



DADI INSTITUTE OF ENGINEERING & TECHNOLOGY

An Autonomous Institute

Approved by AICTE & Permanently affiliated to JNTU GV

Accredited by NAAC with 'A' Grade and Inclusion u/s 2(f) & 12(B) of UGC Act

An ISO 9001:2015, ISO 14001:2015 & ISO 45001:2018 Certified Institute.

NH-16, Anakapalle - 531002, Visakhapatnam, A.P.

www.diet.edu.in, 9963993229 E-mail: principal@diet.edu.in

Regulation – DR23 II B.Tech – I SEM AY: 2024-2025

NUMERICAL AND STATISTICAL METHODS

Course Outcomes:

CO-1	Apply numerical methods to solve algebraic and transcendental equations.
CO-2	Derive interpolating polynomials using interpolation formulae.
CO-3	Solve differential and integral equations numerically.
CO-4	To identify real life problems into Mathematical Models.
CO-5	To apply the probability theory and testing of hypothesis in the field of civil engineering Applications.

STRENGTH OF MATERIALS

Course Outcomes:

CO-1	Explain the basic materials' behavior under the influence of different external loading and support conditions.
CO-2	Illustrate diagrams indicating the variation of key performance features like axial forces, bending moments, and shear forces in structural members.
CO-3	Understand and calculate section modulus for determining stresses developed in beams.
CO-4	Analyze deflections due to various loading conditions.
CO-5	Evaluate stresses across sections of thin and thick cylinders and columns to determine optimum sections to withstand internal pressure using Lamé's equation.

FLUID MECHANICS

Course Outcomes:

CO-1	Explain the principles of fluid statics, kinematics, and dynamics.
CO-2	Apply the laws of fluid statics and concepts of buoyancy.
CO-3	Describe the fundamentals of fluid kinematics and differentiate between types of fluid flows.
CO-4	Apply the principle of conservation of energy for flow measurement.
CO-5	Analyze the losses in pipes and discharge through pipe networks.

SURVEYING AND GEOMETRICS

Course Outcomes:

CO-1	Utilize the principles & methods of surveying to measure horizontal & vertical distances and angles.
CO-2	Recognize the basic principles of compass surveying, such as traversing and calculating angles.
CO-3	Diagnose sources of errors and implement rectification methods.
CO-4	Grasp the fundamentals of theodolite surveying, such as trigonometric leveling and traversing.
CO-5	Set out curves and operate modern surveying equipment.

UNIVERSAL HUMAN VALUES-I

Course Outcomes:

CO-1	Define the terms like Natural Acceptance, Happiness and Prosperity.
CO-2	Identify one's self, and one's surroundings (family, society and nature).
CO-3	Apply what they have learnt to their own self in different day-to-day settings in real life.
CO-4	Relate human values with human relationship and human society.
CO-5	Justify the need for universal human values and harmonious existence and Develop as socially and ecologically responsible engineers.

ENVIRONMENTAL SCIENCE

Course Outcomes:

CO-1	To make the students to get awareness on environment.
CO-2	To understand the importance of protecting natural resources, ecosystems for future generations and pollution causes due to the day-to-day activities of human life.
CO-3	To save earth from the inventions by the engineers.
CO-4	Understand the social issues and the environment and apply some measures to protect the environment.
CO-5	To forecaste the human population and understand the effects of increase in population on environment.

STRENGTH OF MATERIALS LAB

Course Outcomes:

CO-1	Conduct tensile strength tests and illustrate stress-strain diagrams for ductile metals (Apply).
CO-2	Perform bending tests and determine load-deflection curves for steel/wood (Analyze).
CO-3	Conduct torsion tests and calculate torsion parameters(Apply).
CO-4	Perform hardness, impact, and shear strength tests, and compute hardness numbers, impact, and shear strengths (Evaluate).
CO-5	Conduct tests on closely coiled and open coiled springs and compute deflections (Apply).

SURVEYING LAB

Course Outcomes:

CO-1	Operate various linear and angular measuring instruments.
CO-2	Record linear and angular measurements accurately.
CO-3	Calculate area and volume by analyzing data obtained from surveying activities.
CO-4	Utilize modern equipment such as a total station.
CO-5	Compile field notes from survey data.

Regulation - R20

III B.Tech – I SEM

AY: 2024-2025

STRUCTURAL ANALYSIS

Course Outcomes:

CO-1	Distinguish between the determinate and indeterminate structures.
CO-2	Identify the behavior of structures due to the expected loads, including the moving loads, acting on the structure.
CO-3	Estimate the bending moment and shear forces in beams for different fixity conditions.
CO-4	Analyze the continuous beams using various methods -, three moment method, slope deflection method, energy theorems and Draw the influence line diagrams for various types of moving loads on beams/bridges.
CO-5	Analyze the loads in Pratt and Warren trusses when loads of different types and spans are passing over the truss.

