

Subject Code: 102

Subject Name: Environmental Science

Unit I: The Multidisciplinary Nature of Environmental Studies.

2 Hrs

Definition, scope and importance

Need for public awareness

Unit II: Natural Resources

8Hrs

Renewable and non-renewable resources

Natural Resources and associated problems

Forest Resources: Use and over-exploitation, deforestation, case studies, Timber extraction, mining, dams and their effects on forests and tribal people.

Water resources: Use and over utilization 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, case studies.

Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.

Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources, case studies.

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

8 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

8 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

8 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

8 Hrs

Population growth, variation among Nations
Population explosion – Family Welfare program
Environment and human health
Human Rights

Value Education
HIV/AIDS
Women & Child Welfare
Role of Information Technology in Environment and Human health
Case Studies

Unit VIII Field Work

8 Hrs

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 eco-systems – ponds, river, hill slopes, etc.

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