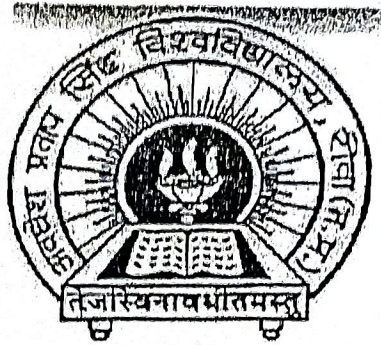


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Awadhesh Pratap Singh University
Rewa (M.P.)

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	

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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.

Dr. Ashish

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 chosen 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.

Dr. J. S. Singh

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.

Dr. ...

-tap Sims
(D.)

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.

Alpaka