

Choice Based Credit System (CBCS)
(As per ordinance-14)

I & II Semester 2020-21

III & IV Semester 2021-22

AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

STUDY CENTRE FOR SOCIAL WORK
AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

Semester Course of M.S.W Based on CBCS

Vision of the University:

To be the premier institution that offers teaching and learning programmes of the best quality, graduate students who excel and become leaders in the chosen profession contributing to the community, the nation and the world, and prepares individuals of the highest moral fibre. The vision of university is:

To create an ideal society and an intellectual environment that initiates, nourishes and perpetuates values of co-existence and to fulfil and achieve excellence.

The university, under the dynamic leadership of our honourable Vice-chancellor is working on quite a few ambitious plans. The idea is to develop the university as a knowledge city.

About the Department:

The idea of starting the Master of Social work Programme to mark the 125th birth anniversary of Mahatma Gandhi took shape in the year 1995 under the dynamic leadership of the them Vice-Chancellor Prof. J.S. Rathor. The department envisages to equip the students with scientific knowledge, technical skills and value orientation necessary for several interventionist roles. The MSW programme (Self Finance Course) is a two year (4 semesters) course designed to help students acquire theoretical insights and practical skills for the effective handling of jobs in the field of social welfare and social service. Centre runs MSW, BSW Programme. Currently Seventy Five students are studying in the department.

The department has organized Invited Talks, Workshops and Seminars to improve the knowledge of students regarding the latest developments in the field of Social Work.

Brief Description of the Activities of Study Centre for Social Work

Exhibition: 1. Demostration by 'SARHD' Organization on the theme of "Seema par Jawan" (2009-10).

2. On 'AIDS' awareness mission organized by 'NAACO'.

Seminar: 1. On Human Rights Day facilitated by District Magistrate – Sudhi Singh Rathore (2001). World International Seminar Rights Day 10th December celebrated in Kay speakers Justice Gulab Gupta; Amita Chare.

2. National Seminar on Social Work profession : "Issues and Challenges: (2015).

Workshop: 1. National Workshop on "role of NEO's in Social Development – (2007).

2. Workshop on "Art of Living" (2013).

3. Workshop on "Field the volunteer in You" – (2012)

4. "Workshop on AIDS' awareness". Organised by NAACO'-(2013).

5. "Spititual lecture series on "Samaj Nirman Ke Sutra" Key not speaker – Hon'ble Sandhya Tiwari (2015)

Campus Selection:

1. District poverty initiative programme (DPIP) – 28-30 Student Selected (2010).
2. Rajiv Gandhi Watershed conservation mission – 32 Student Selected (2012).
3. District poverty Initiative programme – 36 Students Selected (2013).
4. CARE/Bill Gates foundation – 3 Student Selected (2014).
5. Atlas H.R. Services, Indore – 56 Students selected (2016).

Faculty:

1. Prof. Shreekant Mishra Professor In-Charge
2. Dr. Shashank Pandey Guest Faculty
3. Dr. Preetam Singh Guest Faculty
4. Mr. Sunit Kumar Dwivedi Guest Faculty
5. Dr. Shalini Sharma Guest Faculty

Aims:

1. Developing the Counseling Skills and Professional Social Worker Skills among the students and preparing them to take up a carrier in Field of Social Work.
2. Create more interest in the subject and motivate students for self learning.
3. To enhance community relationship.

Objectives:

1. To improve the regular teaching-learning situation with enhanced teaching skills.
2. To renew innovative techniques to facilitate regular class room practice.
3. To develop new methodology and explore teaching aids for better class room transaction.
4. To inculcate competition, creative attitude and human values.
5. To develop social and communication skills through field exposure.

Programme: M.S.W

Programme Code: 517

Duration: 4 Semesters (Two Year)

Number of Seats: 80

Eligibility: Candidate who have Graduate in any Subjects with 50% marks. (45% SC and ST Candidates)

Admission Procedure: The admission will be done as per merit of qualifying examinations.

STUDY CENTRE FOR SOCIAL WORK

AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

PROGRAMME OUTCOMES (POs)

PO#	PROGRAMME OUT COME
PO 1	**Critical thinking:** Take informed actions after identifying the assumptions that frame our thinking and actions, check out the degree to which these assumptions are accurate and valid and look at our ideas and decisions (intellectual, organizational and personal) from different prospective. Acquisition of post graduate attributes and descriptors with demonstrated abilities through Field work training.
PO2	**Effective Communication:** Speak, read, write and listen clearly in person and through electronic media in English, Hindi and In other regional language, and make meaning of the word by Connecting people, ideas, books, media and technology and also speak and write effectively in the discourage of the discipline.
PO3	**Social Interaction:** Understanding the relationship between theories, Observations, and Conclusions, Elicit views of others, mediate Disagreements and Help. To equip students with knowledge on core and ancillary methods of professional social Work and its practice base.
PO4	**Effective Citizenship:** Skill development and Entrepreneurship abilities to be taught at postgraduate levels. Demonstrate empathetic social concern and equity-centered national development.
PO5	**Ethics:** Understand the ethical practice of scientific enquiry recognize difference value system including your own, understand the moral dimension of your decisions, and accept responsibility for them.
PO6	**Environment and Sustainability:** Responding to dynamic socio-cultural milieu, restructuring of discipline specific papers For students.
PO7	**Self-Directed and life-long Learning:** Field work has been made an integral part of the syllabus, giving an opportunity to the Students for practice in diverse settings. To develop young professionals with good communication skills and quest for a self motivated life-long

	learning, focusing on skilling and re-skilling in their respective field Of social work.

STUDY CENTRE FOR SOCIAL WORK

AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

PROGRAMME SPECIFIC OUTCOME (MSW)

PSO#	PROGRAMME SPECIFIC OUTCOME
PSO1	To gain a functional knowledge of theoretical concepts and experimental aspects of Social work and their applications in the day-to-day life. Understanding of social problems, social legislations and the rights based Approach.
PSO2	To integrate the gained knowledge with various contemporary and evolving areas in social work like case work, group work, field work and research method etc.
PSO3	To Understand analyze, plan and implement qualitative as well as quantitative, analytical and therapeutic and intervention-based problems related to Social field. Capacity to extrapolate from what one has learned and apply their competencies to solve different kinds of problems by stepping out of comfort zones and taking up challenges in unforeseen challenges.
PSO4	Develop insight to excel; Adjust in academic research or industry skill enhancement and real word situation based courses like social case work, psychiatric social work, social policy and planning, counseling and communication, and social work of adjustment.

STUDY CENTRE FOR SOCIAL WORK

AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

COURSE STRUCTURE FOR MSW AT A GLANCE

Semester-I

Core Courses								
S. No.	Course Code	Title of the Course	Credit	Maximum Marks		Total	Minimum Pass Marks	
				Theory	Cont. Evln.		Theory	Cont. Evln.
1.	MSW 101	History and Philosophy of Social Work	4	60	40	100	21	20
2.	MSW 102	Human Growth and Development	4	60	40	100	21	20
3.	MSW 103	Case Work	4	60	40	100	21	20
		Total Core Credits	**12**	**180**	**120**	**300**	**-**	**-**
Core Generic Elective I								
4.	MSW 104	Social Science Concepts for Social Workers	4	60	40	100	21	20
		Total Generic Elective Credit	**4**	**60**	**40**	**100**	**-**	**-**
5.	MSW 105	Concurrent Field Work & Orientation	4	-	-	100	35	-
6.	MSW 106	Comprehensive Viva-Voce	4	-	-	100	35	-
	Total (Core+ Core Generic Elective + Concurrent Field Work & Orientation + Comprehensive Viva-Voce)		**24**	**240**	**160**	**600**	**-**	**-**

Semester-II

Core Courses								
S.No.	Course Code	Title of the Course	Credit	Maximum Marks		Total	Minimum Pass Marks	
				Theory	Cont. Evln.		Theory	Cont. Evln.
1.	MSW 201	Social Group Work	4	60	40	100	21	20
2.	MSW 202	Community Organization	4	60	40	100	21	20
3.	MSW 203	Labour Legislations & Social Security	4	60	40	100	21	20
		Total Core Credits	**12**	**180**	**120**	**300**	**-**	**-**
Core Generic Elective II								
4.	MSW 204	Counseling and Communication	4	60	40	100	21	20
		Total Generic Elective Credit	**4**	**60**	**40**	**100**	**-**	**-**
5.	MSW 205	Concurrent Field Work & Study Tour	4	-	-	100	35	-
6.	MSW 206	Comprehensive Viva-Voce	4	-	-	100	35	-
	Total (Core+ Core Generic Elective + Concurrent Field Work & Study Tour + Comprehensive Viva-Voce)		**24**	**240**	**160**	**600**	**-**	**-**

STUDY CENTRE FOR SOCIAL WORK

AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

Semester-III

Core Courses								
S. No.	**Course Code**	**Title of the Course**	**Credit**	**Maximum Marks**		**Total**	**Minimum Pass Marks**	
				Theory	**Cont. Evln.**		**Theory**	**Cont. Evln.**
1.	MSW 301	Social Work Research	4	60	40	100	21	20
2.	MSW 302	Dynamics of Development	4	60	40	100	21	20
		Total Core Credits	**08**	**120**	**80**	**200**	**-**	**-**
Core Discipline Elective								
3.	MSW 303	Youth Development & Empowerment	4	60	40	100	21	20
Total Core Discipline Elective Credits			**4**	**60**	**40**	**100**	**-**	**-**
Core Generic Elective III								
4	MSW 304	Tribal Community Development	4	60	40	100	21	20
Total Core Generic Elective Credit			**4**	**60**	**40**	**100**	**-**	**-**
5.	MSW 305	Concurrent Field Work and Rural Camp	4	-	-	100	35	-
6.	MSW 306	Comprehensive Viva-Voce	4	-	-	100	35	-
	Total (Core+ Core Discipline Elective + Core Generic Elective + Concurrent Field Work & Rural Camp +Comprehensive Viva-Voce)		**08+4+ 4+4+4 = 24**	**240**	**160**	**400 +200 =600**	**-**	**-**

