



GUJARAT TECHNOLOGICAL UNIVERSITY

BACHELOR OF ENGINEERING SYLLABUS

1st Year, Subject Code : 3110007

| | |
|------------------------|-----------------------------------|
| WEF Academic Year | : 2022-23 |
| Semester/Year | : 1 |
| Category of the Course | : Mandatory Course |
| Subject Name & Code | : Environmental Science (3110007) |

Type of course : Engineering Science

Prerequisite : Interest in natural systems sustaining the life on the earth.

Rationale : To inculcate the environmental values translating into pro-conservation actions. Honorable Supreme Court of India has made it 'mandatory' to introduce a basic course on environment at the undergraduate level.

Teaching and Examination Scheme :

| Teaching Scheme | | | Credits | Examination Marks | | | | Total Marks |
|-----------------|---|---|---------|-------------------|--------|-----------------|-------|-------------|
| L | T | P | C | Theory Marks | | Practical Marks | | |
| | | | | ESE(E) | PA (M) | ESE (V) | PA(I) | |
| 2 | 2 | 0 | 0 | 70 | 30 | 0 | 0 | 100 |

Content:

| Sr. No. | Content | Total Hrs | % Weightage |
|---------|--|-----------|-------------|
| 1 | INTRODUCTION TO ENVIRONMENT Definition, principles and scope of Environmental Science. Impacts of technology on Environment, Environmental Degradation, Importance for different engineering disciplines | 02 | 8 |



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|---|---|----|----|
| 2 | ENVIRONMENTAL POLLUTION a) Water Pollution: Introduction – Water Quality Standards, Sources of Water Pollution, Classification of water pollutants, Effects of water pollutants b) Air Pollution: Composition of air, Structure of atmosphere, Ambient Air Quality Standards, Classification of air pollutants, Sources of common air pollutants like PM, SO ₂ , NO _x , Auto exhaust, Effects of common air pollutants c) Noise Pollution: Introduction, Sound and Noise, Noise measurements, Causes and Effects d) Solid Waste: Generation and management e) Bio-medical Waste: Generation and management f) E-waste: Generation and management | 14 | 44 |
| | GLOBAL ENVIRONMENTAL ISSUES Sustainable Development, Climate Change, Global Warming and Green House Effect, Acid Rain, Depletion of Ozone layer, Carbon Footprint, Cleaner Development Mechanism (CDM), International Steps for Mitigating Global Change | | |

Suggested Specification table with Marks (Theory) :

| Distribution of Theory Marks | | | | | |
|------------------------------|---------|---------|---------|---------|---------|
| R Level | U Level | A Level | N Level | E Level | C Level |
| 40 | 40 | 20 | 0 | 0 | 0 |

**Legends : R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate
C: Create and above Levels (Revised Bloom's Taxonomy)**

Note : This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.



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Reference Books :

1. Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha Second edition, 2013 Publisher: Universities Press (India) Private Ltd, Hyderabad.
2. Basics of Environmental Studies by Prof Dr N S Varandani ,2013 Publisher: LAP - Lambert Academic Publishing , Germany
3. Environmental Studies by Anindita Basak ,2009 Publisher: Drling Kindersley(India)Pvt. Ltd Pearson
4. Textbook of Environmental Studies by Deeksha Dave & S S Kateva , Cengage Publishers.
5. Environmental Sciences by Daniel B Botkin & Edward A Keller Publisher: John Wiley & Sons.
6. Environmental Studies by R. Rajagopalan, Oxford University Press
7. Environmental Studies by Benny Joseph, TMH publishers
8. Environmental Studies by Dr. Suresh K Dhameja, 2007 Published by : S K Kataria & Sons New Delhi
9. Basics of Environmental Studies by U K Khare, 2011 Published by Tata McGraw Hill

Course Outcome :

| Sr. No. | CO statement | Marks % weightage |
|---------|---|-------------------|
| CO-1 | Identify the types of pollution in society along with their sources | 45 |
| CO-2 | Realize the global environmental issues | 25 |
| CO-3 | Conceptualize the principles of Green Buildings and Smart cities | 15 |
| CO-4 | Implement the concept of recycle and reuse in all fields of engineering | 15 |

List of Tutorials : Based on

1. Introduction to Environment
2. Water Pollution
3. Air Pollution
4. Noise Pollution
5. Solid Waste
6. Bio-medical Waste
7. E-waste
8. Global Environmental Issues
9. Concept of Green Building
10. Concept of Smart Cities
11. Concept of 4R's

List of Open Source Software/learning website : MOEF, NPTEL