OBJECTIVE OF THIS COURSE

The objectives of environmental studies are to develop a world in which persons are aware of and concerned about environment and the problems associated with it, and committed to work individually as well as collectively towards solutions of current problems and prevention of future problems.

OUTCOMES

By the end of the course my modest expectation is that students demonstrate an understanding of current environmental challenges, will gain a rigorous foundation in various scientific disciplines as they apply to environmental science, such as ecology, evolutionary biology, hydrology, and human behavior. They will have an understanding of primary environmental problems (e.g., invasive species, climate change, small populations, water pollution) and the science behind those problems and potential solutions.

TOPICS COVERED:

1. INTRODUCTION

- Definition, scope and importance
- Need for public awareness.
- The Multidisciplinary Nature of Environmental Studies

2. COMPONENTS OF ENVIRONMENT

- Atmosphere the sphere of air.
- Hydrosphere the sphere of water.
- Lithosphere the sphere of soil, rock, etc.
- Biosphere the sphere of living organisms.
- Biotic and Abiotic

3. NATURAL RESOURCES

- Classification of Resources
- Forest resources: Use and overexploitation, deforestation, Timber extraction, mining, dams and their effects on forests and tribal people.
- Water resources: Use and overutilization of surface and ground water, floods, drought, conflicts over water, dams, benefits and problems.
- Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources,
Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizers, pesticide problems, water logging, salinity.

Energy resources: Growing energy needs, renewable and nonrenewable energy sources, use of alternate energy sources.

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.

4. ECOLOGY AND 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.
- Types, characteristic features, structure and function of the following ecosystem:
  - Forest ecosystem
  - Grassland ecosystem
  - Desert ecosystem
  - Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

5. BIODIVERSITY AND ITS CONSERVATION

- Introduction, definition: genetic, species and ecosystem diversity.
- Bio-geographical 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: insitu and exsitu conservation of biodiversity. (8 lectures)

6. ENVIRONMENTAL POLLUTION

- Definition
- Air pollution
- Water pollution
- Soil pollution
- Marine pollution
- Noise pollution
- Thermal pollution
- Nuclear hazards
Solid waste management: Causes, effects and control measures of urban and industrial wastes.
Role of an individual in prevention of pollution.

7. LIVELIHOODS, ENVIRONMENT AND QUALITY OF LIFE

- Understanding Livelihoods
- Understanding Quality of Life

8. SPIRITUALITY AND ENVIRONMENT

- Sacred Grooves

9. SOCIAL ISSUES AND THE ENVIRONMENT

- From unsustainable to sustainable development.
- Water conservation, rain water harvesting, watershed management.
- Environmental ethics: Issues and possible solutions.
- 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.

10. DEMOGRAPHIC ISSUES AND THE ENVIRONMENT

- Human Population and the Environment
- Population growth, variation among nations.
- Population explosion
- Environment and human health.

11. GREENHOUSE EFFECT GLOBAL WARMING AND CLIMATE CHANGE

- Climate change, global warming, acid rain, ozone layer depletion

PEDAGOGY

A mix of pedagogical tools and techniques would be used. The mix will include interactive classroom lectures, cases, exercises, documentaries, and discussions with special emphasis on class participation, and readings assignments.
EVALUATION

The course evaluation is based on multiple components. The components and their corresponding weights are given below:

<table>
<thead>
<tr>
<th>Components</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Reading Assignment</td>
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<tr>
<td>Quizzes</td>
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<tr>
<td>Mid Semester and End Examination</td>
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