EC/CS/IT-104 **ENVIRONMENTAL STUDIES** **L T P C**
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COURSE OBJECTIVES:

1. To give a comprehensive insight into natural resources, ecosystems and bio diversity.
2. To create an awareness on various aspects of environmental pollution and effects.
3. To educate the ways and means to protect the environment from pollution.
4. To impart fundamental knowledge on human welfare and environmental acts.
5. To demonstrate the environmental problems like global warming, ozone layer depletion, acid rains.

COURSE OUTCOMES:

After successful completion of the course, the students are able to

1. explain the basic issues concerning the ability of the human community to interact in a sustainable way with the environment.
2. discuss the environmental implications of biologically important materials through the ecosystems.
3. discuss the environmental pollution implications and watershed management.
4. discuss the benefits of sustaining each of the following resources - food, health, habitats, energy, water, air, soil and minerals.
5. understand the causes, effects and controlling measures of different types of environmental pollutions with some case studies.

UNIT I **(12)**

Introduction: Definition, Multidisciplinary nature, Scope and Importance of environmental studiesNatural Resources: Forest Resources: Use and over-exploitation, Deforestation, Effects of Mining and Big dams on forests and tribal people.

Water Resources: Use and over-utilization of surface and groundwater, floods and droughts, Water logging and salinity; Conflicts over water. **Energy resources:** Renewable and non-renewable Energy sources; Land as a resource, land degradation, Soil erosion & Desertification.

UNIT II **(12)**

Ecosystems: Definition, Structure and functions of Ecosystems, a general account of types of ecosystems with examples. Bio-geo chemical cycles (water, carbon, and nitrogen).

Biodiversity and its Conservation: Definition of Biodiversity, Values and threats to biodiversity and conservation of biodiversity. Bio-geographical classification of India, India as a mega-diversity nation, Hot-spots of biodiversity, IUCN classification of Biodiversity; Endemic, Exotic and Endangered species - Meaning with a few examples from India.

UNIT III **(12)**

Environmental Pollution: Causes, effects and control measures of Air pollution including Noise, Fresh Water pollution, Marine pollution, Thermal pollution, and nuclear pollution. Solid wastes - Types based on source (Ex. municipal, industrial, constructional and medical) and nature (degradable and non-degradable); Effects of improper dumping. Solid waste management - Objectives, practices.

Water shed and its management: Definition and importance; Water shed management methods including rain water harvestment.

UNIT IV **(12)**

Social Issues and Environment: Definition of sustainable development, key types and measures for sustainable development; salient features of Stockholm conference 1972, Earth summit, 1992; Human Population and environment, Green revolution, Resettlement and rehabilitation of people - problems and concerns.

Climate Changes: Green House Gases, Kyoto Protocol, Global warming (The story of Tuvalu); Ozone depletion and Acid rain; Environmental Impact Assessment.

UNIT V **(12)**

Environmental acts: Environmental Legislation; Wild life protection act, 1972; Water(Prevention and Control of pollution) act, 1974; Forest Conservation act, 1980; Air (Prevention and Control of pollution) act, 1981; Environmental protection act, 1986.

Case Studies: Chipko movement, Narmada Bachao Andolan, Silent Valley Project, Chernobyl Nuclear Disaster, Bhopal Tragedy, Ralegaon Siddhi, The story of Ganga.

Field work:

Visit to a local area to document environmental assets - river / forest / grassland / hill / mountain.

Study of local environment-common plants, insects, birds.

Study of simple ecosystems - pond,river, hill, slopes etc.

Visits to industries, water treatment plants, and effluent treatment plants.

LEARNING RESOURCES:

TEXT BOOK(s):

1. Anubha Kaushik and C.P.Kaushik - Environmental Studies, 3rd Edition, New Age International Publishers, New Delhi., 2012.
2. R. Rajagopalan - Environmental studies from crisis to cure, 3rd Edition, Oxford University press, 2012.

REFERENCE BOOK(s):

1. T Benny Joseph - Environmental Studies, Tata McGraw-Hill Publishing Company Limited, 2006.
2. G. Tyler Miller Jr. - Environmental Science, 3rd edition, CENGAGE Learning, New Delhi, 2011.

WEB RESOURCES:

1. http://nptel.ac.in/120108004
2. http://nptel.ac.in/122102006