

Vision of the Institution

To ignite the minds of the students through academic excellence so as to bring about social transformation and prosperity.

Mission of the Institution

- To expand the frontiers of knowledge through Quality Education.
- To provide valued added Research and Development.
- To embody a spirit of excellence in Teaching, Creativity, Scholarship and Outreach.
- To provide a platform for synergy of Academy, Industry and Community.
- To inculcate high standards of Ethical and Professional Behavior.

Vision of CIVIL ENGINEERING Department

To give the nation qualitative Civil Engineers, who can contribute for the construction of a better world with sophisticated infrastructural facilities, eco-friendly houses, modern transportation facilities with a pollution free environment and to protect the precious natural resources of this planet.

Mission of CIVIL ENGINEERING Department

1. To shape the students into good entrepreneurs and to promote self-confidence and all-round development of the student personality through special lectures, practical training programs, field visits and technical seminars.
2. To train the students to acquire generic knowledge in the areas of Civil Engineering
3. To continuously update the physical infrastructure through modernization, thrust area development, R & D and other schemes
4. To generate knowledge base through sustained research and developmental efforts.
5. To produce engineers with self-confidence and overall personality who can be self-employed and generate employment opportunities to fellow engineers and take active part in nation building,
6. Keeping in view the challenges of the future.

Program Educational Objectives (PEOs)

PEO:1

The main objective of the faculty is to guide them by the principles of sustainable development and global inter connectedness with the civil structures, and make them to understand the impact of civil engineering projects how they effects the society and environment in case of failures.

PEO:2

To develop their communication skills(Oral, Written, Visual, Graphic modes) which makes them to participate actively in their communities and profession when working as team leaders or members.

PEO:3

An intensive training is provided to identify, formulate and solving engineering problems in technical areas appropriate CIVIL ENGINEERING.

PEO:4

To make them competent and engaged engineering professionals applying their technical and managerial skills in planning, designing and construction.

Program Outcomes (POs) of CIVIL ENGINEERING Department

Engineering Graduates will be able to:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes (PSOs) of CIVIL ENGINEERING Department

PSO 1:

An ability to learn constructional concepts and to implement them in the field work and to make the structural planning in a smarter way.

PSO 2:

To encourage young energetic engineers in technical and software skills in the field of Civil Engineering with innovative thoughts along with existing and future trends in constructional field.

PSO 3 :

The capability to integrate knowledge in constructional field work and to improve skills to become an entrepreneur.

ESTIMATING, SPECIFICATION AND CONTRACTS

Course Objective:

1. Impart the knowledge of Estimating, Costing and Valuation for Civil Engineering Structures.
2. Prepare and evaluate contract documents.

PART-A

UNIT – I

General items of work in Building – Standard Units Principles of working out quantities for detailed and abstract estimates – Approximate method of Estimating.

UNIT – II

Rate Analysis – Working out data for various items of work over head and contingent charges.

UNIT-III

Earthwork for roads and canals, Reinforcement bar bending and bar requirement schedules.

UNIT – IV

Contracts – Types of contracts – Contract Documents – Conditions of contract, Valuation of buildings.
Standard specifications for different items of building construction.

PART - B

UNIT – V

Detailed Estimation of Building using individual wall method

UNIT – VI

Detailed Estimation of Buildings using centre line method

FINAL EXAMINATION PATTERN:

The end examination paper should consist of part A and Part B. Part-A should consist of five questions and design out of which three are to be answered. Part -B consists of two questions and out of which one question is to be answered. Weightage for part –A is 60% and part –B is 40%

Course Outcomes :

1. Prepare quantity estimates for Buildings, roads & rails and canal structures as per specifications.
2. Draft detailed specifications and work out Rate Analysis for all works related to civil engineering projects.
3. Ascertain the quantity of materials required for Civil engineering works as per specifications.
4. Prepare cost estimate and valuation of civil engineering works.
5. Prepare tenders & contract documents. Evaluate contracts and tenders in construction practice.

