

Core Module Syllabus for Environmental Studies for Undergraduate Courses of all branches of Higher Education

Unit 1: The Multidisciplinary nature of environmental studies

- Definition, scope and importance
- Need for public awareness

(2 lectures)

Unit 2: Natural Resources

- Renewable and non-renewable resources
- Natural resources and associated problems
 - a) Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.
 - b) Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.
 - c) Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
 - d) Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.
 - e) Energy resources: Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources, case studies.
 - f) Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification
- Role of an individual in conservation of natural resources
- Equitable use of resources for sustainable lifestyles

(8 lectures)

Unit 3: Ecosystems

- Concept of an ecosystem
- Structure and function of an ecosystem
- Producers, consumers and decomposers
- Energy flow in the ecosystem
- Ecological succession
- Food chains, food webs and ecological pyramids
- Introduction, types, characteristic features, structure and function of the following ecosystems:
 - a. Forest ecosystems
 - b. Grassland ecosystems
 - c. Desert ecosystems

Unit 4: Biodiv

Unit 5: Envir

Unit 6: Socia

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- d. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries) (6 lectures)

Unit 4: Biodiversity and its conservation

- Introduction: Definition: genetic, species and ecosystem diversity
- Biogeographical classification of India
- Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values
- Biodiversity at global, national and local levels
- India as a mega-diversity nation
- Hotspots of biodiversity
- Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts
- Endangered and endemic species of India
- Conservation of biodiversity: *In-situ* and *Ex-situ* conservation of biodiversity (8 lectures)

Unit 5: Environmental Pollution

- Definition
- Causes, effects and control measures of:
 - a. Air pollution
 - b. Water pollution
 - c. Soil pollution
 - d. Marine pollution
 - e. Noise pollution
 - f. Thermal pollution
 - g. Nuclear hazards
- Solid waste Management: Causes, effects and control measures of urban and industrial wastes
- Role of an individual in prevention of pollution
- Pollution case studies
- Disaster management: floods, earthquakes, cyclones and landslides (8 lectures)

Unit 6: Social Issues and the Environment

- From unsustainable to sustainable development
- Urban problems related to energy
- Water conservation, rain water harvesting, watershed management
- Resettlement and rehabilitation of people; its problems and concerns. Case studies.
- Environmental ethics: Issues and possible solutions
- Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case studies.

X ENVIRONMENTAL STUDIES FOR UNDERGRADUATE COURSES

- Wasteland reclamation
- Consumerism and waste products
- Environment Protection Act
- Air (Prevention and Control of Pollution) Act
- Water (Prevention and Control of Pollution) Act
- Wildlife Protection Act
- Forest Conservation Act
- Issues involved in enforcement of environmental legislation
- Public awareness

(7 lectures)

Unit 7: Human Population and the Environment

- Population growth, variation among nations
- Population explosion – Family Welfare Programme
- Environment and human health
- Human Rights
- Value Education
- HIV / AIDS
- Women and Child Welfare
- Role of Information Technology in Environment and human health
- Case Studies

(6 lectures)

Unit 8: Field Work

- Visit to a local area to document environmental assets—river / forest / grassland / hill / mountain
- Visit to a local polluted site—Urban / Rural / Industrial / Agricultural
- Study of common plants, insects, birds
- Study of simple ecosystems—pond, river, hill slopes, etc.

(Fieldwork Equal to 5 lecture hours)

Teaching Methodologies

The Core Module Syllabus for Environmental Studies includes classroom teaching and fieldwork. The syllabus is divided into 8 units, covering 50 lectures. The first 7 units, which cover 45 lectures, are classroom-teaching based and intended to enhance knowledge skills and attitude to environment. Unit 8 is based on field activities, to be covered over five lecture hours, and would provide students with first-hand knowledge on various local environmental aspects. Field experience is one of the most effective learning tools for environmental concerns. This moves education out of the scope of the

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textbook mode of teaching and into the realm of hands-on learning in the field, where the teacher acts as a catalyst to interpret what the student observes or discovers in his/her own environment. Field studies are as essential as class work and form a unique synergistic tool in the entire learning process.

The course material provided by UGC for classroom teaching and field activities should be effectively utilized.

The Universities/colleges can draw upon the expertise of outside resource persons for teaching purposes.

The Environmental Core Module will be integrated into the teaching programs of all undergraduate courses.

Annual System: The duration of the course will be 50 lectures. The exam will be conducted along with the Annual Examination.

Semester System: The Environment Course of 50 lectures will be conducted in the second semester and the examinations shall be conducted at the end of the second semester.

Credit System: The core course will be awarded 4 credits.

Exam Pattern: In case of awarding marks, the question paper should carry 100 marks. The structure of the question paper being:

Part A: Short-answer pattern—25 marks

Part B: Essay-type built-in choice—50 marks

Part C: Field work—25 marks

(7 lectures)

(6 lectures)

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(lecture hours)

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