CE 509: Environmental Impact Assessment (EIA) (3-0-0:3)

Course Objective: The problems of development in India are exceedingly complex. There is an intricate nexus between development and environment. Development requires use of natural resources - that often leads to excessive depletion and degradation.

The objectives of this course include; knowledge of EIA methods, understanding of interaction between environmental components, learning of mitigation strategies for mitigation of negative impact on the Environment.

Environmental impact assessment
Introduction, definitions and concepts, rationale and historical development of EIA, EIA for civil engineers.

Broad components of EIA
Initial environmental examination, environmental impact statement, environmental appraisal, environmental impact factors and areas of consideration.Pertinent institutional information, unique pollution problems, existing visual quality, public participation techniques. Composite consideration, potential cultural resources, potential visual impacts, geographical study area.

Methodologies
Measurement of environmental impact, organization, scope and methodologies of EIA pertinent environmental factors.Six generic steps, descriptive checklists, simple interaction matrix, stepped matrix, uniqueness ratio, habitat evaluation system.Public involvement techniques, comprehensive environmental impact study, various project types, archaeological properties, leachate testing, evaluation species, proposing agency, EIA Models.

Status of EIA in India
EIA Regulations in India, TOR for Hydropower Projects and other projects. Case studies from hydropower projects, hazardous industries and mining.

Environmental management
Principles, problems and strategies; Review of political, ecological and remedial actions.Future strategies; multidisciplinary environmental strategies, the human, planning, decision-making and management dimensions.

Environmental audit
Definitions and concepts, partial audit, compliance audit, methodologies and regulations.

EMS and Standardization
Introduction to ISO and ISO 14000. EMAS regulations, Wider application of system based approach. Local infrastructure development and environmental management: A system approach, Regional environmental management system, Conversion plan development and implementation strategies, Environmental management systems in local government**.**

Text Books and References:

1. Canter, L. W., *"Environmental Impact Assessment",* McGraw-Hill
2. Agarwal, N. P., "*Environmental Reporting and Auditing",* Raj Pub.
3. Judith, P. and Eduljee, G., "*Environmental Impact Assessment for Waste Treatment and Disposal Facilities",* John Wiley & Sons
4. Burke, G., Singh, B. R. and Theodore, L., "*Handbook of Environmental Management and Technology",* John Wiley & Sons
5. Eccleston, C. H., "*Environment Impact Statements: A Comprehensive Guide to Project and Strategic Planning",* John Wiley & Sons
6. Rau, J. G. and Wooten, D. C., "*Environmental Impact Analysis Handbook",* McGraw-Hill
7. Fuggle, R. F. and Rabie, M. A., "*Environmental Management in South Africa",* Juta & Co. Ltd.
8. Harrison, R. M., "*Pollution, Causes, Effects and Control",* Whitstable Lithop Ltd.
9. ISO 14001 : *Environmental System Handbook,* Whitelaw K. and Butterworth

Expected Outcome

EIA is now a well-established tool in India and a detailed system of legislation and guidance has developed to support its practice. EIAs for Environmental Clearance (EC) are generally carried out by EIA professionals in the country. Presently, we have more of demand than availability of EIA professional in the country. The present course shall help our students to grow as EIA professionals and offer them better job opportunities.