

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**Master in Computer Application (Integrated MCA)**  
**Year III-(Semester-VI) (w.e.f. December, 2015)**

**Subject Name: Environmental Studies (ES)**

**Subject Code: 4460603**

**1. Learning objectives:**

- Understand the importance of environmental science
- Develop sensitivity to protect environment

**2. Prerequisites: NIL**

**3. Contents:**

Unit No.	Course Content	No. of Lectures
1.	<p><b>Introduction to Environment and Environmental Studies</b></p> <p>The Multidisciplinary nature of environmental studies:            Scope and importance, Need for public awareness.</p>	[02]
2.	<p><b>Natural Resources: Renewable and non-renewable resources</b></p> <p>a) Forest resources: Use and Over-exploitation, Timber extraction, mining, dams and their effects on forest and tribal people.</p> <p>b) Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams benefits and problems.</p> <p>c) Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources.</p> <p>d) Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity.</p> <p>e) Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources.</p> <p>f) Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification.</p> <p>-Role of an individual in conservation of natural resources.</p>	[07]

	-Equitable use of resources for sustainable lifestyles.	
<b>3.</b>	<b>Ecosystems</b> Concept of an ecosystem, Structure and function of an ecosystem, Producers, consumers and decomposers, Energy flow in the ecosystem.	<b>[05]</b>
<b>4.</b>	<b>Environmental Pollution</b> Environmental pollution types, Causes, effects and control measures of environmental pollution, Role of an individual in prevention of pollution. Solid waste Management: Causes, effects and control measures of urban and industrial wastes. -Disaster management: floods, earthquake, cyclone and landslides.	<b>[06]</b>
<b>5.</b>	<b>Social Issues and the Environment</b> Sustainable development, Climate changes, Environmental Laws, Natural Reserves, and Public awareness.	<b>[05]</b>
<b>6.</b>	<b>Human Population and the Environment</b> -Population growth, variations among nations. -Population explosion-Family welfare Programme. -Environment and human health. -Value Education. -Role of information Technology in Environment and human health.	<b>[03]</b>

#### **4. Reference Book(s):**

Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha Second edition, 2013 Publisher: Universities Press (India) Private Ltd, Hyderabad.

#### **5. Suggested Additional Reading:**

1. De A.K., Environmental Chemistry, Wiley Eastern Ltd.
2. Agarwal, K.C.2001 Environmental Biology, Nidi Publ.Ltd.Bikaner.
3. Environmental Studies by Benny Joseph, TMH publishers
4. Environmental Studies by Dr. Suresh K Dhameja, 2007 Published by : S K Kataria & Sons New Delhi
5. Basics of Environmental Studies by U K Khare, 2011 Published by Tata McGraw Hill
6. Basics of Environmental Studies by Prof Dr N S Varandani ,2013 Publisher: LAP - Lambert Academic Publishing , Germany
7. Environmental Sciences by Daniel B Botkin & Edward A Keller Publisher: John Wiley & Sons.

8. Environmental Studies by R. Rajagopalan, Oxford University Press

**Course Outcome:**

1. After learning the course the students should be able to
2. Understand and realize the multi-disciplinary nature of the environment, its components, and inter-relationship between man and environment.
3. Understand the relevance and importance of the natural resources in the sustenance of life on earth and living standard.
4. Comprehend the importance of ecosystem, biodiversity and natural bio geo chemical cycle.
5. To correlate the human population growth and its trend to the environmental degradation and develop the awareness about his/her role towards environmental protection and prevention.
6. Identify different types of environmental pollution and control measures.
7. To correlate the exploitation and utilization of conventional and non-conventional resources.

**Major Equipments:** Multimedia projector with computer

\*PA (M): 10 marks for Active Learning Assignments, 20 marks for other methods of PA

ACTIVE LEARNING ASSIGNMENTS: Preparation of power-point slides, which include videos, animations, pictures, graphics for better understanding of environmental issues – The faculty will allocate chapters/ parts of chapters to groups of students so that the entire syllabus of Environmental Studies is covered. The power-point slides should be put up on the web-site of the College/ Institute, along with the names of the students of the group, the name of the faculty, Department and College on the first slide. The best three works should be sent to [achievements@gtu.edu.in](mailto:achievements@gtu.edu.in).