Semester-IV

Core Courses								
S. No.	**Course Code**	**Title of the Course**	**Credit**	**Maximum Marks**		**Total**	**Minimum Pass Marks**	
				Theory	**Cont. Evln.**		**Theory**	**Cont. Evln.**
1.	MSW 401	Social Welfare Administration	4	60	40	100	21	20
2.	MSW 402	Social Policy and Planning	4	60	40	100	21	20
		Total Core Credits	**08**	**120**	**80**	**200**	**-**	**-**
Core Discipline Elective								
3.	MSW 403	Women and Empowerment	4	60	40	100	21	20
Total Core Discipline Elective Credits			**4**	**60**	**40**	**100**	**-**	**-**
Core Generic Elective IV								
4.	MSW 404	Psychiatric Social Work	4	60	40	100	21	20
Total Core Generic Elective Credits			**4**	**60**	**40**	**100**	**-**	**-**
5.	MSW 405	Concurrent and Block Field Work	4	-	-	100	35	-
6.	MSW 406	Comprehensive Viva - Voce	4	-	-	100	35	-

	Total (Core+ Core Discipline Elective + Core Generic Elective + Concurrent and Block Field Work + Comprehensive Viva-Voce)	**08+4+ 4+4+4 = 24**	**240**	**160**	**400 +200 =600**	**-**	**-**
	Total Semester (I+II+III+IV)	**96**	**960**	**640**	**2400**		

Programme Administration

Evaluation:

1. Each course will be assessed for 100 marks, out of which 60 marks will be for end-semester examination and 40 marks will be for Continuous Evaluation. The duration of end-semester examination for each course shall be of three hours.
2. The question paper of end-semester examination of each course will consist of two sections A & B. Section A will consist of short answer type questions each carrying 6 marks and section B of long answer type questions each carrying 10 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.
3. During the semester, a teacher offering the course will do the continuous evaluation of the student at three points of time by conducting three tests of 20 marks each. Of these, two must be written tests and third may be written test/Quiz/Seminar/Assignment. Marks obtained in two best tests out of three will be awarded to the student.
4. Total of Marks obtained in end-semester examination and best two tests under continuous evaluation will decide the grade in the course.

STUDY CENTRE FOR SOCIAL WORK

AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

COURSE STRUCTURE

Under CBCS

MSW

SEMESTER-I

Core Courses								
S. No.	**Course Code**	**Title of the Course**	**Credit**	**Maximum Marks**		**Total**	**Minimum Pass Marks**	
				Theory	**Cont. Evln.**		**Theory**	**Cont. Evln.**
1.	MSW 101	History and Philosophy of Social Work	4	60	40	100	21	20
2.	MSW 102	Human Growth and Development	4	60	40	100	21	20
3.	MSW 103	Case Work	4	60	40	100	21	20
		Total Core Credits	**12**	**180**	**120**	**300**	**-**	**-**
Core Generic Elective I								
4.	MSW 104	Social Science Concepts for Social Workers	4	60	40	100	21	20
		Total Generic Elective Credit	**4**	**60**	**40**	**100**	**-**	**-**
5.	MSW 105	Concurrent Field Work & Orientation	4	-	-	100	35	-
6.	MSW 106	Comprehensive Viva-Voce	4	-	-	100	35	-
	Total (Core+ Core Generic Elective + Concurrent Field Work & Orientation + Comprehensive Viva-Voce)		**24**	**240**	**160**	**600**	**-**	**-**

STUDY CENTRE FOR SOCIAL WORK

AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

MSW (Under CBCS)

Credit: 4 **Max. Marks** **Min. Pass**

SEMESTER – I

Theory **60** **21**

Course Code: MSW 101 History and Philosophy of Social Work **Cont. Evln.** **40** **20**

Course Objectives:

1 Enable students understand and differentiate social work and other related terms.
2 Understand the context of emergence of social work as a profession.
3 To impart learner idea about the historical development of professional social workin India.
4 Develop understanding about various approaches to social work.

Note: The question paper of end-semester examination of each course will consist of two sections A & B. Section A will consist of short answer type questions each carrying 6 marks and section B of long answer type questions each carrying 10 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Course Contents:

UNIT-I

Introduction to social work profession: social work profession and its relationship with social service, social reform, social welfare, social development, social cohesion, social justice, human rights and empowerment. Objective and principles of social work.

UNIT-II

Historical Development of Social Work: Development of Professional Social Work in UK, USA and India. Social Work education in India, UK and USA. Associations of professional Social Work at national and international level. Present state of social work asa profession in India.

UNIT-III

Philosophical Base of Social Work: Values, basis assumptions and methods of Social Work. Philosophy of Social Work: democratic and humanitarian. code of ethics of Social Work. Function and roles of Social Worker.

UNIT-IV

Approaches to Social Work practice: System approach, integrated approach, Radical approach, Generalist approach, Anti-oppressive approach and Gandhian approach.

Suggested Reading

1. Allan, June; Pease, Bob; & Briskman, L., Critical Social Work: An Introduction to Theories andPractice, Jaipur:Allen & Unwin, NSW/Rawat Publications, 2003.
2. Bogo, Marion, Social Work Practice: Concepts, Processes, and Interviewing, Columbia

UniversityPress, 2006.

3. Compton, B. R., Introduction to Social Welfare and Social Work: Structure, Function and Process,The Dorsey Press, Irwin-Dorsey (Homewood, Ill, Georgetown, Ont.), 1980.
4. Coulshed, Veronica& Orme, Joan, Social Work Practice (4th Edn.), Palgrave Macmillan, 2006.
5. Derezotes, David S., Advanced Generalist Social Work Practice, Sage Pub., New Delhi, 2000.
6. Dubois, B. & Miley, K.K., Social Work: An Empowering Profession, Allyn and Bacon, London,2005.
7. Higham, Patricia, Social Work: Introducing Professional Practice, SAGE, 2006.
8. Kulkarni, P.D., The Indigenous Base of Social Work Profession in India, IJSW,54 (4), 2000.
9. Kumar, Hajira, Social Work: An Experience and Experiment in India, Gitanjali Publishing House,Delhi, 1994.
10. Lymbery, Mark; Postle, Karen, Social Work: a Companion to Learning, SAGE, 2007.
11. Midgeley, James, Social Welfare in Global Context, Sage Publications, New Delhi, 1997.
12. National Association of Professional Social Workers in India NAPSWI. (2015): Code of Ethics forProfessional Social Workers in India. Available at: www.napswi.org
13. Parker, Jonathan; Bradley, Greta, Social Work Practice: Assessment, Planning, Intervention andReview (2nd Edn.), Learning Matters Ltd., 2007.
14. Pathak, S.H., Social Welfare: An Evolutionary and Development Perspective, MacMillan India Ltd.,New Delhi, 1981.
15. Reamer, Frederic G., Social Work Values and Ethics, Columbia University Press, 2006.
16. Shastri, Raja Ram, Social Service Tradition in India, Welfare Forum & Research Organization,Varanasi, 1966.
17. Watson, Florence , Integrating Theory and Practice in Social Work Education, Jessica KingsleyPublishers Ltd., London, 2002.
18. Wilson, Kate; Ruch, Gillian; Lymbery, Mark; Cooper, Andrew, Social Work: An Introduction toContemporary Practice, Pearson/Longman, 2008.
19. Wood, Gale Goldberg; Tully, Carol Thorpe (3rd Edn.), The Structural Approach to Direct Practice inSocial Work: A Social Constructionist Perspective, Columbia University Press, 2006.

Course Learning Outcomes

CO1 To understand history and evolution of social Work profession, both in India and the West.

CO2 To develop insights into the origin and Development of Ideologies and Approaches to social Change.

CO3 To develop Skills to understand contemporary reality in its historical context.

STUDY CENTRE FOR SOCIAL WORK

AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

MSW (Under CBCS)	**Credit: 4**	**Max. Marks**	**Min. Pass**
SEMESTER – I	**Theory**	**60**	**21**
Course Code: MSW 102 Human Growth and Development	**Cont. Evln.**	**40**	**20**

Course Objectives:

1. To acquire fundamental knowledge on various stages of human growth and personality development.
2. To understand growth and development of individual at various stages in life span.
3. To understand the theories, concepts and their applications.
4. To develop skills and techniques in assessing the psycho-social issues and problemsof different age groups.

Note: The question paper of end-semester examination of each course will consist of two sections A & B. Section A will consist of short answer type questions each carrying 6 marks and section B of long answer type questions each carrying 10 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Course Contents:

UNIT-I

Human Growth and Development: Growth, maturation and development, Principle and determinants of development Personality: definition, structure, dynamics and determinants, Motivation: definitions and types, Adaptation: definition and modes.

UNIT-II

Theories of Personality Development: Erik- Eriksons Theory of Psychosocial Development Theory, Psychoanalytical Theory of Freud, Piglet's theory- Cognitive Theory, Humanistic Theory of Kart Roger's

UNIT-III

Stage of Development-I: Male and female reproductive systems, Prenatal development andanti-natal care: conception, development of fetus, necessary precautions such as medical, nutritional, emotional during parental period and reparations for anti-natal care, Characteristics (physical, social, cultural, emotional, and cognitive), needs, problems, tasks and relevance of social work practice during each stages of development, Infancy, Babyhood, Childhood (early and late),Puberty and Adolescence.

UNIT-IV

Stage of Development-II: Characteristics (physical, social, cultural, emotional and cognitive), needs, problems, tasks and relevance of social work practice during each stages of development: Early, Adulthood, Middle Adulthood, Late Adult and old age.

