**17MC2201 - ENVIRONMENTAL STUDIES**

**(Civil Engineering)**

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| **Course Category** | Mandatory Course | **Credits** | - |
| **Course Type** | Theory | **Lecture - Tutorial - Practical** | 3-0-0 |
| **Prerequisite** | None | **Sessional Evaluation** | 40 |
| **Semester End Exam. Evaluation** | 60 |
| **Total Marks** | 100 |

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| **Course**  **Objective** | 1. To understand multidisciplinary nature of environmental studies. 2. To understand the various multidimensional aspects of an ecosystem. 3. To acquire the knowledge on various natural resources and their associated problems. 4. To understand the various aspects of biodiversity and its conservation. 5. To apply the concept of environmental studies for analysis of environmental pollution. 6. To analyze environmental problems in India. | |
| **Course Outcomes** | CO1 | Explain the importance of environmental studies and its various components. |
| CO2 | Demonstrate the elements of ecosystem. |
| CO3 | Identify various natural resources and associated problems. |
| CO4 | Express the importance of biodiversity and conservations of ecosystem. |
| CO5 | Explain various types of environmental pollution. |
| CO6 | Understand environmental problems regulating acts existing in India. |
| **Course Content** | **UNIT- I**  **INTRODUCTION**: Definition – Scope and Importance of environmental studies – Various components of environment – Atmosphere, biosphere, hydrosphere and lithosphere – Multidisciplinary nature of environmental studies and public awareness.  **UNIT- II**  **ECOSYSTEMS**: Concept – Structure and function– Producers composers and decomposers–Energy flow– Ecological succession– Food chains, webs and ecological pyramids – Characteristics structures and functions of ecosystems such as forest, grass land, desert – Aquatic ecosystems.  **UNIT- III**  **NATURAL RESOURCES AND ASSOCIATED PROBLEMS:**  **LAND RESOURCES**: Land as a resource, land degradation, man induces landslides, soil erosion, and desertification.  **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 groundwater, conflicts over water sharing and watershed management.  **MINERAL RESOURCES**: Use and exploitation, environmental effects of extracting and using mineral resources.  **FOOD RESOURCES**: World food problems, changes caused by agriculture and over grazing, effects of modern agriculture, fertilizers- pesticides problems, water logging, salinity,  **ENERGY RESOURCES**: Growing energy needs renewable and non-renewable energy sources use of alternate energy sources.  **UNIT- IV**  **BIODIVERSITY AND CONSERVATION**: Definition, genetic, species, and ecosystem diversity, value of biodiversity at global, national, local levels, hot spots of biodiversity, threats to biodiversity, endangered and endemic species of India, in-situ and ex-situ conservation of biodiversity.  **CASE STUDIES**: Silent valley project, Mathura refinery and Tajmahal, Tehri dam, Kolleru Lake aquaculture, Fluorosis in Andhra Pradesh.  **UNIT- V**  **ENVIRONMENTAL POLLUTION**: Definition, causes, effects and control of air pollution, water pollution, soil pollution, marine pollution, noise pollution, thermal pollution, nuclear hazards, ozone layer depletion, global warming and Acid Rains – Solid waste management methods: Composting, vermi composting, Landfill – Disaster management, floods, earthquake, cyclone and landslides.  **UNIT- VI**  **ENVIRONMENTAL PROBLEMS IN INDIA:** Effect of urbanization, industrialization and transportation on quality environment and public health – Drinking water, sanitation for good health – Green revolution – Social, economic and environmental interaction for sustainable development.  **ENVIRONMENTAL ACTS:** Water act, air act, environment protection act, wildlife protection act, forest conservation act – Coastal regulation zones (CRZ), special economic zones (SEZ).  **FIELD WORK**: Visit to a local area having river / forest / grassland / hill/ mountain to document and environmental assets–Study of local environment- common plants, insects, birds – Study of simple ecosystems - Pond, hill slopes, etc – Visits to industries, water treatment plants, effluent treatment plants. | |
| **Textbooks**  **and Reference books** | **TEXTBOOKS:**   1. Bharucha Erach, Biodiversity of India, Map in Publishing Pvt. Ltd., Ahmadabad, 2002. 2. Environmental Science by Anubha Kaushik and C.P.Kaushik.   **REFERENCE BOOKS:**  1. Introduction to Environmental Science by Y.Anjaneyulu.  2. Environmental Studies by Dr.B.S.Chauhan.  3. Environmental Science by M.ChandraSekhar. | |