

**23AC21T1 ENVIRONMENTAL SCIENCE**

<b>Course Category</b>	Audit Course	<b>Credits</b>	-
<b>Course Type</b>	Theory	<b>Lecture – Tutorial –Practical</b>	2-0-0
<b>Prerequisite</b>	-	<b>Sessional Evaluation</b>	30
		<b>Semester End Exam. Evaluation</b>	70
		<b>Total Marks</b>	100

<b>Course Objectives</b>	<ol style="list-style-type: none"> <li>To make the students to get awareness on environment.</li> <li>To understand the importance of protecting natural resources, ecosystems for future generations and pollution causes due to the day to day activities of human life</li> <li>To save earth from the inventions by the engineers.</li> </ol>		
<b>Course Outcomes</b>	COs	Statements	Blooms Level
	CO1	Understand the value of natural resources	L2
	CO2	Summarize the function of ecosystem, values of biodiversity and conservation.	L2
	CO3	Identify how the environment is polluted and suggest the mitigation measures.	L2
	CO4	Understand the environmental problems in India and way to minimize the effects.	L3
	CO5	Categorize the environmental protection laws in our country and role of information technology in environment protection.	L3
<b>Course Content</b>	<p align="center"><b>UNIT I</b></p> <p><b>Multidisciplinary Nature of Environmental Studies:</b> Definition, Scope and Importance; Need for Public Awareness.</p> <p><b>Natural Resources :</b> Renewable and non-renewable resources; Natural resources and associated problems – Forest resources, Use and over exploitation, deforestation; Case studies – Timber extraction, Mining, dams and other effects on forest and tribal people; Water resources – Use and over utilization of surface and ground water, Floods, drought, conflicts over water; Dams – benefits and problems; Mineral resources - Use and exploitation, environmental effects of extracting and using mineral resources; Case studies on Food resources; World food problems - Changes caused by agriculture and overgrazing; Effects of modern agriculture - Fertilizer-pesticide problems, water logging, salinity; Case studies – Energy resources.</p>		

## UNIT II

**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; Introduction, types, characteristic features, structure and function of the following ecosystem:

Forest ecosystem.

Grassland ecosystem

Desert ecosystem.

Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

**Biodiversity and its Conservation :** Introduction, Definition; Genetic, species and ecosystem diversity; Bio-geographical classification of India; 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 – Hotspots of biodiversity; Threats to biodiversity - Habitat loss, Poaching of wildlife; Man-wildlife conflicts – Endangered and endemic species of India; Conservation of biodiversity - In-situ and Ex-situ conservation of biodiversity.

## UNIT III

**Environmental Pollution:** Definition, Cause, effects and control measures of :

- a. Air Pollution.
- b. Water pollution
- c. Soil pollution
- d. Marine pollution
- e. Noise pollution
- f. Thermal pollution
- g. Nuclear hazards

**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.

## UNIT IV

**Social Issues and the Environment:** From Unsustainable to Sustainable development; Urban problems related to energy; Water conservation, Rain water harvesting, watershed management; Resettlement and rehabilitation of people - its problems and concerns; Case studies – Environmental ethics; Issues and possible solutions – Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust; Case Studies – Wasteland reclamation, Consumerism and waste products; Environment

	<p>Protection Act. – Air (Prevention and Control of Pollution) Act, Water (Prevention and control of Pollution) Act, Wildlife Protection Act, Forest Conservation Act; Issues involved in enforcement of environmental legislation – Public awareness.</p> <p style="text-align: center;"><b>UNIT V</b></p> <p><b>Human Population and the Environment:</b> Population growth, variation among nations, Population explosion; Family Welfare Programmes. – Environment and human health, Human Rights, Value Education, HIV/AIDS , Women and Child Welfare; Role of information Technology in Environment and human health – Case studies.</p> <p><b>Field Work:</b> Visit to a local area to document environmental assets River/forest grassland/hill/mountain, Visit to a local polluted site-Urban/Rural/Industrial/Agricultural Study of common plants, insects, and birds, river, hill slopes, etc.</p>
<p><b>Textbooks and Reference books</b></p>	<p><b>TEXTBOOKS:</b></p> <ol style="list-style-type: none"> <li>1. Erach Bharucha, “<i>Textbook of Environmental Studies</i>”, University Grants Commission, Universities Press, 3<sup>rd</sup> edition, 2021.</li> <li>2. Anubha Kaushik and C. P. Kaushik, “<i>Perspectives in Environmental Studies</i>”, New Age International Private Limited, Chennai, 6<sup>th</sup> edition, 2018.</li> <li>3. P. Anandan and R.K. Kumaravelan, “<i>Environmental science and Engineering</i>”, Scitech Publishers, Chennai, 1<sup>st</sup> edition, 2009.</li> <li>4. K.V.S.G. Murali Krishna, “<i>Environmental Studies</i>”, Savera Publishing House, New Delhi, 2<sup>nd</sup> edition, 2015.</li> </ol> <p><b>REFERENCE BOOKS:</b></p> <ol style="list-style-type: none"> <li>1. Y. Anjaneyulu, “<i>Introduction to Environmental Science</i>”, BS Publications, Hyderabad, 2004.</li> <li>2. Dr .B.S. Chauhan, “<i>Environmental Studies</i>”, Laxmi Publications, New Delhi, 2<sup>nd</sup> edition, 2018.</li> <li>3. P.N, Palini Swamy, P. Manikandan, A. Geeta and K. Manjula Rani, “<i>Environmental Science</i>”, Pearson Education, Chennai, 2<sup>nd</sup> edition, 2015.</li> </ol>

**CO-PO Mapping:** 3-High Mapping, 2-Moderate Mapping, 1-Low Mapping, - -Not Mapping

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2	PS O3
CO 1	2	1	1	-	-	2	3	1	-	1	-	1	-	2	-
CO 2	2	2	2	-	-	2	3	1	-	2	1	2	-	2	1
CO 3	2	2	2	1	-	2	3	1	-	2	1	2	-	3	1
CO 4	2	2	2	1	-	3	3	1	-	2	1	2	-	3	2
CO 5	2	2	2	1	-	3	3	1	-	2	2	2	1	3	2