Environmental Impact Assessment
(SYLLABUS)

Course Code	23CE4702B	Year	IV	Semester	I
Course Category	Professional Elective - V	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 concepts, principles, and stages of Environmental Impact Assessment (EIA), including environmental baseline studies, stakeholder participation, and cost-benefit analysis.
2. To provide knowledge on various EIA methodologies and techniques for identification, prediction, and evaluation of environmental impacts using scientific tools such as GIS and environmental indices.
3. To develop the ability to assess environmental impacts on water, air, soil, biological environment, and to understand risk assessment and mitigation measures for sustainable development.
4. To familiarize with environmental legislation, environmental clearance procedures, environmental audit, ISO 14001 standards, and preparation of EIA, EMP, and compliance reports.

Course Outcomes:

Course will enable the student to:

CO	Statement	Blooms level
CO1	Explain the fundamental concepts, principles, stages, and components of Environmental Impact Assessment (EIA), including environmental baseline studies, stakeholder participation, and cost-benefit analysis.	**L2**
CO2	Apply appropriate EIA methodologies and tools such as matrix, network, overlay methods, GIS and environmental indices for identification and evaluation of environmental impacts.	**L3**
CO3	Analyse environmental impacts of developmental activities on air, water, soil, and biological environment and suggest suitable mitigation measures for sustainable development.	**L4**
CO4	Analyse environmental risk assessment procedures, uncertainty analysis, and management strategies to minimize adverse environmental impacts of projects.	**L4**
CO5	Explain environmental legislation, environmental clearance procedures, audit process, ISO 14001 standards, and preparation of EIA, EMP and compliance reports.	**L2**

Course Articulation Matrix:

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

(1 = Low, 2 = Medium, 3 = High)

Syllabus

Unit No	Content	Mapped COs
I	Basic concepts 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 - application of remote sensing and GIS for EIA.	**CO1, CO2**
II	EIA Methodologies: 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: Introduction and Methodology for the assessment of soil and ground water, Delineation of study area.	**CO2**
III	Procurement of relevant soil quality, Impact prediction, Assessment of Impact significance, Identification and Incorporation of mitigation measures - EIA 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	Assessment of Impact of development 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 an Environmental Risk Assessment - Advantages of Environmental Risk Assessment	**CO4**
V	EIA: MoEF & CC Acts, Notifications and Guidelines: Provisions in the EIA notification, procedure for environmental clearance, and 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 ISO14000. Environmental compliance reports. Case studies and preparation of EIA statement 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