Suggested Reading

1. Srivastava, Ruchi, 2011: personal Growth and training and development, Vrinda Publications P.ltd. Delhi.
2. Morgan, C.T., King, R.A., Welsz, J.R. & Schopler, J. 2003 Introduction to Psychology (7th Edition) New Delhi: Tata McGraw Hill Publication Company Limited.
3. Hurlock, E.B. 1981. Developmental Psychology: a lifespan Approach, Tata McGraw Hill, New Delhi.
4. Hurlock E.B., 1992. Child Growth and Development, Tata McGraw Hill, New Delhi.
5. Hurlock, E.A., Developmental Psychology, Lifespan Approach, Tata McGraw Hill, New Delhi, 1994.
6. Hurock, Elizabeth B., Child Development, McGraw Hill Book Company, London, 1978.
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8. Baron, R.A. & Byrne, D., Social Psychology (8thEdition), Prentice Hall, New Delhi, 1998
9. Bron, Rober A.; Byrne, Donn, Social Psychology, Allyn and Bacon, Boston, 1997.
10. Hall, C.S.;Lindsay, G. &Campbell, J.B., Theories of Personality, John Willey & Sons, Inc. New York,1998.
11. Hilgard Ernest R., Atkinson, Rital, Introduction to Psychology, Harcourt Brace Jovanovich Inc. NewYork, 1979.
12. Loid, Dodge Farnald, Psychology - Six Perspectives, Sage Publication, New Delhi, 2007.
13. Maluccio, A.N., Pine, B.A. & Tracy, E.M., Social Work Practice with Families and Children, Columbia University Press, New York, 2002.
14. Mansead, A.S.R.; Strobe W. (Ed.), The Blackwell Reader in Social Psychology, Oxford: Blackwell,1997.
15. Morgan, C.T.; King, R.A.; Welsz, J.R. & Schopler, J., Introduction to Psychology (7th Ed.), TataMcGraw Hill Publication Company Limited, New Delhi, 2003.
16. Myers, David G., Psychology, W H Freeman & Co., 2006.
17. Nevid Jeffrey S., Psychology: Concepts and Applications, Houghton Mifflin Co., 2007.
18. Rathus Spencer A., Psychology: Concepts and Connections, Wadsworth Publishing Company, 2006.
19. Robinson, Lena, Psychology for Social Workers, Routledge, London, 1995.
20. Sharma, Rajendra K. & Sharma, Rachna, Social Psychology, Atlantic Publishers, 2007.
21. William, James, Principles of Psychology, Cosimo Inc., New York, 2007.

Course Learning Outcome:

CO1 To understand psychological concepts and its relevance to Social Work.

CO2 To understand the basic concepts and processes in social psychology and its relevance to Social Work.

CO3 To understand determinants and processes of personality development.

CO4 To understand social attitudes and psychosocial behavior.

CO5 Describe how human development is the product of social, psychological and biological factors.

STUDY CENTRE FOR SOCIAL WORK

AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

MSW (Under CBCS)	**Credit: 4**	**Max. Marks**	**Min. Pass**
SEMESTER – I	**Theory**	**60**	**21**
Course Code: MSW 103 Social Case Work	**Cont. Evln.**	**40**	**20**

Course Objectives:

1. To understand individuals and their uniqueness.
2. Understand Social Case Work as a method of Social Work Practice.
3. To understand the process involved in working with individual.
4. To develop the self awareness and skills in working with individual.

Note: The question paper of end-semester examination of each course will consist of two sections A & B. Section A will consist of short answer type questions each carrying 6 marks and section B of long answer type questions each carrying 10 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Course Contents:

UNIT-I

Basic Concept of Social Case Work: Nature, Concept, objectives and basic assumption of Social Case Work, Historical Development of Social Case Work as a method of Social Work, Key Concepts-Role and Functioning, Adjustment & Maladjustment.

UNIT-II

Principles & Components of Social case Work: Principles of Social Case Work Practice, Client-Worker Relationship, Components of Social Case Work-Person, Place Problem and Process Study Assessment, Intervention.

UNIT-III

Tools, Techniques and Skills of Social Case Work: Tools: Interview Observation, Home Visit, Recording and Counselling, Techniques: Clarification, Insight Development Environmental Modification & Referral, Skills: Listening, Questioning, Communication Resource utilization

UNIT-IV

Approaches to Social Case Work: Problem-solving, Psycho-social and Crisis Intervention, approaches to Social Case Work, Case Work Practice in Different settings- Correctional, Family & Health & Crisis situated, Social Case Work Practice with people (rape, victims, disabled) and oppressed group (minorities, SC/ST), Practical-Two CaseStudies, Presentation and discussion of Case Work Practice.

Suggested Reading

Priest F.P.-1957 : 'The Case Work Relationship', Chicago Loyalo University Press.

Fook. J. 1993 : 'Radical Case Work A Theory of Practice',Australia, Allen & Unwin.

Mathew. G. 1992 : 'An Introduction to Social Case Work-TISS', Bombay.

Pearlman H.H. 1951 : 'Social Case Work A Problem Solving Process', Chicago: The University of Chicago Press.

Hamilton G. 1954 : 'Theory & Practice Social Case Work (2nd edition revised)', New York, Columbia University Press.

Robert R.W& Nee-1970 : 'Theories of Social Case-Work Chicago', The University of Chicago Press.

Timms N. 1964 : 'Social Case Work', Principles and Practice, London Routledge & Kegan Paul.

Hollis F. 1964 : 'Social Case Work A Psycho Social Therapy', New York, Mc graw hill.

Werner A. Hertz -1956 : 'Concept and Principles underlying in Social Case-Work practice-Washington', The office of Vocational Rehabilitation.

R.K. Upadhyay-2003 : 'Social Case-Work: A Therapeutic Approach'- New Delhi, Rawat Publication.

Craig, W.L.-1992 : 'Case-Studies in Social Work Practice- California' Wadsworth Publishing Company.

Cora K. (ed)-1950 : 'Principles and Techniques in Social Case- Work', Family Service Association of America.

Herbert H. Aptekar : 'The dynamics of Case Work & counseling' Boston-Hongton liffin company.

Swithum Bowers-1949 : 'The nature and definitation of Social Case Work', (Reprint from Journal of Social CaseWork-New York).

Course Learning Outcome

CO1. To understand the individual, family and their problems and the social contextual factors affecting them.

CO2. To understand Social Casework as a method of Social Work practice.

CO3. To gain knowledge about the basic concepts, tools, techniques, processes and Skills of working with individuals.

CO4. To develop an understanding of application of case works in diverse settings.

STUDY CENTRE FOR SOCIAL WORK

AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

MSW (Under CBCS)	**Credit: 4**	**Max. Marks**	**Min. Pass**
SEMESTER – I	**Theory**	**60**	**21**
Course Code: MSW 104 Social Science Concepts for Social Workers.	**Cont. Evln.**	**40**	**20**

Course Objectives:

1. To impart knowledge and understanding on basic social science concepts requiredfor Social Work professionals.
2. To develop reasonable knowledge and favorable attitude in respect of our Society & Social System.
3. To enable the learners to understand the concepts of Liberalism and Neo- Libralism.

Note: The question paper of end-semester examination of each course will consist of two sections A & B. Section A will consist of short answer type questions each carrying 6 marks and section B of long answer type questions each carrying 10 marks. In each section there will befive questions, one from each unit with internal choice. All questions will be compulsory.

Course Contents:

UNIT-I

Conceptual & Theoretical Perspective to Understand Society: Society: Concept, definition and characteristics Theories of society: Evolutionary, Cyclical Conflict and System.

UNIT-II

Basic Sociological Concepts: Social Group: concept and characteristics Types of Social Group : Primary Secondary and Reference. Social Institution Concept and Characteristics Family and Marriage as an Institution.

UNIT-III

Polity for Social Workers: Basic Concept: State Democracy, Liberty, Equality, Rights, Power, Authority and Legitimacy, Ideologies- Concepts of Socialism, Capitalism & Mixed Economy.

UNIT-IV

Liberalism & Neo-Liberalism: Liberalism: Concept definition, principles, origin and growth. Types of Liberalism: Classical and Social, Neo-Liberalism: Concept, definition, history and theory, Liberalism Vs Neo-Liberalism.

Suggested Reading

Shrinivas, M.N.(1980) : 'Social Change in India', Hindustan Publishing Corporation, Delhi.

Sinha, Raghuvir : 'Social Change in Indian Society'.Gillin and Gillin: 'Cultural Sociology'.

Moore W.E. : 'Social Change'.

Merton W.E. : 'Social Theory and Social Structur'e'.

Sharma S.R. : 'Basic Concepts of Sociology' (The Hindi Vision)

Prabhas : 'Hindu Social Organization'.

Singh, Yogendra : 'Modernization of Indian Traditions',Thomson Press Rawat Publications, New Delhi.

Siddiqui, H.Y.(ed.) : 'Social Work and Social Action', Hernam, New Delhi.

Kapadia, K.M. (1966) : 'Marriage and family in India', Oxford University Press.

Davis, Kingsley : 'Human Society', Surjeet Publications.

Rao, MSA (ed) : 'Social Movement in India', Manohar.

Dube, S.C. (1988) : 'Modernization and Development', The United Nations University, Tokyo.

Gore, M.S. : 'Social Development', Rawat Publications. Joby,

Jackson : 'Contemporary Society John Wiley & Sons.Bierstedt,

Robert : 'The Social Order', Mc Graw-Hill Book Co.

Broom and Selznick : 'Sociology, Row', Peterson & Company

Course Learning Outcomes

CO1 Acquaint themselves with the basic concepts of Sociology like society, community, association, culture, social change, social stratification etc.

CO2 Know the basic social institutions like family, marriage, kinship in a scientific way.

CO3 Explain social change and the factors affecting social change. Realize the importance of cultural lag to understand social change.

CO4 Learn about the Constitutional Provision for the protection of minorities and other weaker section in India.

CO5 Learn about the Reservation Policy in India.