DESIGN AND DRAWING OF REINFORCED CONCRETE STRUCTURES

Course Outcomes:

CO-1	Work on different types of design methods.
CO-2	Carryout analysis and design of flexural members and detailing.
CO-3	Design structures subjected to shear, bond and torsion.
CO-4	Design different type of compression members and footings.
CO-5	Familiarize with design of compression members under different types of loading.

GEOTECHNICAL ENGINEERING-I

Course Outcomes:

CO-1	Understand the definition of the various quantities related to soil mechanics and establish their inter-relationships.
CO-2	Understand the methods of determination of the various index properties of the soils and classify the soils.
CO-3	Understand the importance of the different engineering properties of the soil such as compaction, permeability, consolidation and shear strength and determine them in the laboratory.
CO-4	Impart the principles of compaction and consolidation of soils and determine the magnitude and the rate of consolidation settlement.
CO-5	Apply all the geotechnical concepts in day-to-day civil engineering practice.

ENVIRONMENTAL MANAGEMENT

Course Outcomes:

CO-1	Plan and design the water and wastewater systems.
CO-2	Identify the source of emissions and select proper control systems.
CO-3	Design & estimation of water supply system for a city.
CO-4	Gain knowledge about various environmental aspects.
CO-5	Selection of suitable treatment flow for raw water treatments.

CONSTRUCTION TECHNOLOGY MANAGEMENT

Course Outcomes:

CO-1	Appreciate the importance of construction planning.
CO-2	Understand the functioning of various earth moving equipment.
CO-3	Know the methods of production of aggregate products and concreting.
CO-4	Understand the importance of safety in construction projects.

CO-5	Apply the gained knowledge to project management and construction techniques.
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PROFESSIONAL ETHICS AND HUMAN VALUES

Course Outcomes:

CO-1	Create awareness of Ethics and moral values.
CO-2	Understand the importance of Ethics and code of conduct in business.
CO-3	Understand social responsibility in business and importance of human values.
CO-4	Professional Ethical values and contemporary issues.
CO-5	Excelling in competitive and challenging environment to contribute to industrial growth.

SURVEYING FIELD WORK-II LAB

Course Outcomes:

CO-1	Use the surveying tools like Theodolite and Total Station in the field.
CO-2	Take linear and angular measurements, booking and plotting accurately.
CO-3	Locate the position of the object after finding the distance and heights using stadia, tangential and trigonometrical principle.
CO-4	Set out a simple circular curve in the field.
CO-5	Obtaining different elevations by levelling.

GEOTECHNICAL ENGINEERING LAB

Course Outcomes:

CO-1	Determine the index properties for soil classification – Grain size distribution & Atterberg's limits.
CO-2	Determine the engineering properties – Permeability, Compaction, consolidation, shear strength parameters & CBR value.
CO-3	Impart knowledge of determination of index properties required for classification of soils.
CO-4	Determine compaction characteristics and consolidation behavior from relevant lab tests; to determine permeability of soils.
CO-5	Determine shear parameters of soil through different laboratory tests.

SKILL ORIENTED COURSE - II DESIGN OF SPECIAL STRUCTURES

Course Outcomes:

CO-1	Gain Professional knowledge in the design and construction of Industrial chimneys and Water tanks.
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CO-2	Gain Professional knowledge in the design of service reservoir and Estimation of drains for village.
CO-3	Understand the design of spillway for low and medium height dams.
CO-4	Estimate the concrete roads and rain water harvesting ponds.
CO-5	Evaluate all the design elements of special structures.

Regulation - R20 IV B.Tech – I SEM AY: 2024-2025

URBAN TRANSPORTATION PLANNING

Course Outcomes:

CO-1	Estimate travel demand for an urban area.
CO-2	Estimate trip generation, trip distribution, mode choice and traffic assignment.
CO-3	Plan the transportation network for a city.
CO-4	Identify the corridor and plan for providing good transportation facilities.
CO-5	Evaluate various alternative transportation proposals.

GROUND IMPROVEMENT TECHNIQUES

Course Outcomes:

CO-1	Understand various methods of ground improvement and their suitability to different field situations.
CO-2	Design a reinforced earth embankment and check its stability.
CO-3	Understand the various functions of Geo synthetics and their applications in Civil Engineering practice.
CO-4	Understand the concepts and applications of grouting.
CO-5	Design and implement various ground improvement techniques on field.

