DEPARTMENT OF ENVIRONMENTAL SCIENCES

Dr. Ram Manohar Lohia Avadh University, Faizabad-224001

COURSE: Environmental Sciences (Under Graduate)

B.Sc. I

Paper		Marks
I	Fundamentals of Ecology	45
II	Population and Community Ecology	45
III	Fundamentals of Environmental Chemistry	45
Practical		65
	Total Marks =	**200**

B.Sc. II

IV	Environmental Pollution	45
V	Instrumentation, Computer application and Ecological statistics	45
VI	Environmental Economics and Legislation	45
Practical		65
	Total Marks =	**200**

B.Sc.III

VII	Environmental Problems, Public Health and Remote Sensing	50
VIII	Environmental Microbiology and Biotechnology	50
IX	Natural Resource Conservation and Management	50
X	Environmental Monitoring and Toxicology	50
Practical		100
	Total Marks =	**300**
	GRAND TOTAL	**= 700**

Note:

1. The practical will be based on the courses as prescribed for the three years.
2. The quastion paper shall be set as per the present norms of the University examination system.
3. This syllabus will be effective from session **2002-2003** .

B.Sc. I

PAPER I - FUNDAMENTALS OF ECOLOGY

Introduction of Ecology (Definition, History Branches & Scope of Ecology).

Basic principals of environment & ecology. Environmental Factors (abiotic & biotic)- their importance & role. Concept of Biosphere. Ecosystem- Definition, Functions, Structural components & Types (aquatic, marine, terrestrial). Concept of Productivity. Energy Flow. Food chains & Food web. Ecological Pyramids- Types & diversity. Ecotone. Ecotypes. Ecological Indicators. Edge effect. Biogeography- phytogeography & zoogeography. Biogeochemical cycles

PAPER II - POPULATION AND COMMUNITY ECOLOGY

Population Ecology- Definition, Characters viz- Spacing, Density, Growth curves, Law of Population Growth i.e., Logistic theory of Population Growth,Natality, Mortality, Life Tables, Age Structure. Population Genetics- Basic Concepts (Genetic Variations, Inbreeding & Genetic Drift). Interactions - Interspecific & Intraspecific.

Concept of Biotic Community - Definition, Structure & Composition. Characteristics of Community- Diversity, Dominance, Stratification, Fluctuation.

Concept of Limiting Factors. Habitat & Niche. Evolution, Natural selection, Speciation. Ecological Succession- Definition, Causes, Types & Process .

PAPER III - FUNDAMENTALS OF ENVIRONMENTAL CHEMISTRY

Introduction of Environmental Chemistry.

Stochiometry, Gibbs' Energy, Chemical Potential, Chemical Equilibria, Acid- Base Reactions, Solubility Product, Solubility of Gases in Water, The Carbonate System, Unsaturated & Saturated Hydrocarbons, Radionucliedes. Thermodynamics.

Chemical Composition of Air - Classification of Elements, Chemical Speciation, Particles, ions & radicals in the atmosphere. Structure & Composition of atmosphere. Chemical Processes for formation of inorganic & organic particulate matter. Thermochemical & Photochemical reactions in the atmosphere. Chemistry of Pollutants in Air . Stability of Atmosphere.

Water Chemistry- Structure & properties of water & its Environmental significance. Concept of DO, BOD, COD, Sedimentation, Coagulation, Filtration & Redox Potential.

Soil Chemistry - Soil Genesis (Formation & Soil profile development). Classification of soil, Chemical & mineralogical composition of soil, Organic & Inorganic matter of soil, their sources & composition. Soil acidity & alkalinity. Major soil nutrients & elements. Nitrogen Pathways.