

<b>Course Code</b>	<b>150120105</b>			
<b>Category</b>	<b>Interdisciplinary</b>			
<b>Course Title</b>	<b>Environmental Studies (ES)</b>			
<b>Scheme and Credits</b>	<b>Theory</b>	<b>Tutorial</b>	<b>Lab</b>	<b>Credits</b>
	<b>2</b>	<b>1</b>	<b>0</b>	<b>3</b>
<b>Pre-requisites (if any)</b>	–			

### 1. Course Objective:

<b>Sr.</b>	<b>Course Outcome (Learner will be able to)</b>
1.	Students will understand the complex and diverse relationships between humans And environments.
2.	Students will understand ecosystems.
3.	Students will understand causes and effects of pollution on human health and environment.
4.	Students will understand non-renewable, exhaustible, and inexhaustible material and energy resources.
5.	Students will understand various act related to human rights and environment protection.
6.	Students will understand the role of Information Technology in environment and human health.

### 2. Course contents:

<b>Module</b>	<b>Content</b>	<b>Weightage</b>
<b>Unit I</b>	<b>Introduction to Environmental Studies</b> Environment, definition of ES, the multidisciplinary nature and scope of ES, Importance of ES, institutes serve to protect environment, people served/serve to protect environment.	<b>10%</b>
<b>Unit II</b>	<b>Ecosystem: Types, Structure and Functions</b> Concept of an ecosystem, Types of ecosystem (Terrestrial and Aquatic), characteristic features, structure and functions. Producers, consumers and decomposers, Energy flow in the ecosystem: Water cycle, Carbon cycle, Oxygen cycle, Nitrogen cycle, Phosphorus and Sulphur cycle Ecological succession, food chain, food web and ecological pyramids	<b>15%</b>
<b>Unit III</b>	<b>Pollution: causes, effect and control measures</b>	<b>30%</b>

	<p>Pollution and its types:  <b>Air pollution:</b> types and sources of air pollution, causes, effects and control measures.  <b>Water pollution and Marine pollution:</b> causes of water pollution, ground water pollution.  <b>Noise pollution:</b> causes, effects and control measures of noise pollution.  <b>Soil pollution:</b> causes of soil degradation (erosion, excess use of fertilizer and pesticides, excess salt and water), control measures.  <b>Thermal Pollution:</b> effects and control measures.  <b>Solid waste Management:</b> Causes, effects and control measures of urban and industrial wastes.  <b>e-waste management</b>  <b>Disaster management:</b> floods, earthquake, cyclone and Landslides</p>	
<p><b>Unit IV</b></p>	<p><b>Natural Resources: Renewable and Non renewable</b></p> <p>Natural resources and types of natural resources (renewable and non-renewable), Earth's resources and humans</p> <p><b>Renewable resources-</b></p> <p><b>Water resources:</b> Use of water, problem associated with water (over-utilization of surface and ground water, floods, drought), dams benefits and problems caused by it.</p> <p><b>Forest resources:</b> forest functions, causes of deforestation and its impacts.</p> <p><b>Mineral resources:</b> use of mineral resources, stages of mining operations, consequences of mining activities.</p> <p><b>Food resources:</b> sources of food, effects of modern agriculture, problems due to fertilizer-pesticide, water logging and salinity.</p> <p><b>Non-renewable resources-</b></p> <p><b>Energy resources:</b> sources and need of energy resources, renewable and non-renewable energy sources, use of alternate energy sources, approaches towards energy conservation.</p> <p><b>Land resources:</b> Land as a resource, land degradation, man induced landslides, soil erosion and desertification.</p> <p>Role of individual to in the conservation of natural resources.</p>	<p style="text-align: center;"><b>30%</b></p>
<p><b>Unit V</b></p>	<p><b>Social issues and environment</b></p> <p>From unsustainable to sustainable development, Urban problems related to energy, water conservation, Climate changes, Environmental Laws, and Public awareness.          Population growth, impact of population, Human rights          Role of individual to protect environment          Role of information Technology in Environment and human health</p>	<p style="text-align: center;"><b>15%</b></p>

#### 3. Desirable:

1. Concept of biodiversity, value education, woman and welfare education

#### 4. Main Text Books

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

#### 5. Reference Books:

1. Basics of Environmental Studies by U K Khare, 2011 Published by Tata McGraw Hill
2. Basics of Environmental Studies by Prof Dr N S Varandani ,2013 Publisher: LAP – Lambert Academic Publishing , Germany
3. Environmental Sciences by Daniel B Botkin & Edward A Keller Publisher: John Wiley & Sons.
4. De A.K., Environmental Chemistry, Wiley Eastern Ltd.
5. Agarwal, K.C.2001 Environmental Biology, Nidi Publ. Ltd. Bikaner

#### 6. Accomplishment of the student after completing the course:

1. Students will be able to discuss the complex and diverse relationships between humans and environments.
2. Students will be able to explain that ecosystems are comprised of physical and biological elements whose interactions engender ecosystem functions that provide humanity with a diverse array of ecological services.
3. Students will be able to explain the causes and effects of pollution on human health and environment.
4. Students will be able to differentiate between non-renewable, exhaustible, and inexhaustible material and energy resources.
5. Students will gain the ability to explain the various act related to human rights and environment protection.
6. Students will able to describe the role of Information Technology in environment and human health.