DESIGN AND DRAWING OF IRRIGATION STRUCTURES

Course Outcomes:

CO-1	design and draw hydraulic structures of Surplus weir.
CO-2	design and draw hydraulic structures of Tank sluice with a tower head.
CO-3	design and draw hydraulic structures of Canal drop-Notch type.
CO-4	design and draw hydraulic structures of Canal regulator.
CO-5	design and draw hydraulic structures of Syphon aqueduct type III.

SURVEYING AND GEOMATICS

Course Outcomes:

CO-1	Describe the function of surveying and work with survey instruments, take observations, and prepare plan, profile, and cross-section and perform calculations.
CO-2	Calculate, design and layout horizontal and vertical curves.

CO-3	Operate a total station and GPS to measure distance, angles, and to calculate differences in Elevation. Reduce data for application in a geographic information system.
CO-4	Relate and apply principles of photogrammetry for surveying.
CO-5	Apply principles of Remote Sensing and Digital Image Processing for Civil Engineering problems.

DISASTER MANAGEMENT

Course Outcomes:

CO-1	Affirm the usefulness of integrating management principles in disaster mitigation work.
CO-2	Distinguish between the different approaches needed to manage pre- during and post- disaster periods.
CO-3	Explain the process of risk management.
CO-4	Understand and Relate to risk transfer.
CO-5	Understand the tools of post-disaster management.

UNIVERSAL HUMAN VALUES

Course Outcomes:

CO-1	To appreciate the essential complementarity between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity which are the core aspirations of all human beings.
CO-2	To develop a holistic perspective forms the basis of Universal Human Values and movement towards value-based living in a natural way.
CO-3	To highlight possible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually fulfilling human behavior and mutually enriching interaction with Nature.
CO-4	To understand that human beings are not fulfilling to other orders today and need to take appropriate steps to ensure right participation in the nature.
CO-5	To grasp the right utilization of their knowledge in their streams of Technology/Engineering/ Management/ any other area of study to ensure mutual fulfilment.

SKILL ADVANCED COURSE-II PROJECT AND TOWN PLANNING

Course Outcomes:

CO-1	Understand the important codes and by-laws that will benefit young professionals.
CO-2	Get practical knowledge in planning of smart city.
CO-3	Gain professional knowledge in the design and construction procedures of various Civil Engineering projects.
CO-4	Gain Knowledge about the existing cities including roads and metros.

CO-5	Understand and analyze various governance plans implemented by the government.
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Regulation - DR23 II B.Tech – II SEM AY: 2024-2025

Managerial Economics and Financial Analysis

Course Outcomes:

CO-1	Define the concepts related to Managerial Economics, financial accounting and management (Understand).
CO-2	Understand the fundamentals of Economics viz., Demand, Production, cost, revenue and markets (Understand).
CO-3	Apply the Concept of Production cost and revenues for effective Business decision (Apply).
CO-4	Analyze how to invest their capital and maximize returns, Evaluate the capital budgeting techniques (Analyze, Evaluate).
CO-5	Develop the accounting statements and evaluate the financial performance of business entity (Create).

Engineering Geology

Course Outcomes:

CO-1	Explain the significance of geological agents on the Earth's surface and their importance in civil engineering. (Understand).
CO-2	Identify and understand the properties of megascopic minerals and rocks. (Understand).
CO-3	Describe the concepts of groundwater and its geophysical methods and apply knowledge to identify site parameters such as contour, slope, and aspect for topography. (Understand, Apply).
CO-4	Classify earthquake-prone areas, landslides, and subsidence zones, and measure these hazards to practice hazard zonation. (Analyze).
CO-5	Investigate project sites for civil engineering projects, including site selection for mega projects like dams, reservoirs, and tunnels, using strike and dip problem-solving. (Evaluate, Analyze).

Building Materials and Concrete Technology

Course Outcomes:

CO-1	Know various engineering properties of building construction materials and suggest their suitability (Understand).
CO-2	Describe the basic ingredients of concrete and their role in its production and behavior in the field and Test the properties of fresh and hardened concrete. (Apply).

CO-3	Explain the basic concepts of concrete. (Understand).
CO-4	Design the concrete mix using the BIS method. (Apply).
CO-5	Evaluate the ingredients of concrete through lab test results and recognize the importance of concrete quality. (Evaluate).

