

ENVIRONMENTAL STUDIES

(Common to all Branches)

Course Code : 15BC1104

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Course Outcomes:

On successful completion of the course, the student should be able to

- CO 1** Identify the various resources available and explain their conservation techniques.
- CO 2** Classify, describe and explain the concepts of ecosystem, biodiversity and their conservation.
- CO 3** Categorize and explain different types of pollution and their control methods.
- CO 4** Identify the different social issues caused due to today's development and also describe the relevant Acts.
- CO 5** Assess the effects of population and its growth on environment and human health.

UNIT-I

(10 Lectures)

MULTIDISCIPLINARY NATURE OF ENVIRONMENTAL STUDIES & NATURAL RESOURCES

Definition, Scope and Importance – Need for Public Awareness. Renewable and non-renewable resources– Natural resources and associated problems – Forest resources – Use and over – exploitation, deforestation, case studies – Timber extraction – Mining, dams and other effects on forest 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-II

(10 Lectures)

ECOSYSTEMS, BIODIVERSITY AND ITS CONSERVATION:

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 ecosystem: a. Forest ecosystem b. Grassland ecosystem c. Desert ecosystem d. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries).

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 - Hot-spots 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 Exsitu conservation of biodiversity.

UNIT-III

(10 Lectures)

ENVIRONMENTAL POLLUTION:

Definition, Cause, 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, earthquake, cyclone and landslides.

UNIT-IV

(10 Lectures)

SOCIAL ISSUES AND THE ENVIRONMENT:

From Unsustainable to Sustainable development -Urban problems related to energy -Water conservation, rain water harvesting, and 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 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.

UNIT-V

(10 Lectures)

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.

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.

TEXT BOOKS:

1. Bharucha. E., “*Textbook of Environmental Studies for Undergraduate Courses*”, University Press, 2005.

2. Rajagopalan. R., “*Environmental Studies*”, Oxford University Press, 2005.

REFERENCE:

1. AnjiReddy. M., “*Textbook of Environmental Sciences and Technology*”, BSPublications, 2010.