SOLID WASTE MANAGEMENT

1. Evaluate the subject from the technical, legal and economical points by learning of all terms related to general solid waste management.
2. Explain the hierarchical structure in solid waste management and a requirement for an integrated solution.
3. Examine the technical points that are required to set up a solid waste management system.
4. Apply the legal legislation related to solid waste management.
5. Make an economical analysis of the solid waste management system.

UNIT- I

INTRODUCTION OF SOLID WASTE MANAGEMENT:

Goals and Objectives Of SolidWaste Management, Classification Of Solid Waste - Factors Influencing Generation Of Solid Waste - Sampling And Characterization –Future Changes In Waste Composition, Major Legislation, Monitoring Responsibilities.

UNIT- II

BASIC ELEMENTS IN SOLID WASTE MANAGEMENT:

Elements and Their InterRelationship – Principles of Solid Waste Management- Onsite Handling, Storage and Processing Of Solid Waste

COLLECTION OF SOLID WASTE:

Type and Methods of Waste Collection Systems,Analysis of Collection System - Optimization of Collection Routes– Alternative Techniques for Collection System.

UNIT-III

TRASFER AND TRANSPORT:

Need For Transfer Operation, Compaction of SolidWaste - Transport Means and Methods, Transfer Station Types and Design Requirements

UNIT-IV

SEPARATION AND TRANSFORMATION OF SOLID WASTE:

Unit operations used forseparation and transformation: shredding - materials separation and recovery, source reduction and waste minimization.

UNIT – V

PROCESSING AND TREATMENT

Processing Of Solid Waste - WasteTransformation through Combustion and Composting, Anaerobic Methods for Materials Recovery and Treatment – Energy Recovery – Biogas Generation and Cleaning– Incinerators.

UNIT-VI**DISPOSAL OF SOLID WASTE**

Methods of Disposal, Landfills: Site Selection, Design and Operation, Drainage and Leachate Collection Systems –Designated Waste Landfill Remediation

TEXT BOOKS:

1. George Tchobanoglous “Integrated Solid Waste Management”, McGraw Hill Publication, 1993

REFERENCES:

1. Vesilind, P.A., Worrell, W., Reinhart, D. “Solid Waste Engineering”, Cengage learning, New Delhi, 2004
2. Charles A. Wentz; “Hazardous Waste Management”, McGraw Hill Publication, 1995.

COURSE OUTCOMES:

Upon successful completion of this course, the students will be able to:

- a. Design the collection systems of solid waste of a town.
- b. Design treatment of municipal solid waste and landfill.
- c. To know the criteria for selection of landfill.
- d. To characterize the solid waste and design a composting facility.

COURSE OBJECTIVES

The objective of this course is:

- Familiarize students with deterioration of concrete in structures
- Equip student with concepts of NDT and evaluation
- Understand failures and causes for failures in structures
- Familiarize different materials and technique for repairs

REPAIR AND REHABILITATION OF STRUCTURES

(ELECTIVE –II)

UNIT – I

Deterioration of concrete in structures: Physical processes of deterioration like freezing and thawing, wetting and drying, Abrasion, Erosion, pitting, chemical processes like carbonation, chloride ingress, corrosion, alkali aggregate reaction, Sulphate attack acid attack, temperature and their causes, mechanism, effect, preventive measures, Cracks: cracks in concrete type, pattern, quantification, measurement & preventive measures.

UNIT – II

Non destructive testing: Non destructive testing methods for concrete including rebound hammer, ultrasonic pulse velocity, Rebar locator, corrosion meter, penetration resistance and pull out test, core cutting corrosion: methods for corrosion measurement and assessment including half cell potential and resistivity, mapping of date.

UNIT – III

Failure of buildings: Definition of building failure-types of failures-causes of failures-faulty design, accidental overloading, poor quality of material and poor construction practises- fire damage-methodology for investigation of failures, diagnostic testing methods and equipments-repairs of cracks in concrete.