STUDY CENTRE FOR SOCIAL WORK

AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

COURSE STRUCTURE

Under CBCS

MSW

Semester-II

Core Courses								
S.No.	Course Code	Title of the Course	Credit	Maximum Marks		Total	Minimum Pass Marks	
				Theory	Cont. Evln.		Theory	Cont. Evln.
1.	MSW 201	Social Group Work	4	60	40	100	21	20
2.	MSW 202	Community Organization	4	60	40	100	21	20
3.	MSW 203	Labour Legislations & Social Security	4	60	40	100	21	20
		Total Core Credits	**12**	**180**	**120**	**300**	**-**	**-**
Core Generic Elective II								
4.	MSW 204	Counseling and Communication	4	60	40	100	21	20
		Total Generic Elective Credit	**4**	**60**	**40**	**100**	**-**	**-**
5.	MSW 205	Concurrent Field Work & Study Tour	4	-	-	100	35	-
6.	MSW 206	Comprehensive Viva-Voce	4	-	-	100	35	-
	Total (Core+ Core Generic Elective + Concurrent Field Work & Study Tour + Comprehensive Viva-Voce)		**24**	**240**	**160**	**600**	**-**	**-**

STUDY CENTRE FOR SOCIAL WORK

AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

MSW (Under CBCS)

Credit: 4 **Max. Marks** **Min. Pass**

SEMESTER – II

Theory **60** **21**

Course Code: MSW 201 Social Group Work **Cont. Evln.** **40** **20**

Course Objectives:

1. Appreciate the importance of groups in the life of an individual.
2. Gain knowledge about group formation and the use of variety of group formation and group approaches.
3. Develop understanding of concepts dynamics and small group theory in relation to all types of groups
4. Develop knowledge skills and techniques to be used by social worker in groups.
5. Begain and develop commitment to the value of democratic process in group life.

Note: The question paper of end-semester examination of each course will consist of two sections A & B. Section A will consist of short answer type questions each carrying 6 marks and section B of long answer type questions each carrying 10 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Course Contents:

UNIT-I

Basic Concepts of Group Work: Social Group Work- definition characteristics significance, scope, principles & assumptions. Theory Helpful in Social Group work., Values and Ethics in Social Group Work.

UNIT-II

Group Dynamics & Leadership: Group Dynamic, Stages of Group Development. Definition of Leadership. Leadership and Power Group. Group Leadership Skill, Planning the group- Concept and Model.

UNIT-III

Treatment & Task Groups: Purpose of Treatment and Task Groups (support group, educational groups, growth groups, therapy groups and socialization group). Objective in the beging stage, Definition and process of assessment, Program Planning – Concept and Principles.

UNIT-IV

Evaluation, Recording and Termination: Evaluation: definition and method Evaluation for planning the group. Recording: Definition, Principle & Types Termination- definition, types of termination.

Suggested Reading

H.Y. Siddiqui (2008, 2014)- Group Work Theories and practice.

Aussi A.S.(1980)- Perspective on Social group work practice.

S.rengasany – Socisal Group Work.

Norma C Long- Group Work Practices to advance social completive.

Albert S allussi- Perspectives on Social group work practice.

Tracker H Administrative as a group process. Aussi, A.S.1980: Perspectives on social group work practice.

Balgopal, P.R. and Vassil, T.V. 1983: Groups in Social Work.

Kemp, C.G. 1970: Perspective on the group process.

Klein A.F. 1970: Social work through group process.

Northen, H. 1969: Social work with groups.

Sundel, M.Glasse P.: Individual change through small groups.

Sarri, R.Vinter: Treeken, Harleigh, B. 1990: Social group work-Principles and practice.

Course Learning Outcomes

CO1 To understand the nature and types of groups.

CO2 To understand Social Group Work as a method of Social Work practice.

CO3 To know the basic concepts, tools, techniques, processes and Skills of working with groups.

CO4 To develop an understanding of process of group development and group dynamics.

CO5 To develop an understanding of application of group works in diverse settings.

STUDY CENTRE FOR SOCIAL WORK

AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

MSW (Under CBCS)

Credit: 4 **Max. Marks** **Min. Pass**

SEMESTER – II

Theory **60** **21**

Course Code: MSW 202 Community Organization **Cont. Evln.** **40** **20**

Course Objectives:

1. Understand the concept and perspectives of community in social work practice;
2. Develop a critical understanding of power relation and power structure incommunity;
3. Develop understanding of community organization as a method of social work;
4. Develop key skills and capacities in student about Community level social work intervention;
5. Articulate functions and roles of community organizer.

Note: The question paper of end-semester examination of each course will consist of two sections A & B. Section A will consist of short answer type questions each carrying 6 marks and section B of long answer type questions each carrying 10 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Course Contents:

UNIT-I

Community and Community Organization and Introduction: Community in a social work perspective: sociological definition and features of community**;** place-based community and non-place-based community; Neighborhood; Community as a Social System., Rural, urban and tribal community: Features and Issues, Conflict and power in community organization: Meaning and Type of Power; Concept and Forms of Community Power structure; its relevance and use in Community Organization, Basics concept and features: Community Work, Community Practice and Community Development.

UNIT-II

Concepts and Process of Community Organization: Community organization**:** Meaning, Objectives, Component Principles and Historical Development., Process of community organization**:** Integration; Community study; Issue identification and analysis; Core group formation; Group work and meetings; Develop an action plan; Resource Mobilization, Implementation of action plan; Evaluation and reflection; Phase Out and Follow up.

UNIT-III

Approach, Models skills and Role of Community Organization: Approaches and models of community organization: Rothman, Ross, Fisher and Alinsky. **Skills of community organizer:** Relationship Skills; Problem-solving skills; Political skills; Professional skills; and use of self. **Roles**

of community organizer: Guide, enabler, expert; social therapist, catalyst; facilitator, broker, negotiator, advocate and evaluator.

UNIT-IV

Participatory Techniques in Community Organization: Use of PRA, PLA; Stakeholder analysis and strategic planning; Limitations of participatory methods, Use of ICT and GIS in community practice, Course Outcome: Acquaint with knowledge, skills, techniques and professional self of community organization and practice to address community level issues of social problems, service delivery and development of local people.

Suggested Readings

Alinsky, Saul (1971) : Rules for Radicals: A Practice Primer for Realistic Radicals, Vintage Books.

Brager, G. & Specht, H. (1969) : Community Organization, New York: Columbia University Press.

Cox, Fred (1987) : Community organization, F .E. Peacock Publishers: Michigan.

Douglas, Bilan (1983) : Community Organization Theory and Practices Hall: New Jersey.

Gangrade, K.D (1971) : Community Organization in India, Popular Prakashan: Bombay.

Government of India (1980) : Encyclopedia on Social Work, Publication division: New Delhi

Hillman, Arthur (1950) : Community Organization and Planning, Macmillan: New York.

Murphy, Campell, G. (1954) : Community Organization Practice, Houghton Mifflin: New York.

Poplin, Dennis, E. (1972): Communities, Macmillan: New York.

Rothman, Jack, Erlich, John & Tropman, John (1987) : Strategies of Community Organization: A Book of Readings, F .E. Peacock Publishers: Michigan.

Siddique, H.Y, (1984): Social Work and social Action, Harman, New Delhi.

Siddique, H. Y (1997): Working with Communities: An Introduction to Community Work, Hira Pub: New Delhi.

Verma, R.B.S. & Singh, Atul Pratap (2015) : Samudayik Sangathan Evam Abhyaas. New Royal Book Company: Lucknow. (Hindi).

Singh, A.N. (1992) : Community Organization (in Hindi) HaryanaSahityaAcadamiChandigarh.

Hardcastle, D. A., Powers, P.R.&Wenocur, S. (2004) : Community Practice: Theories and Skills for Social Workers,Oxford University Press: London.

Weil, M. (ed,) (1996): Community Practice: Conceptual Models. The Haworth Press Inc.: New York.

Ross, M. G (1967): Community Organization. Theory, Principle and Practice, Harper & Row: New York.

Lee, J.A.B. (2001): The Empowerment Approach to Social Work Practice: Building the Beloved Community (2nd ed.). ColumbiaUniversity Press: New York.

Pandey, B. & Pandey, T. (2018): SamudayikSangathan (in Hindi), Rawat Publication: Jaipur.

Course Learning Outcomes

CO1 To understand the fundamental concepts and components of community, community organization and social action.

CO2 To understand the models of community organization and social action.

CO3 To understand the relationship of community organization and social action with other methods of social work.

CO4 To understand various social movements in India

STUDY CENTRE FOR SOCIAL WORK

AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

MSW (Under CBCS)	**Credit: 4**	**Max. Marks**	**Min. Pass**
SEMESTER – II	**Theory**	**60**	**21**
Course Code: MSW 203 Labour Legislations and Social Security	**Cont. Evln.**	**40**	**20**

Course Objectives:

1. To Understood labour in legal setting;
2. To learn various labour laws in India
3. To understand the concept of social security.

Note: The question paper of end-semester examination of each course will consist of two sections A & B. Section A will consist of short answer type questions each carrying 6 marks and section B of long answer type questions each carrying 10 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Course Contents:

UNIT-I

Labour Legislation in India-I: Labour legislation- need, scope, nature and principles Indian Constitution and labour. The Factories Act, 1948 - interpretation, inspecting staff, provisions related to health, safety, welfare, working hours of adults, employment of young persons and leave. The Industrial Disputes Act, 1947 - definition, authorities- powers, duties and procedure; strike and lockouts; lay-off and retrenchment. The Mines Act,1952 - salient features.

UNIT – II

Labour Legislation in India-II : Industrial Employment (Standing Orders) Act, 1946 - Salient Features. The Contract Labour (Regulation and Abolition) Act, 1970: Salient Features. The Child Labour (Prohibition and Regulation) Act, 1986 - salient features.

UNIT – III

Social Security: Social Security - concept, scope and types. The Unorganized Workers Social Security Act, 2008 - salient features. The Employees Compensation Act, 1923 - interpretation, provisions related to compensation and commissioner. The Employees' State Insurance Act, 1948- authorities, contributions and benefits. The Maternity Benefits Act, 1961- Salient Features.

UNIT – IV

Legislations related to Wages and Salary: Concept of bonus, gratuity and provident fund. The Minimum Wages Act, 1948 - salient features. The Payments of Wages Act, 1936 - definition, deductions and penalty.

Suggested Readings

Malik, P.L. : 'Industrial Law', Eastern Book Company.

Mishra, S.N. : 'Labour and Industrial Law', CPL.

