ENVIRONMENTAL SCIENCE

(Common to all branches)

Course Code: 22BC11Z1

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Course Outcomes: At the end of the Course the student shall be able to

CO1: explain the importance of various natural resources (L2)

CO2: discuss the interconnectedness of human dependence on the various ecosystems (L2)

CO3: apply the knowledge to prevent the major global environmental problems. (L3)

CO4: explain the water management and environmental acts (L2)

CO5: discuss the effect of population growth on the environment (L2)

UNIT– I **(6 Lectures)**

NATURAL RESOURCES: Renewable and non-renewable resources – Natural resources and associated problems – Forest resources: Use and over exploitation, deforestation Mining: dams and other effects on forest and tribal people – Water resources: Use and over utilization of surface and groundwater – dams – benefits and problems; Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources.

Learning outcomes

At the end of the module the student will be able to

1. summarize the various natural resources (L2)
2. explain the problems of deforestation (L2)
3. explain why renewable and non-renewable energy resources are important.(L2)

UNIT – II **(7 Lectures)**

ECOSYSTEMS, BIODIVERSITY AND ITS CONSERVATION

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

BIODIVERSITY AND ITS CONSERVATION: Definition: genetic, species and ecosystem diversity – 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-sports of biodiversity – Threats to biodiversity, Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

Learning outcomes

At the end of the module the student will be able to

1. explain a clear picture of the structure and functions of ecosystems.(L2)
2. discuss theories in the field of Biodiversity and systematics in the broad sense.(L2)
3. identify the threats to biodiversity (L2)

UNIT – III: **(5 Lectures)**

ENVIRONMENTAL POLLUTION AND SOLID WASTE MANAGEMENT:

Environmental pollution: Definition, Cause, effects and control measures of: a. Air Pollution.

b. Water pollution

c. Noise pollution

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.

Learning outcomes

At the end of the module the student will be able to

1. illustrate Cause, effects and control measures of air pollution.(L3)
2. describe noise & water pollution.(L2)
3. discuss solid waste management.(L2)

UNIT – IV: (6 Lectures)

Lectures SOCIAL ISSUES AND THE ENVIRONMENT: Urban problems related to energy – Water conservation, rain water harvesting, watershed management , Environmental ethics: Issues and possible solutions – Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust, Environment Protection Act: Air (Prevention and Control of Pollution) Act. – Water (Prevention and control of Pollution) Act.

Learning outcomes At the end of the module the student will be able to 1. explain the reasons for global warming (L2) 2. explain principles and the impact of disasters on the environment.(L2) 3. discuss the environmental protection acts (L2)

UNIT – V: (6 Lectures)

HUMAN POPULATION AND THE ENVIRONMENT: Population growth, variation among nations. Population explosion – Family Welfare Programmed. – Environment and human health – Human Rights – Value Education – HIV/AIDS – Women and Child Welfare – Role of information Technology in Environment and human health

Learning outcomes

At the end of the module the student will be able to

1. explain the impact of the earth's population on environment (L2)
2. explain the role of information technology in environment and human health (L2)
3. explain importance of Women and Child Welfare programs (L2)

Text Books:

1. Anubha Kaushik, Kaushik C.P, *Environmental Studies*, 3rd edition, New age international publishers, 2011.

Reference Books:

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

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