



GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering: Civil and Infrastructure Engineering

Subject Code: 3174029

Semester – VII

Subject Name: Environmental Impact Assessment

Type of course: Open Elective Course

Prerequisite: Environmental Science

Rationale:

With the burgeoning population, the rise in demand for exploration of natural resources, renewable and non-renewable, has increased many folds leading to implementation of projects dealing with industries, dams, roads, buildings etc. The projects help in the economic development of the country and provide resources to the people; however, it comes at the cost of environmental degradation. This necessitates a methodology to assess the impact of these projects to the environment so that these developments do not lead to environmental degradation. *Environmental Impact Assessment* involves the proper study of the impact on the environment which is carried out before taking the final decision of a project. Therefore, *Environmental Impact Assessment* would help in the planning the development process in a sustainable and organized manner with which effective control and mitigation measures can be undertaken.

Teaching and Examination Scheme:

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

Content:

Sr. No.	Content	Total Hrs
1	Environmental Management Plan: Introduction; Participants; Ethics and Environment	3
2	Policy and Legal Aspect of Environmental Management: Introduction to environmental policies: Economics, Industries, Agriculture, Ecosystem, Environmental Policy System (EPI); Environmental Laws and Legislations, Private and Public law, Principles of International law, Indian Environmental law, International Institutions; Objectives and principles of legislation; Environmental Legislations in India	4
3	Environmental Impact Assessment (EIA): Introduction- (EIA); Purpose of EIA; Steps in EIA; Environmental Impact Statement	15



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	(EIS); Evolution of EIA worldwide; Evolution of EIA in India; Forecasting Environmental Changes; Strategic Environmental Assessment (SEA)- rationale and scope, SEA process, Benefits and constraints of SEA; Comparison between EIA and SEA; Environmental Clearance Procedure in India	
4	EIA documentation and process: Preliminary Stages of EIA , Screening, Scoping, Examination of alternatives, Impact identification using matrix and network methodologies, Baseline data; Impact Prediction, Impact on Air, Water, Soil, Noise, Socio economic environment; Evaluation and Mitigation; Impact on Decisions; Participation, Requisites and Review	12
5	Environmental Auditing: Introduction to Environmental Auditing; General Audit Methodology; Elements of Audit Process, what to audit, who will audit, why to audit, how to audit;	8
	Total	42

Suggested Specification table with Marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
15	25	20	20	10	10

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:

1. Canter L.W., Environmental Impact Assessment, McGraw-Hill, 1996
2. Peter Morris & Riki Therivel, Methods of Environmental Impact Assessment, Routledge, Taylor and Francis Group, 2001
3. Shrivastava A. K., Environmental Impact Assessment, APH Publishing, 2003
4. Betty Bowers Marriott, Environmental Impact Assessment: A Practical Guide, McGraw-Hill Professional, 1997.



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

Sr. No.	CO statement	Marks % weightage
CO-1	Understand environmental management and the policies involved	10
CO-2	Understand the need of EIA and carry out the environmental assessment.	40
CO-3	Understand the processes involved in EIA and the impacts to air, water, soil, noise and socio-economic environment and be able to document EIA in detail.	30
CO-4	Understand the auditing processes and recognize the elements involved	20

List of Open Source Software/learning website:

MIT Open Courseware, NPTEL

ACTIVE LEARNING ASSIGNMENTS: Preparation of power-point slides, which include videos, animations, pictures, graphics for better understanding theory and practical work – The faculty will allocate chapters/ parts of chapters to groups of students so that the entire syllabus to be covered. The power-point slides should be presented and put up on the web-site of the College/ Institute, along with the names of the students of the group, the name of the faculty, Department and College on the first slide.