FACULTY OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF

CIVIL ENGINEERING

Marwadi University
Marwadi Chandarana Group

Environmental Impact Assessment

01CI0615

Objective of the Course:

- To expose basic understanding to plan the development process in a sustainable manner.
- To understand EIA frameworks.
- To know EIA process.
- To apply knowledge for Project Management and Decision-Making.

Credit Earned: 03

Prerequisite: Basic knowledge of Environmental Studies, Fundamentals of air and water pollution, Environmental Policies

Student's learning outcomes:

After successful completion of the course, it is expected that students will be able to,

1. Value the importance of EIA as part of the planning process.
2. Apply the different methodologies to predict and assess the impacts of the project.
3. Characterize the environmental attributes.
4. Demonstrate an understanding of the concept of Sustainable Development.

Teaching and Examination Scheme

Teaching Scheme (Hours)			Credits	Theory Marks			Tutorial/ Practical Marks		Total Marks
Theory	Tutorial	Practical		ESE (E)	IA (M)	CSE (I)	Viva (V)	Term Work (TW)	
03	00	00	03	50	30	20	25	25	150

Detailed Syllabus

Sr. No.	Title of the unit	Number of Hours
1	**Environmental Impact Assessment**	**10**
	1.1 Need of EIA, methodology, environmental impact assessment techniques-ad-hoc method, checklist method, overlay mapping method, network method, simulation and modeling technique,	4

	matrix method, system diagram technique.	
	1.2 Assessment of impacts –air, water, soil, noise, biological, social, cultural, economic, environmental factors.	3
	1.3 Public participation in decision making, EIA and sustainable development.	2
	1.4 Benefits & Drawbacks in EIA process.	1
2	**Legislation and Procedures**	**8**
	2.1 National Environmental Policy Act (NEPA) of 1969, USA. EIA notification 1994, 2006 for India and implementation.	3
	2.2 EIA Guidelines. EIA legislative requirements and administrative procedures in India / States of India.	3
	2.3 Accreditation of EIA consultants by Quality Control of India – requirements and guidelines.	2
3	**Environmental Impacts and Mitigation**	**8**
	3.1 Anticipated environmental impacts and mitigation measures.	2
	3.2 EIA and sustainable development, environmental monitoring program,	2
	3.3 EIA notification September 2006 and amendments: categorization of projects.	2
	3.4 preparation of environment management plan (EMP), environmental clearance procedure.	2
4	**Environmental Economics**	**8**
	4.1 Economy and the environment, economics of environmental issues, externalities, risk –benefit analysis.	3
	4.2 Global issues, economics of natural resource exploitation, integrating economic and ecological principles.	3
	4.3 Pollution economics, carbon tax, carbon trading, clean development mechanism, and ecomark concept.	2
5	**Case Studies of Environmental Impact Assessment and Risk Analysis**	**8**
	1.1 Environmental Appraisal procedures in India, Impact identification methods.	2
	1.2 Environmental impacts of mining industry; nuclear power plant; textile industry; petroleum refining; fertilizer industry.	2
	1.3 Case study –EIA of Hydroelectric dam and river valley projects; thermal power plants.	2
	1.4 National river conservation plan –Namami Gange and Yamuna Action Plan. Risk assessment in EIA.	2
	Total	**42**

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 an effective teaching-learning process.

Distribution of Theory for course delivery and evaluation					
Remember	Understand	Apply	Analyze	Evaluate	Create
10%	25%	30%	25%	10%	0%

Instructional Method and Pedagogy:

1. The course delivery method will depend upon the requirement of content and the needs of students. The teacher, in addition to conventional teaching method by white board, may also use any of tools such as collaborative learning, demonstration, role play, Quiz, brainstorming, MOOCs, Active Learning Assignments etc.
2. The internal evaluation will be done based on continuous evaluation of students in the classroom.
3. Students will use supplementary resources such as online videos, Swayam, NPTEL videos, and E-Courses.

Recommended Study Material

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
5. The Practice of Strategic Environmental Assessment, Earthscan, London. Therivel, R. and Partidario, M. R. (1996) (eds)
6. Environmental Economics: An Indian Perspective, Oxford University Press, Rabindra N, Bhattacharya (2001)

Web Link:

1. Environmental Impact Assessment for Environmental Health
   https://onlinecourses.swayam2.ac.in/nou22_bt06/preview
2. Environmental Impact Assessment
   https://onlinecourses.nptel.ac.in/noc22_ar07/preview