I.L.I.Publication : 'Labour Law and Labour Relations-Cases and Material', New Delhi.

Siddiqi, Z.M.S. and M.A. Wani (ed.): 'Labour Adjudication in India', ILI, New Delhi.

Course Learning Outcomes

CO1 To understand key concepts of deviance and crime.

CO2 To understand major forms of crime.

CO3 To gain knowledge about major theories of crime.

CO4 To understand process and the mechanism of social control.

CO5 To practice correctional Social Work in different institutional and no institutional settings.

CO6 To understand provisions of various social legislations in India.

STUDY CENTRE FOR SOCIAL WORK

AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

MSW (Under CBCS)

Credit: 4 **Max. Marks** **Min. Pass**

SEMESTER – II

Theory **60** **21**

Course Code: MSW 204 Counselling and Communication **Cont. Evln.** **40** **20**

Course Objectives:

1. Understand the concept and goals of by studying this course, the learners shall counselling and communication as a helping process.
2. Develop attitudes and inculcate values that enhance investment of self in the counselor's role.
3. Learn to apply counseling and communication skills while working with clients in various settings.

Note: The question paper of end-semester examination of each course will consist of two sections A & B. Section A will consist of short answer type questions each carrying 6 marks and section B of long answer type questions each carrying 10 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Course Contents:

UNIT-I

Counseling : Meaning, Definition, Relevance to Social Work, Goals, Types and Principles, -Skills of Counseller, -Recent Trends in Counselling.

UNIT – II

Methods and Techniques of counselling : Counselling process : Phases and Steps, Counselling Techniques : Advice, Motivation, Clarification, Modelling, Role Playing, Reality Orientation, Confrontation and Reaching out.

UNIT – III

Communication framework of communication: Concept, Definition, Components, Significance, Steps and Methods, Principles and Skills of Communication. Barriers to communication and methods of Removal These Barriers. Role of Communication in Social Work.

UNIT – IV

Communication System in Organization: Types of Communication Formal and Informals intrapersonal and Interpersonal; Verbal/oral and Verbal/written communication, Directions in communication; Vertical, Horizontal and Diagonal, Reumors and Grapevine ; Ways to establish an effective communication in Organization.

Suggested Readings

Crow, L. And Crow, A., (1970) An Introduction to Guidance: Basic principles, New Delhi Publishing House.

Jaiswal, S.R. (2000) Guidance and Counselling in Education. Vinod Pustak Mandir, Agra -2. Jones, A. (1970) (6th Edition). Principles of Guidance. Bombay: Tata McGraw Hill publishing Co.

Stonge. R. (1981) Educational Guidance- Principles and Practices New York.

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Course Learning Outcomes

CO1 Understand Concept and Process of Counselling.

CO2 Inculcate helping and guidance skills among the trainees.

CO3 Provide insights on Special areas and issues related to Counselling.

CO4 Sensitize the Students to the ethics of Counselling.

CO5 Understand the Role, responsibilities and functions of Counselor.

STUDY CENTRE FOR SOCIAL WORK

AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

COURSE STRUCTURE

Under CBCS

MSW

Semester-III

Core Courses								
S. No.	**Course Code**	**Title of the Course**	**Credit**	**Maximum Marks**		**Total**	**Minimum Pass Marks**	
				Theory	**Cont. Evln.**		**Theory**	**Cont. Evln.**
1.	MSW 301	Social Work Research	4	60	40	100	21	20
2.	MSW 302	Dynamics of Development	4	60	40	100	21	20
		Total Core Credits	**08**	**120**	**80**	**200**	**-**	**-**
Core Discipline Elective								
3.	MSW 303	Youth Development & Empowerment	4	60	40	100	21	20
Total Core Discipline Elective Credits			**4**	**60**	**40**	**100**	**-**	**-**
Core Generic Elective III								
4	MSW 304	Tribal Community Development	4	60	40	100	21	20
Total Core Generic Elective Credit			**4**	**60**	**40**	**100**	**-**	**-**
5.	MSW 305	Concurrent Field Work and Rural Camp	4	-	-	100	35	-
6.	MSW 306	Comprehensive Viva-Voce	4	-	-	100	35	-
	Total (Core+ Core Discipline Elective + Core Generic Elective + Concurrent Field Work & Rural Camp +Comprehensive Viva-Voce)		**08+4+4+4+4 = 24**	**240**	**160**	**400 +200 =600**	**-**	**-**

STUDY CENTRE FOR SOCIAL WORK

AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

MSW (Under CBCS)

Credit: 4 **Max. Marks** **Min. Pass**

SEMESTER – III

Theory **60** **21**

Course Code: MSW 301 Social Work Research **Cont. Evln.** **40** **20**

Course Objectives:

1. To understand meaning, scope and importance of social work research
2. To understand about the application of methods in the study of social phenomenon
3. To impart knowledge in the learners about methods, techniques and scientific process of social work research
4. To acquire the skills for preparation of research proposals, data analysis and report writing.

Note: The question paper of end-semester examination of each course will consist of two sections A & B. Section A will consist of short answer type questions each carrying 6 marks and section B of long answer type questions each carrying 10 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Course Contents:

UNIT-I

Concept of Research: Social Research: Meaning, Objectives and Scope, Scientific Method: Concept & Characteristics, Distinction between Social Research & Social Work Research, Types of Research: Quantitative, Qualitative, Action, Evaluation, Steps in Social Work Research

UNIT II

Constructing Research Design & Data Collection: Research Design: Meaning & Types, Hypotheses: Meaning & Types, Sources of Data Collection: Primary & Secondary, Methods of Data Collection: Observation & Interview, Tools of Data Collection: Interview Schedule, Questionnaire, Attitudinal Scales(Bogardus, Likert & Sociometric Scale), Sampling: Meaning & Types

UNIT III

Data Management: Tabulation & Data Analysis, Writing Research Report: Important Considerations, Presentation & Styles of Referencing, Citing & Paraphrasing, Writing Bibliography & use of Footnotes, Application of Computers in Social Work Research(MS- Word, MS-Excel, MS-PowerPoint)

UNIT IV

Basic Statistics: Concept, Purpose and Scope of Statistics in Social Work Research, Measures of Central Tendency: Mean, Median, Mode, Measures of Dispersion: Range, Standard Deviation, Mean Deviation, Quartile Deviation, Correlation: Karl Pearson & Spearman's Coefficient.

Suggested Readings

Argyrous, G. (2000). Statistics for Social and Health Research: with a guide to SPSS (London: Sage)

Babbie, Earl,(1989).Survey Research Methods (2nd Edn), Belmont, CA, Wadsworth

Bailey, K.D. (1982) Methods of Social Research. New York: The Free Press.

Becker, H. S. (2007). Writing for Social Scientists Chicago: University Chicago Press.

Bell, J. (2010). Doing your Research project Buckingham, UK: Oxford University Press.

Berry, R.(2004). The Research Project: How to Write It. London and New York: Routledge.

Black, J.A. & Champion, D.J. (1976). Methods and Issues in Social Research. New York: John Wiley.

Burns, R.B. (2000) Introduction to Research Methods. New Delhi: SagePublications.

Burton, S. & Steane, P. (2004). Surviving your thesis London: Routledge.

Clare. J., & Hamilton, H. (2003). Writing Research: Transforming data into text Edinburgh, Scotland: Churchill Livingstone.

Coakes, S.J., and Steed, L.G. (2001). SPSS: Analysis without anguish: version 10.0 for Windows (Brisbane: Wiley)

Craswell, G. (2012). Writing for academic success London: Sage Publications.

Gash, S. (1999). Effective Literature Searching for Students (second edition). Aldershot: Gower.

Goode, W.J. & Hatt,P.K. (1952).Methods in Social Research. New York: McGraw Hill Book Company, Inc.

Gibaldi, J. (2004). MLA Handbook for Writers of Research Papers (sixth edition). New York: The ModernLanguage Association of America.

Hart, C. (1998). Doing a literature review: Releasing the Social Science imagination.

London: Sage. Kumar, Ranjit,(2014).Research Methodology- A Step-by-Step Guide for Beginners, Sage Text.

Laldas D.K. (2000). Practice of Social Research: Social Work Perspective. New Delhi: Rawat Publications.

Manalo, E., & Trafford, J. (2004). Thinking to thesis: a guide to graduate success at all levels Auckland,New Zealand: Pearson Longman.

Nicola, B., Richard (2003) SPSS for Psychologists: A Guide to Data Analysis Using SPSS for Windows, Palgrave Macmillan.

Pagano, R. R. (1998). Understanding Statistics in the Behavioral Sciences (5th ed). Stamford, CT: Wadsworth

Pallant, J. (2001). SPSS Survival Manual: A Step by Step Guide to Data Analysis using SPSS for Windows (Version 10) (Allen and Unwin)

Rawlings, J. O., Pantula, S. G., and Dickey, A. D. (1998) .Applied Regression Analysis. New York: Springer.

Reid, W.J. & Smith,A.D. (1981).Research in Social Work. New York: ColumbiaUniversity Press.

Rubin, A. & Babbie,E. (2001).Research Methods for Social Work (4th Ed.).California: Wadsworth.

Englewood Cliffs (2001d). SPSS Base 11.0 for Windows User's Guide:, NJ:Prentice Hall.

Swales, J. M., & Feak, C. (2000). English in today's Rsesearch world: A writing guide. Ann Arbor: University of Michigan Press.

Swales, J. M., & Feak, C. (2004). Academic writing for graduate students: Essential tasks and skills(2nded.). Ann Arbor: University of Michigan Press.

Selltiz, C., Wrightsman, L.S. & Cook, S.W. (1976).Research Methods in Social Relations. New York: Holt, Rinehart and Winston.

Siokin, R.M.(1955). Statistics for Social Sciences. New Delhi: Sage Publications.

Tabachnick, B.G., and Fidell, L.S. (2001) Using Multivariate Statistics, 4th edition (Boston: Allyn and Bacon).

Watson, G. (1987). Writing a Thesis: a Guide to Long Essays and Dissertations. London: Longman.

