INSTITUTE	**FACULTY OF TECHNOLOGY**
PROGRAM	**BACHELOR OF TECHNOLOGY (CIVIL ENGINEERING)**
SEMESTER	**1**
COURSE TITLE	**BASICS OF ENVIRONMENTAL STUDIES**
COURSE CODE	**01EN2101**
COURSE CREDITS	**0**

Objective:

1 To develop awareness and understanding of environmental issues, sustainability, and the role of engineers in environmental protection and resource conservation.

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

1 Explain environmental concepts, natural resources, and ecosystem functioning.

2 Analyze environmental problems and biodiversity challenges caused by human and technological activities.

3 Identify sources of environmental pollution and suggest suitable control strategies.

4 Explain sustainable engineering practices such as green computing, renewable energy use, and environmental monitoring technologies.

Pre-requisite of course: None

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
2	0	0	0	0	0	50	50

Contents : Unit	Topics	Contact Hours
1	**Natural Resources, Ecosystems and Sustainable Engineering** Introduction to environmental studies: scope and importance. Environment, Ecology: scope and classifications,, Ecosystem: Concept and types, Natural resources: forest, water, land and energy resources. Conservation and sustainable utilization of resources., Role of engineering and green technologies in sustainable resource management.	6
2	**Biodiversity, Climate Change and Environmental Challenges** Biodiversity: definition, types and importance. Threats to biodiversity and conservation strategies (in-situ and ex-situ). , Environmental challenges: global warming, climate change, ozone layer depletion, acid rain, deforestation and desertification., Population growth, Environmental impacts of industrialization, urbanization and technological development.	6

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Contents : Unit	Topics	Contact Hours
3	**Environmental Pollution and Waste Management** Types, sources, impacts and control of pollution: air, water, soil, noise and marine pollution., Solid waste management, e-waste management, biomedical waste management and plastic waste management., Concepts of circular economy and sustainable waste management, Concept of green computing.	7
4	**Environmental Protection and Sustainable Development** Concept of sustainable development. SDGs, Environmental protection laws and policies in India., Environmental management systems. Role of engineers in environmental protection, Environmental monitoring using sensors and digital technologies., Smart cities and environmental data analysis for sustainability.	7
Total Hours		**26**

Textbook :

1 Textbook of Environmental Studies for Undergraduate Courses, Erach Bharucha, Universities Press (India) Private Ltd, , 2013

2 Basics of Environmental Studies, N S Varandani, LAP -Lambert Academic Publishing, 2013

References:

1 Basics of Environmental Studies, Basics of Environmental Studies, U K Khare, Tata McGraw Hill , 2011

2 Environmental Science A Global Concern, Environmental Science A Global Concern, William P. Cunningham & Mary Ann Cunningham, Tata Mc Graw Hill, 2009

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**
0.00	0.00	35.00	35.00	30.00	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.

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Instructional Method:

3 Practical examination will be conducted at the end of the semester for the evaluation of the performance of students in the laboratory.

4 Students will use supplementary resources such as online videos, NPTEL videos, e-courses, Virtual Laboratory

Supplementary Resources:

1 https://onlinecourses.nptel.ac.in/noc19_ge22/preview

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