Principles and Practices of Environmental Impact Assessment
(SYLLABUS)

Course Code	23CE2701B	Year	IV	Semester	I
Course Category	Open Elective - III	Branch	CIVIL	Course Type	Theory
Credits	3	L-T-P	3-0-0	Prerequisites Courses	Environmental Science
Internal Evaluation	30	Semester End Evaluation	70	Total Marks	100

Course Objectives:

After completing this course, students will be able to:

1. To introduce fundamental principles, concepts, stages, and stakeholder roles in Environmental Impact Assessment (EIA) for sustainable project planning.
2. To provide knowledge on EIA methodologies, tools, and techniques for identification, prediction, and evaluation of environmental impacts.
3. To develop understanding of impact assessment on air, water, soil, biological environment, and risk assessment with suitable mitigation measures.
4. To familiarize with environmental legislation, environmental clearance procedures, audit systems, ISO 14001 standards, and preparation of EIA/EMP reports.

Course Outcomes:

Course will enable the student to:

CO	Statement	Blooms level
CO1	Explain the basic principles, concepts, stages, and components of Environmental Impact Assessment (EIA) for sustainable decision-making.	**L2**
CO2	Apply appropriate EIA methodologies and tools for identification, prediction, and evaluation of environmental impacts of developmental projects.	**L3**
CO3	Analyse the impacts of projects on air, water, soil, and biological environment and identify suitable mitigation measures.	**L4**
CO4	Analyse environmental risk assessment procedures and uncertainty associated with environmental management decisions.	**L4**
CO5	Explain environmental legislation, environmental clearance procedures, audit process, ISO 14001 standards, and preparation of EIA/EMP reports.	**L2**

Course Articulation Matrix: (1 = Low, 2 = Medium, 3 = High)

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	2	-	-	1	3	-	-	-	-	1	3	2
CO2	3	3	2	2	3	2	-	-	-	-	1	3	3
CO3	3	3	2	2	2	3	-	-	-	-	1	3	3
CO4	2	3	1	2	1	3	-	-	-	-	2	2	3
CO5	2	2	-	1	-	3	2	-	1	1	2	2	3

Syllabus

Unit No	Content	Mapped COs
I	Fundamental Principles of Environmental Impact Assessment: Introduction to principles and practices of EIA; Elements of EIA; Factors affecting EIA; Initial Environmental Examination; Life cycle analysis; Preparation of Environmental Base map; Classification of environmental parameters; Role of stakeholders in the EIA preparation; Stages in EIA; Environmental economics; Cost–benefit Analysis; EIS and EMP; Identification of activities; Practical application of remote sensing and GIS for EIA studies.	CO1
II	EIA Methodologies and Practical Approaches: Introduction; Criteria for the selection of EIA Methodology; EIA methods; Ad-hoc methods; Matrix methods; Network method; Environmental Media Quality Index method; Overlay methods; Impact of developmental activities and land use; Practical framework for assessment of soil and ground water impacts; Delineation of study area.	CO2
III	Impact Prediction and Environmental Management Practices: Procurement of relevant soil quality data; Impact prediction; Assessment of impact significance; Identification and incorporation of mitigation measures; Practical EIA considerations with reference to surface water, air and biological environment; Methodology for the assessment of impacts on surface water environment; Generalized approach for assessment of air pollution impact.	CO3
IV	Environmental Risk Assessment in Practice: Assessment of impact of developmental activities on vegetation and wildlife; Environmental impact of deforestation; Environmental Risk Assessment and Risk management in EIA; Risk assessment and treatment of uncertainty; Key stages in performing Environmental Risk Assessment; Practical environmental risk evaluation and management strategies.	CO4
V	Environmental Legislation, Standards and Professional Practices: EIA: MoEF & CC Acts, Notifications and Guidelines; Provisions in the EIA notification; Procedure for environmental clearance; Procedure for conducting Environmental Impact Assessment report; Evaluation of EIA report; Environmental legislation objectives; Evaluation of audit data and preparation of audit report; Post audit activities; Concept of ISO and ISO 14000; Environmental compliance reports; Professional practice through case studies and preparation of EIA statements for various industries.	CO5

Learning Resource(s)
Text Book(s)
1. Environmental Impact Assessment, Canter Larry W., McGraw-Hill education Edi (1996) 2. Environmental Impact Assessment Methodologies, Y. Anjaneyulu, B. S. Publication, Sultan Bazar, Hyderabad.
Reference Book(s)

1. Environmental Impact Assessment, Canter, L.W., McGraw-Hill Education, 1996.
2. Environmental Impact Assessment Methodologies, Anjaneyulu, Y., and Manickam, V., B.S. Publications, Hyderabad, 2007.
3. Environmental Management: Principles and Practice, Christopher Sheldon and Mark Yoxon, Routledge (Taylor & Francis), 2008.

e- Resources & Other digital material

1. https://onlinecourses.nptel.ac.in/noc22_ar07/preview