Young, Pauline V.,(1966). Scientific Social Survey Research (4th Ed.) Englewood Cliffs, NJ, Prentice Hall.

Course Learning Outcomes

CO1 To gain understanding of nature and relevance of social science research and its application in the study of social phenomena.

CO2 To learn steps and process of formulation of research design and carry out the same.

CO3 To learn method of conducting a review of literature.

CO4 To develop familiarity with qualitative and quantitative research methods.

CO5 To learn how to prepare tools for collection of data.

CO6 To learn process of data collection, organization, presentation, analysis and report Writing.

STUDY CENTRE FOR SOCIAL WORK

AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

MSW (Under CBCS)

	Credit: 4	Max. Marks	Min. Pass
SEMESTER – III	**Theory**	**60**	**21**
Course Code: MSW 302 Dynamics of Development	**Cont. Evln.**	**40**	**20**

Course Objectives:

1. This paper aims to acquaint students with the concept, parameters and issues of multidimensional social development.
2. Students will learn some theories and models of development.
3. This paper also focuses on the emerging concepts of sustainable human developmentas well as and gender and development.
4. Students shall also learn to perceive development with human rights perspective

Note: The question paper of end-semester examination of each course will consist of two sections A & B. Section A will consist of short answer type questions each carrying 6 marks and section B of long answer type questions each carrying 10 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Course Contents:

UNIT-I

Concept of Development and Social development: Concept of Development and Social Development; Meaning and Scope of 'Development', 'Social Development' and 'Inclusive Development',Development as Human Rights. Parameters of Social and Economic Development; Social, Cultural, Political and Ecological Critiques of Development,

UNIT- II

Human Development: Human Development: Meaning, Characteristics and Measurement. Major Conventions and Protocols relevant to Sustainable Development: 1985: Vienna Convention on Protection of the Ozone Layer. 1987: Our Common Future: Report of the World Commission on Environment and Development (Brundtland Report). Agenda 21.

UNIT- III

Sustainable Development: Sustainable Development and Sustainable Human Development: Concept and concerns. Sustainable Development Goals (SDG) TransformingOur World: The 2030 Agenda for Sustainable Development.

UNIT- IV

Gender and Development: Gender and Development: Concepts of WID (Women in Development), WAD (Women and Development), and GAD (Gender and Development); GAD as an Analytical Tool,

Gender Development Index (GDI). Approaches to Empowerment of Women; Gender Sensitive Development-Need and Pre-requisites.

Suggested Readings

Drege, Jean and Amartya Sen (1996): Indian Development: Selected Regional. Perspectives, Oxford University Press.

Gore, M.S. (1985): Social Aspects of Development, RawatPublications, Jaipur.

Kulkarni, P.D. and M.C. Nanavatte (1997): Social Issues in Development, Opal. Publishing House.

Srivastava, S.P.(ed.)(1998) : The Development Debate: Critical PerspectivesRawat Publications, Jaipur.

Todaro, M.P. (1997) : Economic Development in the Third World,Hyderabad, Orient Longman.

Das, K. Debendra,(ed.) (1994) : Structural Adjustment is the Indian Economy Deep and Deep Publications, New Delhi.

Dutt, Ruddar (ed.) (2002): Second Generation Economic Reforms in India, Deep and Deep Publishers, New Delhi.

Chakravarthy, Sukhamoy (1997): Development Planning : The Indian Experience,Oxford University Press.

Dutt and Sundaram (1995): Indian Economy, Sultan Chand and Company Ltd.

Reddy, Y.Venugopal (1979) : Multi Level Planning in India, Vikas Publications, New Delhi.

Bakers, Gary (1993) : Human Development Revisited , ChicagoUniversity Press.

Haq, Mahbub-ul: Poverty Curtain, Oxford University Press.

Haq, Mahmub-ul (1998) : Reflections on Human Development, Oxford University Press.

Myrdal, Gunnar (1990): Asian Drama, Kalyani Publication.

Course Learning Outcomes

CO1 Understanding psychological concepts and its relevance to Social Work.

CO2 Understanding the basic concepts and processes in social psychology and its relevance to Social Work.

STUDY CENTRE FOR SOCIAL WORK

AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

MSW (Under CBCS)

Credit: 4 **Max. Marks** **Min. Pass**

SEMESTER – III

Theory **60** **21**

Course Code: MSW 303 Youth Development & Empowerment **Cont. Evln.** **40** **20**

Course Objectives:

1. To understand the state of youth in contemporary Indian Society.
2. To develop basic understanding regarding youth development and Empowerment.
3. To understand and develop insight regarding issues and problems related to youth inIndia.
4. To know the policy, programmes and services for youth welfare & development inIndia.

Note: The question paper of end-semester examination of each course will consist of two sections A & B. Section A will consist of short answer type questions each carrying 6 marks and section B of long answer type questions each carrying 10 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Course Contents:

UNIT-I

Youth in Indian Society: Concept and features of youth, Demographic profile of youth in India regarding health, education, employment etc. Concept of youth welfare and youth development. Needs and problems of youth in India. Emerging pattern of youth culture in contemporary Indian Society. Intergeneration conflicts, Problems of Adolescence.

UNIT-II

Youth Development And Empowerment: An Introduction: Youth Welfare **:** Concept, Need and Historical Development, Youth Development : Concept, Need and dimensions Empowerment of Youth : Need and Process, Youth movement and youth unrest.

UNIT-III

Issues and Problems of Youth: Problems of Urban, Rural Youth and Female Youth, Problems of youth in academic institutions. Exploitation of youth with reference to communalism and terrorism, Alcoholism and drug dependency among youth, Internet addition among youth in India

UNIT-IV

Policies & Programmes for development and empowerment of youth in India: National Youth Policy, Services and Programmes for youth development and empowerment in India, N.C.C, N.S.S., Nehru Yuva Kendra, Employment, Guidance and Counseling services for youth etc. Role of Civil society organization in empowerment of youth, Social Work Intervention with youth in India.

Suggested Readings

Hassan, M.K. 1981: Prejudice in Indian Youth, Classical Publishing Company.

Sudershan Kumari 1978 : Aspuratious of Indian Youth, Chaukambha, Vns, Orientative, Delhi.

Course Learning Outcomes

CO1 UnderstandingthestateofyouthincontemporaryIndianSociety.

CO2 Understanding developsbasicunderstandingregardingyouthdevelopmentand Empowerment.

CO3 Understanding and develop insight regarding issues and problems related to youth in India.

CO4 Knowthepolicy, programmes and services for youth welfare & development in India.

STUDY CENTRE FOR SOCIAL WORK

AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

MSW (Under CBCS)	**Credit: 4**	**Max. Marks**	**Min. Pass**
SEMESTER – III	**Theory**	**60**	**21**
Course Code: MSW 304 Tribal Community Development	**Cont. Evln.**	**40**	**20**

Course Objectives:

1. To develop knowledge and understanding about tribal societies and their situation invarious regions of India
2. To enable the student to understand the varies problems of tribal people. i.e. social, educational, infrastructural, health & women.
3. To enhance skills on critical review of tribal development Programmes and itsApplication of social work methods.
4. Review the developmental programmes and their impact on the situation of tribalpopulation.

Note: The question paper of end-semester examination of each course will consist of two sections A & B. Section A will consist of short answer type questions each carrying 6 marks and section B of long answer type questions each carrying 10 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Course Contents:

UNIT-I

Tribal Concept: Meaning and characteristics of tribe. various perspective – British perspective, Indian perspective, tribal own perspective. Constitutional Meaning of tribe. Tribal distribution in India, Tribal Social organisations: Tribal family, marriage, kinship, Yuvagruh, Religion and customary practices.

UNIT – II

Tribal Movements in India: Santhal, Mizo, Naga, Munda, Moplah, Bodo, Jharkhand, etc. Impact of tribal movements on tribal policy: Contribution of tribal activists: BirsaMunda, Tantya Bhil, AmbarsinghMaharaj. Contribution of Tribal reformers: ThakkarBappa, Dr. B.D Sharma,Verrier Elvin, Godavari Parulekar

UNIT – III

Educational challenges-accessibility, marginalisation, migration, drop-out. Health challenges: accessibility, malnutrition, mortality & morbidity, reproductive health, anemia and sickle cell anemia, Superstitions, addiction, isolation. Economic challenges: Land alienation, Agriculture Poverty, indebtedness, Unemployment. Infrastructural challenges: Habitat and settlement, Basic civic Amenities, Transportation & communication, Access to Forest.

UNIT- IV

United Nations Declaration of Rights of Indigenous people, National Commission on Scheduled Tribe, National Council for Tribal Welfare, TRIFED Autonomous Councils, Panchayati Raj Institutions & PESA Panchayat (Extension to Scheduled Area) Act 1996, role of Civil Society Organizations in tribal development, Forest Dwellers protection Act 2006.

Suggested Readings

Government of India: Five year plans Kitab Mahal, New Delhi.

William, Biddle,j: 1965. The community development process- The discovery oflocal initiative, Holt Richards and Wington, New York,

Bhattacharjee, J.B., 1989 .Sequences of Development in North East India, New Delhi: Omsons Publications,

Fuchs, S., 1982. The Original Tribes at India, Delhi: McMillan and Co.,

Sangma, M., 1981 History and Culture of the Garos, New Delhi: Book today,

Sharmam D., 1984. Planning for Tribal Development, New Delhi: Prach Prakashan,

Singh, K.S. 1982., Tribal Movements in India, Vol. I, Delhi: Manohar,Gare G.M. 1974 Social Change among the tribal of western Maharastra

Gare G.M. 1974. social change among the tribal of western Maharashtra,

Shab. D.V. 1979. Education and social change among the tribal in India –

Shah D.V.1979. Education and social change among Tribal in India

Patil R.N. Shish publishing house 8181, Punjabi Bagh, New Delhi – 110028

D.V.V. Ramona Rao – Tribal Development New Approaches Discovery publishinghouse New Delhi – 110002 (Indian)

R.N.Mishra. Tribal cultural and economy – Ritu publication Indian economy –_V.K.Puri- Himalaya Punlishing House

Tripati R.N. Ashish publishing house 8/81, Punjabi bag , New Delhi .110028.

