

**Course Title: Environmental Science**

**Course Code: 104**

**Unit I: The Multidisciplinary Nature of Environmental Studies.**

**3 Hrs**

Definition, scope and importance, Need for public awareness

**Unit II: Natural Resources**

**10 Hrs**

**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.

**Unit III: Ecosystems**

**10 Hrs**

- Concept of an ecosystem.
- Structure and function of an eco-system
- Producers, consumers and de-composers
- Energy flow in the ecosystem
- Ecological succession
- Food chains, food webs, and ecological pyramids
- Introduction, types, characteristic features, structure and function of the following ecosystem:-
  - Forest ecosystem

- Grassland ecosystem
- Desert ecosystem
- Aquatic ecosystem (Ponds, streams, lakes, rivers, oceans, estuaries)

#### **Unit IV: Bio-diversity and its conservation**

**10 Hrs**

- Introduction – Genetic, species and eco-system diversity
- Biographical classification of India
- Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values.
- Bio-diversity at global, national and local levels
- India as a mega-diversity nation
- Hot-spots of bio-diversity
- Threats to bio-diversity: Habitat loss, poaching of wildlife, man-wildlife conflicts.
- Endangered and endemic species of India
- Conservation of bio-diversity: In situ and Ex-situ conservation of bio-diversity.

#### ***Unit V: Environmental Pollution***

***10 Hrs***

Definition

- Causes, effects and control measures of: -
  - 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 preventive of pollution.
  - Pollution case studies
  - Disaster management: Floods, earthquake, cyclone and landslides.

#### **Unit VI: Social Issues and the Environment**

**10 Hrs**

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

## **Unit VII: Human Population and the Environment**

**10 Hrs**

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

### **Recommended Books:**

1. A Text Book of Environmental Science – APH Publishing Corporation – Arvind Kumar.
2. Environmental Hazards in South Asia – Capital Publishing Co. – V Subramaniam.