UNIT-IV

Materials for repair and rehabilitation-admixtures-types of admixtures-purposes of using admixtures-chemical composition-natural admixtures-fibres-wraps-glass and carbon fibre wraps-steel plates-concrete behaviour under corrosion, disintegrated mechanism-moisture effects and thermal effects-visual investigation-acoustical emission methods-corrosion activity measurement-chloride content- depth of carbonation impact echo methods-ultrasound pulse velocity tests-pull out tests.

UNIT – V

Repair techniques: Grouting, jacketing, Shotcreting, externally bonded plates, nailing, underpinning and under water repair, materials, equipments, precautions and processes.

UNIT – VI

.Investigation of structures: Distress, observation and preliminary test methods, case studies: related to rehabilitation of bridge piers, dams, canals, heritage structures, corrosion and erosion, damaged structures.

TEXT BOOKS:

1. 'Maintenance & repair of civil structures' by B.L.Gupta& Amit Gupta
2. 'Rehabilitation of concrete structures' by B.vidivelli, standard publishers.
3. 'concrete bridge practice construction, maintenance & rehabilitation' by V.K Raina.

REFERENCE BOOKS:

1. Concrete structures protection repair and rehabilitation by R.Doodgewoodson, BH publishers.

COURSE OUTCOMES

At the end of this course the students will be able to

- Explain deterioration of concrete in structure

- Carryout analysis using NDT and evaluate structures
- Assess failures and causes of failures in structures
- Carryout physical evaluation and submit report on condition of the structure

ENVIRONMENTAL IMPACT ASSESSMENT AND MANAGEMENT (ELECTIVE –II)

COURSE OBJECTIVES:

1. To study the importance of EIA
2. To know the role of public in EIA studies
3. Understand phenomena of impacts in the environment
4. Know the impact quantification of various projects on the environment

UNIT – I

Basic concept of EIA : Initial environmental Examination, Elements of EIA, - factors affecting E-I-A Impact evaluation and analysis, preparation of Environmental Base map, Classification of environmental parameters - role of stake holders in the EIA preparation stages in EIA

UNIT – 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, cost/benefit Analysis.- EIS and EMP

UNIT – III

Impact of Developmental Activities and Land use: Introduction and Methodology for the assessment of soil and ground water, Delineation of study area, Identification of actives, application of remote sensing and GIS in EIA

UNIT-IV

Procurement of relevant soil quality, Impact prediction, Assessment of Impact significance, Identification and Incorporation of mitigation measures - E I A with reference surface water, Air and Biological environment: Methodology for the assessment of Impacts on surface water environment, Air pollution sources, Generalized approach for assessment of Air pollution Impact.

UNIT – V

Assessment of Impact of development Activities on Vegetation and wildlife, environmental Impact of Deforestation – Causes and effects 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.

UNIT – VI

EIA notification by Ministry of Environment and Forest (Govt. Of India):

Provisions of EIA notification, Procedure for environmental clearance, procedure for conducting 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 audit report preparation.

Post Audit activities, Concept of ISO and ISO 14000.

Case studies and preparation of Environmental Impact assessment statement for various Industries.

TEXT BOOKS:

1. Environmental Impact Assessment Methodologies, by Y. Anjaneyulu, B.S. Publication, Sultan Bazaar, KAKINADA.
2. Environmental Impact Assessment Methodologies, by Y. Anjaneyulu, B.S. Publication, Sultan Bazaar, Hyderabad.

REFERENCE BOOKS:

1. Environmental Science and Engineering, by Suresh K. Dhaneja – S.K. Katania & Sons Publication. New Delhi.
2. Environmental Pollution and Control, by Dr H.S. Bhatia – Galgotia Publication (P) Ltd, Delhi.
3. Environmental Science and Engineering, by J. Glynn and Gary W. Hein Ke – Prentice Hall Publishers

COURSE OUTCOMES :

1. To critically examine assumptions inherent in impact assessment.
2. To develop skills in identifying and solving problems.
3. To provide students with an understanding of the historical evolution of impact assessment in selected parts of the world.
4. To provide students with the knowledge and professional skills necessary to enable them to undertake environmental impact assessment.
5. To examine a range of environmental impact assessments.
6. To identify and explore impact assessment fields and approaches