

**Subject Code: 02ES0131**
**Subject Name: Environmental Studies**
**B.Sc. Year – I (Sem-I)**

**Objective:** The important of Environment sciences and Environment studies can not be disputed. The need of sustainable development is key to future of mankind. Continuing problems of pollution, loss of forest, solid waste disposal, degradation of environment, issues like economic productivity and national security, Global warming, the depletion of ozone layer and loss of biodiversity have made everyone aware of environmental issues. So motive of this course is to aware and make responsible to the students for the environmental related issues.

**Credits Earned: 4 Credits**
**Course Outcomes:** After completion of this course, student will be able to

- After learning the course the students should be able to
- Understand and realize the multi-disciplinary nature of the environment, its components, and inter-relationship between man and environment.
- Understand the relevance and importance of the natural resources in the sustenance of life on earth and living standard.
- Comprehend the importance of ecosystem, biodiversity and natural bio geo chemical cycle.
- conventional resources
- Apply knowledge of Environment in daily life and find solution for problems related to Environment pollution.

**Teaching and Examination Scheme**

Teaching Scheme (Hours)			Credits	Theory Marks			Tutorial/ Practical Marks		Total Marks
Theory	Tutorial	Practical		ESE (E)	Mid Sem (M)	Internal (I)	Viva (V)	Term Work (TW)	
3	-	2	4	50	30	20	25	25	150

**Contents:**

<b>Unit</b>	<b>Topics</b>	<b>Contact Hours</b>
1	<b>Introduction to Environment and Environmental Studies:</b> Definition and Components of Environment, Relationship between the different components of Environment, Man and Environment relationship, Impact of technology on Environment, Environmental Degradation, Multidisciplinary nature of the Environment studies, its scope and importance in the present day Education System	<b>6</b>
2	<b>Ecology and Ecosystems:</b> Introduction: Ecology- Objectives and Classification , Concept of an ecosystem- structure and functions of ecosystem Components of ecosystem- Producers, Consumers, Decomposers Bio-Geo- Chemical Cycles- Hydrologic Cycle, Carbon cycle, Energy Flow in Ecosystem, Food Chains, Food webs ,Ecological Pyramids Major Ecosystems: Forest Ecosystem, Grassland Ecosystem, Desert Ecosystem, Aquatic Ecosystem, Estuarine Ecosystem.	<b>15</b>
3	<b>Natural Resources:</b> a. Renewable and Nonrenewable resources, exploitation and conservation, Role of individual in conservation of natural resources. b. Water resources: Water sources- Surface and Ground water sources, Indian and Global scenario. c. Land as a resource, social issues d. Forest resources: Definition and Classification of Forests Ecological and Economic importance and benefits of forest, Indian scenario, Deforestation: causes and effects, remedial measures. e. Food resources: Sources of food, Global and Indian food demand scenario, Limits of food production, Environmental effects of Agriculture.	<b>15</b>
4	Pollution, Population & Environment a. Overpopulation: Cause, Effects & Control strategies b. Water & Air Pollution : Classification, Source, Effects & Control measures c. Land & Noise Pollution : Definitions, Causes, Effects & Control d. E-Waste : Source, Control Strategies, E-waste rules	<b>9</b>
	<b>Total</b>	<b>45</b>

**Reference Books :**

1. Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha Second edition, 2013 Publisher: Universities Press (India) Private Ltd, Hyderabad.
2. Basics of Environmental Studies by Prof Dr N S Varandani , 2013 Publisher: LAP - Lambert Academic Publishing , Germany
3. Environmental Studies by Anindita Basak , 2009 Publisher: Drling Kindersley(India)Pvt. Ltd Pearson
4. Textbook of Environmental Studies by Deeksha Dave & S S Kateva , Cengage Publishers.
5. Environmental Sciences by Daniel B Botkin & Edward A Keller Publisher: John Wiley & Sons.

**List of Experiments**

1. Model Preparation (Non-Working ) Biogeochemical Cycle (Nitrogen)
2. Model Preparation (Non-Working ) Biogeochemical Cycle (Carbon)
3. Measurement of basic water quality parameter : pH, TDS, Conductivity
4. Introduction to spectrophotometer
5. E-waste management method demonstration.

**Suggested Theory distribution:**

The suggested theory distribution as per Bloom's taxonomy is as per follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery and evaluation					
Remember	Understand	Apply	Analyze	Evaluate	Create
20%	20%	30%	15%	10%	5%

**Instructional Method:**

- a. The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.
- b. The internal evaluation will be done on the basis of continuous evaluation of students in the laboratory and class-room.

- c. Practical examination will be conducted at the end of semester for evaluation of performance of students in laboratory.
- d. Students will use supplementary resources such as online videos, NPTEL videos, e-courses, Virtual Laboratory