D.V.V.Ramana Road- Discovery publishing house New Delhi 110002. (India)

Tribal cultural and Economy – Ritu publication R.N. Mishra .

Indian Economy –S.K. Mishra ,V.K.puri –Himalaya publishing House .

Social and political Envirment in India Dr. Sub hash Naik –Everest publication .

Dynamics of tribal migration – sonali publications New Delhi-

Man power Employment policy and Labor welfare –K. Narindar Jetly – New_Century publication, New Delhi.

Tribal culture Economy and health – Shahi Bairathi – Rawat publications

Dube, S.C. ,India's Changing Villages.

Haimendorf, Christoph von, Tribes of India;

Hasnain, N., Tribes in India.

Raza, Moonis and A. Ahmad, An Atlas of Tribal India .

Sharma, Suresh, Tribal Identity and Modern World .

Singh, K.S. , Tribal Situation in India (Indian Institute of Advanced Study)

Singh, K.S, Tribal Society .

Singh, K.S ,The Scheduled Tribes .

Doshi S.L. : Tribal society in India.

Dynamics of tribal migration – Sonoli Publications New Delhi

Man Power employment policy and Labour Welfare – K. Narindar Jetty – NewCentury

Tribal culture economy and health shashi Bairathi – Rawat Publications

Course Learning Outcomes

CO1 Understand the problems of Tribal people.

CO2 Study about overall mechanisms for community development.

CO3 Understand the impact of bureaucratic approaches in the implementation of tribal development schemes.

CO4 Become familiar with the role of social workers in the context of community development.

CO5 Understand the use of social work methods in community development programmes.

STUDY CENTRE FOR SOCIAL WORK

AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

COURSE STRUCTURE

Under CBCS

MSW

Semester-IV

Core Courses								
S. No.	**Course Code**	**Title of the Course**	**Credit**	**Maximum Marks**		**Total**	**Minimum Pass Marks**	
				Theory	**Cont. Evln.**		**Theory**	**Cont. Evln.**
1.	MSW 401	Social Welfare Administration	4	60	40	100	21	20
2.	MSW 402	Social Policy and Planning	4	60	40	100	21	20
		Total Core Credits	**08**	**120**	**80**	**200**	**-**	**-**
Core Discipline Elective								
3.	MSW 403	Women and Empowerment	4	60	40	100	21	20
Total Core Discipline Elective Credits			**4**	**60**	**40**	**100**	**-**	**-**
Core Generic Elective IV								
4.	MSW 404	Psychiatric Social Work	4	60	40	100	21	20
Total Core Generic Elective Credits			**4**	**60**	**40**	**100**	**-**	**-**
5.	MSW 405	Concurrent and Block Field Work	4	-	-	100	35	-
6.	MSW 406	Comprehensive Viva - Voce	4	-	-	100	35	-
	Total (Core+ Core Discipline Elective + Core Generic Elective + Concurrent and Block Field Work + Comprehensive Viva-Voce)		**08+4+ 4+4+4 = 24**	**240**	**160**	**400 +200 =600**	**-**	**-**
	Total Semester (I+II+III+IV)		**96**	**960**	**640**	**2400**		

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AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

MSW (Under CBCS)

Credit: 4 **Max. Marks** **Min. Pass**

SEMESTER – IV

Theory **60** **21**

Course Code: MSW 401 Social Welfare Administration **Cont. Evln.** **40** **20**

Course Objectives:

1. To orient the students regarding different dimensions of Social Welfare Administration.
2. To acquaint the learners with the basics of social welfare administration.
3. To develop a critical understanding among the learners about the various issues in the realm of social welfare administration, Developmental organizations and Project management.
4. Acquire knowledge about the basic principles and processes of administration

Note: The question paper of end-semester examination of each course will consist of two sections A & B. Section A will consist of short answer type questions each carrying 6 marks and section B of long answer type questions each carrying 10 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Course Contents:

UNIT-I

Foundation of Social Welfare Administration: Social Welfare Administration: Concept, Scope, Need and Objectives, Social Welfare Administration and Related Concepts: Social- Service Administration, Social Security Administration, Public Administration. Basic Administration Process: POSDCORB

UNIT-II

Social Welfare Administration in India: Social Welfare Administration at the Central Level Structure, Roles and Functions, Jurisdiction of the central Ministry of Social Justice and Empowerment; Ministry of Tribal Affairs; Ministry of Women and Child evelopment. Central Social Welfare Board: its jurisdiction; structure & Functioning; U.P. State Social Welfare Advisory Board. Administrative Structure, Roles and Functioning.

UNIT- III

Welfare and Development Organizations: Welfare and Development Organizations: Nature, Forms and Roles, Registration of Welfare and Development Organizations, Laws Relating to Societies, Trusts and Non-Profit Organizations. Recent Trends in Welfare Administration: Parallel structures like - USAID-SIFSA, DSACS.

UNIT- IV

Project Planning and Evaluation: Project: Meaning, Objectives, Types, Components; Coverage, Outlines and Process. Steps in Project Formulation and Reporting; Demand Forecasting and

Feasibility Study; Project Execution. Project Monitoring and Evaluation- Mid-term, Ex-post; Evaluation and its importance.

Suggested Readings

Goel, S.L & Jain P.K. : 'Social Welfare Administration' (2 Volumes). Singh, Surendra (2012) : 'Encyclopedia of Social Work in India (5Volumes), New Delhi/Lucknow:NRBC.

Sachdeva, D.R. (1999-93) : Social Welfare Administration, Kitab Mahal, Allahabad.

Koontz, H. and H. Weitrich : Essential of Management, McGraw Hill, New Delhi. (1998) Norad : Guide to Planning and Evaluating NGO Projects (Part II and III), Norway.

Patti, R. : 'Social Welfare Administration in India', Prentice Hall.

Paul, Samuel : 'Strategic Management of Development Programmes', ILO, Geneva. Sankaran, and Rodrigues : 'Handbook for the Management of Voluntary Organizations', Alpha Publications, Madras.

Siddiqui, H.Y.(ed.) : 'Social Work Administration-DynamicManagement & Human Relationships', Prentice Hall, New Jersey.

Chaudhary, D.Paul : 'Social Welfare Administration', Atma Ram & Sons, New Delhi. Fincham, R. and Peter : 'Principles of Organizational Behavior', Oxford

Rhodes (2005) University Press, New Delhi.

Luthans, Fred : 'Organizational Behavior', McGrawHill Irwin.

Awasthi & Awasthi : 'LokPrashasan', Laxmi Narayan Agrawal, (Hindi) (1992) Agra. Fadiya, B.L. (Hindi) : 'LokPrashasan', SahityaBhawan Publication, Agra.

Dale R. (1998) : 'Evaluation Frame Works for Development Programmes and Projects', Sage Publications Ltd.,New Delhi.

Fernando, E. S (1998) : 'Project from Problems', St. Xavier's Church, Mumbai.

Course Learning Outcomes

CO1 Understanding of social welfare administration in order to get an insight about service delivery system.

CO2 Understanding the fundamental concepts of Project and Developmental organizations.

STUDY CENTRE FOR SOCIAL WORK

AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

MSW (Under CBCS)

	Credit: 4	Max. Marks	Min. Pass
SEMESTER – IV	**Theory**	**60**	**21**
Course Code: MSW 402 Social Policy and Planning	**Cont. Evln.**	**40**	**20**

Course Objectives:

1. To orient the students regarding different dimensions of social policy and socialplanning.
2. To develop a critical understanding among the learners about the various relevant Issues in the realm of social policy, planning.
3. To develop amongst the learners an understanding of the scope and modes of social work intervention in policy formulation and the planning process at different levels.

Note: The question paper of end-semester examination of each course will consist of two sections A & B. Section A will consist of short answer type questions each carrying 6 marks and section B of long answer type questions each carrying 10 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Course Contents:

UNIT-I

Social Policy: Conceptual Frame Work: Social Policy: Concept, Objective, Types, Scope, Sources of Social Policy: Indian Constitution- Directive Principles of the State Policy, Fundamental Rights , Public Opinion, Legal Provision, Court Direction, Evaluation Reports, Five Year Plan.

UNIT - II

Approaches and Models of Social Policy: Major Social Welfare Policy: National Policy on Education (1968, 1986, 1992), National Policy on Housing (1987,2007), National Policy for Persons with Disability (2006), National Environmental Policy (2004), Policy Commission**:** Its Structure and Functions.

Unit – III

Social Planning : Conceptual Frame Work: Social Planning: Concept, Objective, Types, Scope, Demerits, Functions, Principles, Planning as an Instrument of Social Policy, Interrelationship between Social and Economic Planning.

UNIT – IV

Social Policy, Planning and Social Work: Role of Social Work Profession in Social policy and Planning**:** Formulation, Implementation, Monitoring, Evaluations, Overview of the basic structure of Indian Political: legislature, Judiciary and Executive, Governance Issue: Transparency, Efficiency, Accountability and Indicators of Good Governance, Learning Outcome**:** Understanding about the social policy and planning in the formulation, implementation, evaluation and role of social work

profession in the level of governance.

Suggested Readings

Hudson, J & Lowe, S. (2007): Understand the Policy Process,Rawat Publications,NewDelhi.

Denny David (1998): Social Policy and Social Work,Clarendon Press, Oxford.

Williams, F.(1989): Social Policy: A Critical Introduction. Polity Press, Cambridge.

Peter, L. (1997): Making Social Policy, Open University Press, Buckingham.

Drake, R.F. (2001) The Principles of Social Policy, Palgrave, New York.

Weimer. D.L. & Vining, A.R. (1994): Policy Analysis: Concepts and Practice. Prentice Hall,New Jersey.

Ahmad Shamshad and Nafees Ansari (2005): Planning commission : Fifty Five Years of Planned Development and Social Sector, Indian Journal of Public Administration, Vol LL 03, July-Sept 2005.

Chaturvedi T. N. (1984): Planning and Its Implementation, Indian Institution of Public Administration, New Delhi.

