ENVIRONMENTAL SCIENCE

Mandatory (Non Credit) course for all branches

Course Code - Category: **Credits:0**

L	T	P	E	O
3	0	0	0	1

Sessional Marks:50

COURSE OBJECTIVES:

- To Make the students get awareness on environment
- To understand the importance of protecting natural resources, ecosystems for future generations
- To know about the causes of pollution due to the day to day activities of human life
- To get an idea about the measures for sustainable development

Course Outcomes:

CO No.	By the end of the semester, the student will be able to:	Marks Allotted				
		Mid-1	Assign-	Assign-	Activity/Seminar/Project	Total Marks
CO-1	Identify the characteristics of various natural resources and can implement the conservation practices	20	10			30
CO-2	Realize the importance of Ecosystem and Biodiversity for maintaining ecological balance	20	10			30
		Marks Allotted				
		Mid-2	Assign-	Assign-	Activity/Seminar/Project	Total Marks
CO-3	Classify, analyze various pollutants and can develop methods for solving problems related to environment	20		10		30
CO-4	Implement the environmental laws or defend issues by getting awareness on legal aspects related to environmental issues	20		10		30
CO-5	Promote awareness on local environmental issues by participating in group activities, seminars, taking project work				40 (10+10+20)	40

CO-PO-PSO Mapping **(Low-1, Medium-2, High-3)**

PO/CO's	1	2	3	4	5	6	7	8	9	10	11	12	PSO1	PSO2
CO1						1	2	1		1		1		
CO2						1	2	1		1		1		
CO3						2	2	1		1		1		
CO4						2	3	1		1		1		
CO5						2	2	1	3	2		1		

SYLLABUS

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.

LEARNING OUTCOMES

- Students will be able to know the scope and importance of environment.
- Students will be able to explain natural resources and their associated problems.
- Students will be able to articulate basic understanding of effects of modern agriculture practices on environment.
- Students will be able to recognise the importance of alternative sources of energy.

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.

LEARNING OUTCOMES

- Students will get a clear picture on structure and functions of ecosystems.
- Students will be able to explain the energy and matter flow in ecosytems.
- Students will be able to identify the threats to biodiversity and conservation methods to protect biodiversity.
- Students will be able to understand the importance of endemic species.

UNIT -III

ENVIRONMETAL 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,

LEARNING OUTCOMES

- Students will be able to understand sources, effects and control measures of various types of pollutions.
- Students will be able to understand about solid waste management.
- Students will explain the ill effects of climatic change.

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.

Legislational 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

LEARNING OUTCOMES

- Students will be able to know the mesures to achieve sustainable development.
- Students will have knowledge about watershed management and environmental ethics
- Students will be able to explain the enforcement of Environmental legislations.

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;

LEARNING OUTCOMES

- Students will know the impacts of population on human health and environment.
- Students will understand the role of IT on Environment.
- Students will be able to prepare a detailed report on a particular environmental issue.

AWARENESS AND OTHER ACTIVITIES

1. Planting trees
2. Listing out water bodies and discuss the problems associated with it

3. Poster making of ecological pyramids and food chain and food web of different ecosystems like forest, grassland and aquatic system
4. Prepare list of endangered endemic and extinct species
5. Preparation of models
6. Cleanliness drive (Swatch Bharath)
7. Group discussion about waste management
8. Slogan making

Prescribed Book

1. **Anubha Kaushik & C.P.Kaushik**, "*Perspertives of Environmental Studies"* by 5th 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"*, 2nd edition, Pearson education 2015.

Reference Books

1. **S. Deswal, A. Deswal**, "*Basic course in Environmental studies"*, 2nd edition, Dhanpatrai Publications, 2008.