



## Anil Neerukonda Institute of Technology & Sciences (Autonomous)

(Permanent Affiliation by Andhra University & Approved by AICTE)  
Accredited by NBA (ECE, EEE, CSE, IT, Mech. Civil & Chemical) & NAAC)  
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### ENVIRONMENTAL SCIENCE

With effect from 2023-24

Mandatory (Non Credit) course for all branches

Course Code - Category: 23MC0102

Credits:0

Lecture hours : 3 per week

Sessional Marks:50

Prerequisites : +1 & +2

#### COURSE OBJECTIVES:

- Inculcating in students the awareness toward components in environment
- Understand the importance natural resources, Structure, and functions of an ecosystem
- Inducing knowledge on Sources, effects, and methods to reduce environmental pollution
- Able to know the meaning of sustainable development and correlate social issues related to environment.

#### Course Outcomes:

By the end of the semester, the student will be able to:

CO.No.	Statement
CO-1	Identify the characteristics of various natural resources and can implement the conservation practices
CO-2	Realize the importance of Ecosystem and Biodiversity for maintaining ecological balance
CO-3	Classify, analyze various pollutants and can develop methods for solving problems related to environment
CO-4	Implement the environmental laws or defend issues by getting awareness on legal aspects related to environmental issues
CO-5	Promote awareness on local environmental issues by participating in group activities, seminars, taking project work

#### UNIT I

#### INTRODUCTION TO ENVIRONMENT AND NATURAL RESOURCES 8 Periods

**Introduction:** Definition, Multidisciplinary nature of environmental studies, Scope and Importance of Environmental Sciences, Need for public awareness.

**Natural Resources:** Renewable and Non-Renewable resources- Forest resources-use and overexploitation, deforestation, Water resources- aquifers, dams and benefits, conflicts over water; Food resources- effects of modern agriculture practices, Energy resources-conventional and non-conventional energy resources.

#### Activities:

Need for Public Awareness (Campaign), Renewable vs. Non-Renewable Resources(Group Discussion), Deforestation and its Impact, Water Conflict(Case studies).

## **UNIT- II**

### **ECOSYSTEM & BIO DIVERSITY**

**8 Periods**

**Ecosystem:** Concept of an ecosystem-structure and function of an ecosystem Food chains, food webs and ecological pyramids, Energy flow in an ecosystem, Ecosystem regulation, Ecological succession.

**Biodiversity:** Definition, types, India as a Mega diversity Nation, Values of biodiversity, Hot spots of biodiversity, Threats to biodiversity, Endangered and endemic species, Conservation of biodiversity.

#### **Activities:**

Ecosystem (Field trip), Food chain and Food Web (Models), Endangered Species (Case Studies), Ecosystem regulation, Values of Biodiversity (Group Discussion), Endangered Species Awareness (Poster presentation).

## **UNIT -III**

### **ENVIRONMENTAL POLLUTION AND WASTE MANAGEMENT**

**8 Periods**

**Pollution:** Sources, effects and control measures of Air pollution, Noise Pollution, Water Pollution, Soil Pollution, Radio Active Pollution; Climate Change, Ozone depletion, Acid rains – causes and adverse effects.

**Solid waste management:** Sources and effects of municipal waste, bio-medical waste, Industrial waste, e- waste, Process of waste management-composting, sanitary landfills, incineration. Green Chemistry concepts,

#### **Activities:**

Pollution (Slogan writing), Pollution Control Measures (Group Discussion), Climate Change (Case Studies), Waste-to-Art (Poster presentation).

## **UNIT- IV**

### **SOCIAL ISSUES AND ENVIRONMENTAL LEGISLATIONS**

**8 Periods**

**Social Issues and the Environment:** Sustainable development, Environmental Impact Assessment, Rain water harvesting, water shed management. Resettlement and rehabilitation of people, Environmental ethics.

**Legislative Acts:** Importance of Environmental legislation, Air (Prevention and Control of Pollution) act, Water (Prevention and control of Pollution) act, Wildlife Protection act, Forest Conservation act.

#### **Activities:**

Sustainable Development, Environmental Ethics (Group Discussion), Environmental Impact Assessment (EIA), Resettlement and Rehabilitation (Case Studies), Rainwater Harvesting(Model), Environmental Legislation (Awareness Campaign).

## **UNIT- V**

### **HUMAN POPULATION AND THE ENVIRONMENT**

**5 Periods**

Human population and environment- Population growth, Population explosion; Family Welfare Programmes; Role of information technology on environment and human health; Value Education – HIV/AIDS – Women and Child Welfare

**FIELD WORK/PROJECT:** Visit to a local area to document environmental problem and submit a Record

#### **Activities:**

Population Growth, Role of Information Technology and Environment, Women Empowerment, Family Welfare Program (Awareness Campaign), Women and Child Welfare (Case Study), Population and Environment (Short film).

1. **Anubha Kaushik & C.P.Kaushik**, “*Perspectives of Environmental Studies*” by 5<sup>th</sup> edition New Age International Publications, 2015.
2. **Erach Bharucha** *Text book of “Environmental Studies for Undergraduate Courses”*, universities Press Commission, 2013.
3. **Palaniswamy**- “*Environmental Studies*”, 2<sup>nd</sup> edition, Pearson education 2015.

#### **Reference Books**

1. **S. Deswal, A. Deswal**, “*Basic course in Environmental studies*”, 2<sup>nd</sup> edition, Dhanpatrai Publications, 2008.