Course Type	Course Code	Name of Course	L	Т	Р	Credit
VAC1	NES/101	<b>Environmental Science</b>	3	0	0	3

### **Course Objective**

To understand the Fundamentals of Ecology, Environmental Pollution, Environmental Management and Environmental Law and Policy.

# Learning Outcomes

The students should be able to:

- Explain basic principles of Ecology and Natural Resources.
- Identify the major sources, effects and monitoring of Environmental pollutants.
- Knowledge of legal aspects relating to Environmental Management.

Unit No.	<b>Topics to be Covered</b>	Lecture Hours	Learning Outcome
Unit I	<b>Ecosystems:</b> Definition, Scope, and Importance of Ecosystems. Biogeochemical cycles, Eutrophication, Bioaccumulation and Biomagnification, ecosystem value, services and carrying capacity.	7L	To understand the Fundamentals of Ecology and natural resources.
	<b>Biodiversity:</b> Introduction, Definition, Value of biodiversity, Threats and conservation of biodiversity, Biodiversity Indices, National Biodiversity Act.		
	<b>Natural Resources:</b> Water resources, Mineral Resources, Land Resources, Forest Resources, Energy Resources.		
Unit II	Water & Wastewater Pollution: Introduction to WaterPollution: Introduction to Pollution, Characteristics/Source/Types/Analysis of Water and Wastewater, Drinking Water and Basic Treatments Process, Industrial Wastewater and Basic Treatments Process, Municipal Wastewater and Basic Treatments Process, Prevention and Control of Water Pollution and Standards for Drinking Water and Effluents.	7L	To understand the essential concepts of Water and Wastewater pollution.
Unit III	<b>Solid and e-Waste Management:</b> Characteristics and Sources of Solid Waste/e-Waste, Environmental Issues related to Solid Waste, Waste Management, Basics of Solid Waste Treatment Methods, Solid Waste Transformation through Thermochemical and Biological Methods and Different Disposal Techniques for e-Waste.	7L	To understand the essential concepts of Solid Waste Management.

**APPENDIX - III** 

Unit IV	<b>Air Pollution:</b> Types and Sources of Air Pollution, Effects of Air Pollution, Controlling Air Pollutants, Indoor Air Pollution, Ozone Depletion in the Stratosphere, Acid Deposition and Noise Pollution.	7L	To understand the essential concepts of Air pollution.
Unit V	<ul> <li>Global Atmospheric Change: Atmospheric System, Atmospheric Circulations, Introduction to Climate and Weather, Global Energy Balance, Greenhouse Effect, and Radiative Forcing of Climate Change and Global Warming Potential.</li> <li>Other Environmental Pollution: Marine pollution, Nuclear Pollution, Thermal Pollution etc.</li> </ul>	7L	To understand the basics of atmospheric system and other sources of environmental pollution.
Unit VI	<ul> <li>Environmental Policy &amp; Legislation: Environmental Protection act, Legal aspects Air Act, Water Act, Forest Act, Wildlife Act, Municipal Solid Waste Management and Handling Rules.</li> <li>Environmental Impact Assessment (EIA): Introduction to Basic EIA Structure and Overview on Impacts of Air, Water, Biological and Socio- economical Aspects.</li> </ul>	7L	To understand the fundamental knowledge of Environmental Management, and environmental policy and legislation.

## **Books and References:**

#### Text Book:

- Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
- Introduction to Environmental Engineering and Science by Gilbert M. Masters and Wendall P. Ela published by Pearson India Education Services Pvt. Ltd.

#### **Reference Book:**

- Environmental Chemistry by B K Sharma, Goel Publishing House
- Berg, L. R., Hager, M. C., & Hassenzahl, D. M. (2011). Visualizing environmental science. Wiley.