



GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Master of Engineering

Level: PG

Branch: Environmental Management

Course / Subject Code : ME02018031

Course / Subject Name: ENVIRONMENTAL IMPACT ASSESSMENT

w.e.f. Academic Year:	2024-25
Semester:	2
Category of the Course:	Professional Elective Course

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.

Course Outcome:

After Completion of the Course, Student will able to:

No.	Course Outcomes
01	Demonstrate the understanding of concept of Environmental Management and apply the tools for environmental management.
02	Satisfy the legal requirements for Environmental Clearance as per prevailing norms.
03	Apply the different methodologies to predict and assess the impacts of project on various aspects of environment
04	Carry out EIA studies including description of environment using environmental attributes and prepare the EIA report.

Teaching and Examination Scheme:

Teaching Scheme(in Hours)			Total Credits L+T+(PR/2)	Assessment Pattern and Marks				Total Marks
L	T	PR		C	Theory		Tutorial/Practical	
			ESE (E)		PA/ CA (M)	PA/CA(I)	ESE (V)	
3	0	2	4	70	30	20	30	150



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Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1	Environmental Management and Environmental management tools: <ul style="list-style-type: none">Sustainable Development :Definition, Need, Methods to achieve Sustainable Development, Sustainable Development GoalsEnvironmental management tools : Life Cycle Assessment, Cleaner technology, Environmental Risk Assessment, Environmental Impact Assessment, Environmental Auditing, Environmental Performance Evaluation, Cost benefit Analysis	05	12
2	Environmental Impact Assessment Basics: Objectives, Principles, Basic terms in EIA : Environment ,Impact, Assessment, significance	02	5
3	Environmental Impact Assessment Process : <ul style="list-style-type: none">Screening and its methodsScoping and its methodsConsiderations of alternatives	06	14
3	Procedure for Environmental Clearance: <ul style="list-style-type: none">EIA Notification September 2006 and amendments: Categorization of projects, Procedure for getting environmental clearance, Public participation in environmental decision making process, Procedure for online process for obtaining Environmental Clearance on PARIVESH PortalNABET Accreditation Process : Sectors and functional areas	06	14
4	EIA Methods: Criteria for selection of EIA method , Checklist method and its types, Matrix and its types, Networks method , Overlay method , Cost Benefit analysis, Case studies for each methods Use of GIS and modelling tools in identification and prediction of impacts	06	14
5	Conducting EIA Process: <ul style="list-style-type: none">Generic structure of EIA :Introduction, Project Description, Description of environment ,TOR for EIA report, Anticipated Environmental Impacts And Mitigation Measures, Analysis of Alternatives, Environmental Monitoring Programme, Environmental Management PlanReport preparation	06	14



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6	Description of Environment: <ul style="list-style-type: none"> • Baseline studies: Purpose, Selection of parameters, Monitoring of physical Environmental parameters, Collection and interpretation of baseline data for various environmental attributes • Environmental Attributes: Air Environment, Noise Environment, Water Environment , Land and land use, Ecological Environment, Social Environment, Risk Assessment • Environmental Impact assessment on different environmental components and its mitigation measures 	06	14
7	Environmental costs and benefits: Estimation of market value of environmental components, analysis of projects and policies with consideration of environmental cost and benefits, priority values and value function graphs, valuing the impacts in monetary terms, monetary objective decision making, issues of risk and uncertainty.	03	8
8	Case histories: Case histories related to power generation and transmissions, transportation, water resources development, mining, oil exploration, water and wastewater treatment plants, airports, ports and harbours etc	02	5

Suggested Specification Table with Marks (Theory):

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

Where R:Remember; U:Understanding; A:Application, N:Analyze and E:Evaluate C:Create(as per Revised Bloom's Taxonomy)

References/Suggested Learning Resources:

(a) Books:

- Environmental Impact Assessment : A practical Guide for Professional Practice by Dr. A.K.A Rathi published by Akar Unlimited
- Environmental Impact Analysis Handbook – by Rau Whoooten; McGraw Hill publications
- Environmental Impact Assessment – by Larry Canter; McGraw Hill publications



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- Environmental Impact Analysis – A Decision Making Tool by R K Jain
- Handbook of Environment Impact Assessment by Judith Petts; McGraw Hill publications
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(b) Open sources of software and website:

- NPTEL
- GPCB - <https://gpcb.gujarat.gov.in>
- CPCB- [CPCB | Central Pollution Control Board](http://cpcb.nic.in)
- PARIVESH portal

Suggested Course Practical List:

- Case Study on EIA of building construction projects
- Case Study on EIA of Mining Industry
- Case Study on EIA of Cement Plants
- Case Study on EIA of Thermal Power Plant
- Case Study on EIA of Wastewater Treatment Plants
- Case Study on EIA of Airports, ports and Harbours
- Categorization of given projects according to Recent EIA Notification

List of Laboratory/Learning Resources Required:

1. Geographical Information Systems
2. Environmental Modeling Tools

Suggested Activities for Students:

- Public Hearing

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