Eyden Joan (1969) :Social Policy in India, Broadway House, London.

Gokhale S.D. (1979):Integrated Social Policy in India: New Development of Policy and Planning, Rawat Publications, Delhi.

Jecob K. K (1989): Social Policy in India, ASSWI, Himanshu Publications, Udaipur.

Kabra Kamal Nayan (2004) :Development Planning In India: Exploring an Alternative Approach Indian Institute of Public Administration, New Delhi.

Govt. of India(1982):The State of India's Environment Report', Centre for Science and Environment, New Delhi.

John Rau and David Wooten(1980): Environmental Impact Analysis handbook, McGrawHill Book Company, New York.

Kuchhal, S. C.(1979) : The Industrial Economy of India, Allahabad.

Mathur, K. (1996): Development Policy and Administration,Sage Publications ,New Delhi.

Bakshi, P.M. (1999): The Constitution of India, Universal law Publishing Co. Pvt.Ltd, Delhi

Chakravarty, S. (1987): Development Planning: An Indian Experience. Clarendon Press ,Oxford.

Smith, G. (1980): Social Need: Policy, Practice and Research, Routledge,London.

Dubois, B. & Miley, K.K. (2002): Social Work: An Empowering Profession,Allyn and Bacon, London.

Course Learning Outcomes

CO1 Gain Knowledge of policy analysis and the policy formulation process.

CO2 Acquire in critical analysis of social policies and development plans.

CO3 Study social policies, plans & programmes so as to be able to interpret, enforce & challenge them.

CO4 Develop an understanding of social policy in the perspective of national goals as stated in the Constitution particularly with reference to Fundamental Rights and the Directive Principles of State Policy.

CO5 Examine application and litigation machinery

STUDY CENTRE FOR SOCIAL WORK

AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

MSW (Under CBCS)	**Credit: 4**	**Max. Marks**	**Min. Pass**
SEMESTER – IV	**Theory**	**60**	**21**
Course Code: MSW 403 Women and Empowerment	**Cont. Evln.**	**40**	**20**

Course Objectives:

1. Develop basic understanding of the concept of women welfare and empowerment.
2. Understand constitutional and legal safeguards available to women.
3. Gain an overview of the agencies where women form the major client group

Note: The question paper of end-semester examination of each course will consist of two sections A & B. Section A will consist of short answer type questions each carrying 6 marks and section B of long answer type questions each carrying 10 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Course Contents:

UNIT-I

Women Welfare & Empowerment: Women Empowerment: Concept and Dimensions, Paradigm shift from Welfare to Right based approach, Status of women in India: Retrospect& Prospect, Factors affecting status of women in India, Indicators of women's position: Demographic profile related to education, health, employment and political participation, Problems of women in Indian Context: Violence, Female Foeticide, Dowry, Unmarried Motherhood, Widowhood, Destitution, Aging, Problems of working women.

UNIT-II

Legislative Provisions: Constitutional safeguards for women in India, Special laws for protection of women: Dowry Prohibition Act, 1961; Medical Termination of Pregnancy Act, 1971; Indecent Representation of Women(Prohibition)Act,1986; The Protection of Women from Domestic Violence Act, 2005; The Pre-Conception & Pre-Natal Diagnostic Techniques(Regulation and Prevention of Misuse) Act, 1994; The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act,2013.

UNIT-III

Policies and Programmes: Women Empowerment Policy, 2001, Programmes: Beti Bachao, Beti Padhao Scheme, One Stop Centre Scheme, Women Helpline Scheme, UJJAWALA: A Comprehensive Scheme for prevention of trafficking and rescue, Rehabilitation and Re-integration of Victims of Trafficking and Commercial Sexual Exploitation, Working Women Hostel, SWADHAR GRAH, Rajiv Gandhi Scheme for Empowerment of Adolescent Girls (RGSEAG) or SABLA, NIRBHAYA, Indira Gandhi Matritva Sahyog Yojana, Support to Training and Employment

Programme for women(STEP), Gender Budgeting Scheme.

UNIT-IV

Institutional Interventions: National and State Commissions for Women, Role of Family Counselling Centres and Family Court, Civil Society Initiatives: All India Women's Conference, Kasturba Gandhi National Memorial Trust, SEWA, Mahila Samakhya, Social Work Interventions for Women Empowerment.

Suggested Readings

Seth, Mira(2002).Women & Development – The Indian Experience, Sage Publications.

Awasthi, Alka, A.K.Srivastava (2000)(ed.). Modernity, Feminism and Women Empowerment, Rawat Publications.

Sharma, Anita (1990).Modernization and Status of Working Women in India, South AsiaBooks.

Marjoria Agosin (2003).Women, Gender and Human Rights: A Global Perspective, RutgersUniversity Press, New Jersey.

Wilson, Elizabeth.(1977).Women and the Welfare State, Tavistock Publications.

Mehra Repha, K. Saradamoni(ed.)(1983). Women & Rural Transformation, ICSSR, CWDS.

Mazumdar, Vina & Bela Rani Sharma(1997). Women: Marriage, Family, Violence & Dowry, Mangal Deep Publications

Vibhuti Patel (2002). Women's Challenges of the New Millennium, Gyan Publishing House.

Arya, Sadhana & Roy, Anupama (Eds).(2007). Poverty, Gender and Migration, Sage, New Delhi.

Desai, N. And Krishanaraj, M.(1987) Women and Society in India, Ajanta Publishers, Delhi.

Dubey, Leela & Palkiwala, J. (Eds.),(1990). Structure and Strategies: Women, Work and Family, Sage Publication, New Delhi.

Govt. Of India, Report of the Committee on the Status of Women in India-"Towards Equality", Ministry of Education and Welfare, 1974. Shram Shakti Report.

Chatra, Kalbugh(1991).Women and Development, Vol I to VI, Discovery Publishing House, New Delhi.

Srivastava, Sushma(1992) Women Empowerment, Commonwealth Publishers, New Delhi.

Verma, R.B.S., H.S Verma and Nadeem Hasnain(2009). Study of Women's Problematic in India, Serials Publications, New Delhi.

Verma, R.B.S., H.S Verma and Nadeem Hasnain(2007). Towards Empowering Indian Women-Mapping Specifics of Tasks in Crucial Sectors, Motilal Banarsidass Publishers Private Ltd., New Delhi.

Kalyani, Menon Sen, A.K.Shiv Kumar(2001). Women in India- How Free? How Equal? Report Commissioned by the Office of Resident Coordinator in India, U.N.

Purushottam, S.(1998).The Empowerment of Women in India- Grass Roots Women's Networks and the State, Sage Publications, New Delhi.

Krishna, S. (Ed.)(2004). Livelihood and Gender, Sage Publication, New Delhi.

De, Utpal Kumar, Bhola Nath Ghosh(2004). Issues on Empowerment of Women, Mohit publication, New Delhi.

Ganesamurthy, V.S.(Ed.)(2008). Empowerment of Women in India-Social, Economic andPolitical, New Century Publications, New Delhi.

Unit for Family Studies(Ed.)(1991). Research on Families with Problems in India- Issues and Implications, Vol.I&II, Tata Institute of Social Sciences, Bombay.

Course Learning Outcomes

CO1 Help Student to acquired knowledge of the status of women in India Society.

CO2 Sensitize the student towards Gender Issues.

CO3 Help students to understand the need and process of women Empowerment.

CO4 Help students to understand the NGOs Intervention and the Government efforts for women development.

STUDY CENTRE FOR SOCIAL WORK

AWADHESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

MSW (Under CBCS)	**Credit: 4**	**Max. Marks**	**Min. Pass**
SEMESTER – IV	**Theory**	**60**	**21**
Course Code: MSW 404 Psychiatric Social Work	**Cont. Evln.**	**40**	**20**

Course Objectives:

1. To trace the historical development of psychiatric social work in India and a borad.
2. To learn to apply the methods of social work in psychiatric setting;
3. To acquire knowledge and skill in rehabilitation of mental patients.

Note: The question paper of end-semester examination of each course will consist of two sections A & B. Section A will consist of short answer type questions each carrying 6 marks and section B of long answer type questions each carrying 10 marks. In each section there will be five questions, one from each unit with internal choice. All questions will be compulsory.

Course Contents:

UNIT-I

History of Psychiatric Social Work: Historical Development of Psychiatric Social Work in UK & USA; Historical Development of Psychiatric Social Work in India.

Unit-II

Psychiatric Social Work- Meaning and Definition; objectives; Scope; Limitations; Process study, Analysis Diagnosis and Treatment Process in Psychiatric Social Work;Social Case Work; Group Work and Family Therapy in Psychiatric Setting.

Unit-III

The Psychiatric Patient and Social Work: Concept of Psychiatric Patient, their family and community; Property rights of Certified Mental Patients; Rehabilitation and Support Programme for Mental Patients: Role of Psychiatric Social Work in Execution of the in Community Mental Health Programmes.

Unit-IV

Role of Psychiatric Social Worker: Psychiatric Social Work as a Field of Social Work in India; Role of Psychiatric Social Workers in Different Settings i.e., Psychiatric OPDs; Government and Gen. Hospitals; Child Guidance Clinics; Epilepsy Clinics and Geriatric Clinics, etc.

Suggested Readings

Callucutt, J.W. (1983): Social Work and Mental Health, New York: The free press Lecca, P.J. (eds).

Ahuja, Niraj & Jyapee : A short textbook of Psychiatry, Medical Publishers Brothers (2002) (p) Ltd, New Delhi.

Mane Purnima & : Mental Health in India Issues and Concerns ,Y.Gandevia Katy (1993) Tata Institute

of Social Sciences, Bombay.

Feld, Harry Gottes (1979): Abnormal Psychology- Community Mental Health Perspective, Library of Congress, London.

Weinburg, S. Kirson (1952) : Society and Personality Disorders, prentice Hall Inc.

Course Learning Outcomes

CO1 Able to understand the symptoms and causes of abnormal behaviour..

CO2 Able to understand factors the affecting and improve mental health.