



GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering

Subject Code: 3163512

Semester – VI

Subject Name: Environmental Management - III

Type of course: Professional Elective Course

Prerequisite: Fundamentals of Environmental Management

Rationale: The main objective of this subject is to make students aware about Environmental Management.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks				Total Marks
L	T	P		Theory Marks		Practical Marks		
			ESE (E)	PA (M)	ESE (V)	PA (I)		
3	1	0	4	70	30	0	0	100

Content:

Sr. No.	Content	Total Hrs
1.	Environmental Management system: ISO 14001, Various clauses, Objectives & targets, PDCA cycle, Audit & certification. Best Practices at Industries: Responsible Care (Guiding principles, Codes, Present scenario.), Green Belt requirements for industries, Rain Water harvesting, Water resource management including water balance. Sustainable Development Goals and status of India.	25
2.	EIA Notification 2006 (or latest amended version in force): Environmental Clearance (EC) process, Categorization of projects and activities, EIA as a four step Activity: Screening, Scoping, Public Consultation, Appraisal. Role of SEIAA, EAC, SEAC, Structure of EIA report, Impact assessment, Environmental Management Plan. Environmental Audit: Audit scheme of GPCB, Pollution load estimation. Environmental Statement.	25
3.	Carbon Footprint: Concept, Carbon neutrality, Importance, Estimation, Reduction in carbon footprint. Emission Trading: Concept, Carbon Credit, Present Scenario. Rate Analysis: Prerequisites, factors affecting rate analysis, procedure for rate analysis. Scheme introduced by MOEF/ GPCB at Surat. Various International Conventions: Stockholm convention, Montreal protocol, Paris Agreement, UNFCCC and it's Role.	25
4.	Environmental Monitoring: Ground Water Monitoring: Objectives, Location of monitor wells, sampling equipment. Surface Water Monitoring: Water Quality parameters, sampling the surface waters, sampling equipment.. Marine Water Monitoring: General requirements, sampling equipment.	25



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Suggested Specification table with Marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
22	23	8	7	5	5

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.

Reference Books:

- Preventive Environmental Management: An Indian Perspective by Dr. Shyam R. Asolekar & Dr. R. Gopichandran
- Practical guide to Environmental Management 9th edition by Frank B Friedman
- Environmental Impact Assessment by Larry Canter
- Environmental Auditing – CPCB Publication
- ISO 14000 standards
- Responsible Care- ICC publication
- Elements of Estimation & Costing – Rangwala.

Course Outcomes: After learning this course students will be able to

Sr. No.	CO statement	Marks % weightage
CO-1	To Examine areas of Environmental Monitoring.	29
CO-2	To Describe the process of Environmental Impact Assessment.	29
CO-3	To Develop the concept of Environmental Audit.	14
CO-4	To Analyze Environmental Management System.	14
CO-5	To Evaluate Carbon Footprint and Emission Trading.	7
CO-6	To Explain the idea of Sustainable Development Goals.	7

List of Tutorials:

- Tutorial on ISO 14001.
- Tutorial on Environmental Impact Assessment.
- Tutorial on Environmental Audit.
- Tutorial on Emission Trading.
- Tutorial on Carbon Footprint.
- Tutorial on Sustainable Development Goals.