

COURSE TITLE	BASICS OF ENVIRONMENTAL SCIENCES
COURSE CODE	01OE0006
COURSE CREDITS	3

Objective:

- 1 To develop understanding of environmental segments, its degradation and sustainability aspects.

Course Outcomes: After completion of this course, student will be able to:

- 1 Understand the multidisciplinary nature of Environment & its components.
- 2 Understand the importance of sampling, monitoring, and environmental characterization.
- 3 Analyze the different types of pollution and remediation approaches
- 4 Apply learnings in conserving environment and achieving sustainable goals.

Pre-requisite of course: Students should gain basic understanding of Environment and environmental issues.

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
3	0	0	50	30	20	0	0

Contents : Unit	Topics	Contact Hours
1	Introduction and Ecology Global Perspective of the Environment; , Components of Environment; Ecology and Types of Ecosystems; Biotic and Abiotic components; , Effects of humans on Environment; Sampling and Monitoring Basics; , Environmental Toxicology; Risk Assessment	8
2	Solid Waste Management and Resource Recovery Municipal Solid Waste; Solid Waste Management; , Source Reduction; Life cycle Assessment; , Waste Management, Energy, and Greenhouse Gases; Recycling; Collection and Transfer Operations; , Materials Recovery Facilities and Economics; Composting; , Discarded Materials; Waste-to-Energy Combustion; Landfills	10
3	Water Pollution Introduction; Water Resources; , Water Pollutants; Water Quality Parameters; , Impact of Water Pollution on Rivers; Water Quality in Lakes and Reservoirs; , Groundwater; Aquifers; Contaminants in Groundwater; Groundwater Remediation Technologies; , Water Treatment Systems; Wastewater Treatment	10

Contents : Unit	Topics	Contact Hours
4	Atmospheric Pollution Air Pollution – Introduction, Sources, Types, and Effects,, Criteria Pollutants; Toxic Air Pollutants,, Air Pollution in the World’s Megacities;, Air Pollution and Meteorology;, Indoor Air Quality; Sources of Indoor , Air Pollutants; Control Strategies	10
Total Hours		38

Textbook :

- 1 Environmental and pollution science, Gerba, C. P., & Brusseau, M. L. , Elsevier, 2011

References:

- 1 Basics of Environmental Studies , Basics of Environmental Studies , U K Khare, Published by Tata McGraw Hill, 2011
- 2 Environmental Studies , Environmental Studies , D. K. Asthana and Meera Asthana, S. Chand Publishing, 2010
- 3 Elements of Environmental Engineering, Elements of Environmental Engineering, Duggal, K. N. , S. Chand Publishing, 2008

Suggested Theory Distribution:

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

Distribution of Theory for course delivery					
Remember / Knowledge	Understand	Apply	Analyze	Evaluate	Higher order Thinking / Creative
20.00	30.00	25.00	15.00	10.00	0.00

Instructional Method:

- 1 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.
- 2 The internal evaluation will be done on the basis of continuous evaluation of students in the laboratory and class-room.
- 3 Students will use supplementary resources such as online videos, NPTEL videos, e-courses, Virtual Laboratory

Supplementary Resources:

- 1 <https://swayam.gov.in/>
- 2 <https://epgp.inflibnet.ac.in/>