GUJARAT TECHNOLOGICAL UNIVERSITY

ENVIRONMENTAL ENGINEERING (13)
ENVIRONMENTAL IMPACT ASSESSMENT
SUBJECT CODE: 2181302
B.E. 8TH SEMESTER

Type of course: Applied Science

Prerequisite: Knowledge of subjects Environmental studies, Ecology and remote sensing, Fundamentals of Air pollution

Rationale: In order to overcome the problems of environmental degradation, it is very necessary to plan the development process in a sustainable manner so that control and mitigation measures can be undertaken prior to occurrence of degradation. One important tool to do this is carrying out Environmental Impact Assessment. Hence knowledge of this subject is very important for an Environmental engineer**.**

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)	
					PA	ALA	ESE	OEP		
3	2	0	5	70	20	10	30	0	20	150

Content:

Sr. No.	Content	Total Hrs	% Weightage
1	Sustainable Development: Development; Sustainable Development – Logic of Sustainable Development; Methods To Achieve Sustainable Development	**4**	**8**
2	Concepts of Environmental Impact Assessment : Environment; Environmental Impacts; Environmental Impact Analysis; Environmental Impact Assessment And Environmental Impact Statement; EIA- As An Integral Part of The Planning Process	**4**	**8**
3	Detailed Contents of EIA: Introduction; Project Description; Description of The Environment; Anticipated Environmental Impacts And Mitigation Measures: Analysis of Alternatives; Environmental Monitoring Programme; Additional studies; Project Benefits; Environmental Cost Benefit Analysis; EMP; Summary.	**6**	**13**
4	Environment attributes: air; water; noise; land and soil ; socioeconomic; cultural & biological	**8**	**17**
5	Description of the Baseline Environment : Purposes for defining the Environmental Setting; Selection of parameters, Monitoring of physical environmental parameters, Collection and interpretation of baseline data for various environmental attributes	**6**	**13**
6	Prediction and Methods of Assessment of Impacts on Various Aspects of Environment; Application of various models for the Prediction of impact on Air Environment, Water Environment, Noise Environment and Land	**6**	**13**

	Environment		
7	Public participation in environmental decision making process.	**4**	**8**
8	EIA notification September 2006 and amendments : Categorization of projects, Procedure for getting environmental clearance	**4**	**8**
9	Case Studies: • EIA for chemical industry • EIA for construction project • EIA for mining project	**4**	**8**
10	Environmental Management Plan	**2**	**4**

Suggested Specification table with Marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
10	25	25	25	15	0

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate 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. Environmental Impact Analysis Handbook – by Rau Whooten; McGraw Hill publications
2. Environmental Impact Assessment – by Larry Canter; McGraw Hill publications
3. Environmental Impact Analysis – A Decision Making Tool by R K Jain
4. Handbook of Environment Impact Assessment by Judith Petts; McGraw Hill publications

Course Outcome:

After learning the course the students should be able to:

1. Demonstrate the understanding of concept of Sustainable Development and justify the methods of achieving SD.
2. Appreciate the importance of EIA as an integral part of planning process.
3. Apply the different methodologies to predict and assess the impacts of project on various aspects of environment.
4. Enumerate the role of public participation in environmental decision making process.
5. Characterize the environmental attributes.

List of Tutorials:

1. Questions based on Sustainable Development.
2. Questions based on Detailed Contents of EIA
3. Questions based on Detailed Contents of EIA with specific project
4. Questions based on Environmental Attributes.
5. Questions based on Description of Environmental Setting.
6. Questions based on Prediction and Methods of Assessment of impacts
7. Questions based on EIA Notification.
8. Case studies on EIA for chemical industries, EIA for construction projects, EIA for mining projects.

List of Open Source Software/learning website:

Website of GPCB,CPCB and MoEF

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 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. The best three works should submit to GTU.