Structural Analysis

Course Outcomes:

CO-1	Apply energy theorems to evaluate trusses. (Apply).
CO-2	Analyze indeterminate structures using Castigliano's Second Theorem. (Analyze).
CO-3	Analyze the behavior of fixed and continuous beams. (Analyze).
CO-4	Evaluate continuous beams and portal frames using the slope-deflection method. (Evaluate).
CO-5	Evaluate continuous beams and portal frames using the moment-distribution method. (Evaluate).

Hydraulics and Hydraulic Machinery

Course Outcomes:

CO-1	Apply their knowledge of fluid mechanics in addressing problems in open channels and hydraulic machinery.
CO-2	Explain the characteristics of laminar and turbulent flows. (Understand).
CO-3	Analyze non-uniform flow problems & the hydraulic jump phenomenon in open channel flows. (Analyze).
CO-4	Evaluate the impact of jets on plates and Centrifugal pumps (Evaluate).
CO-5	Describe the principles, losses, and efficiencies of Turbines. (Understand).

Concrete Technology Lab

Course Outcomes:

CO-1	Explain the importance of testing cement. (Understand).
CO-2	Describe the properties of cement. (Understand).
CO-3	Evaluate different properties of aggregates. (Evaluate).
CO-4	Analyze fresh concrete properties and their relevance to hardened concrete. (Analyze).
CO-5	Evaluate hardened concrete properties. (Evaluate).

Engineering Geology Lab

Course Outcomes:

CO-1	Identify Megascopic minerals & their properties (Analyze).
CO-2	Identify Megascopic rocks & their properties (Analyze).
CO-3	Identify the site parameters such as contour, slope & aspect for topography (Analyze).

CO-4	Know the occurrence of materials using the strike & dip problems (Understand).
CO-5	Identify the topography of the site & material selection (Analyze).

Building Planning and Drawing

Course Outcomes:

CO-1	Plan various buildings according to the building by-laws. (Create).
CO-2	Analyze the relationship between the plan, elevation, and cross-section to identify the form and functions among buildings. (Analyze).
CO-3	Illustrate signs and bonds. (Apply).
CO-4	Illustrate different building units. (Apply).
CO-5	Develop the skills to draw building elements and plan buildings according to requirements. (Create).

Design Thinking and Innovation

Course Outcomes:

CO-1	Define the concepts related to design thinking. (Remember, Understand).
CO-2	Explain the fundamentals of Design Thinking and innovation (Remember, Understand).
CO-3	Apply the design thinking techniques for solving problems in various sectors. (Apply).
CO-4	Analyse to work in a multidisciplinary environment (Analyze).
CO-5	Evaluate the value of creativity and Formulate specific problem statements of real time issues (Apply, Evaluate, Create).

Regulation - R20 III B.Tech – II SEM AY: 2024-2025

Design and drawing of Steel Structures

Course Outcomes:

CO-1	Work with relevant IS codes (Understand).
CO-2	Carryout analysis and design of flexural members and detailing (Analyze).
CO-3	Design compression members of different types with connection detailing (Evaluate).
CO-4	Design Plate Girder and Gantry Girder with connection detailing (Evaluate).
CO-5	Produce the drawings pertaining to different components of steel structures (Create).

Water Resource Engineering

Course Outcomes:

CO-1	Understanding of the theories and principles governing the hydrologic processes (Understand).
CO-2	Quantify hydrologic components and apply concepts in hydrologic design of water resources projects (Analyze).
CO-3	Develop Intensity-Duration-Frequency and Depth-Area Duration curves to design hydraulic structures (Create).
CO-4	Develop design storms and carry out frequency analysis (Evaluate).
CO-5	Develop flow mass curve and flow duration curve, apply hydrograph analysis in the design of water resources projects and unit hydrograph and synthetic hydrograph (Create).

Geotechnical Engineering-II

Course Outcomes:

CO-1	Understand the various types of shallow foundations and decide on their location based on soil characteristics (Understand).
CO-2	Compute the magnitude of foundation settlement and decide on the size of the foundation accordingly (Evaluate).
CO-3	Use the field test data and arrive at the bearing capacity (Understand).
CO-4	Apply the principles of bearing capacity of piles and design them accordingly (Apply).
CO-5	Impart the principles of important field tests such as SPT and Plate bearing test (Apply).

Road Safety Engineering

Course Outcomes:

CO-1	Understand fundamental of Traffic Engineering (Understand).
CO-2	Investigate & determine the collective factors & remedies of accident involved (Evaluate).
CO-3	Design & planning various road geometrics (Evaluate).
CO-4	Implement the traffic system from road safety point of view (Create).
CO-5	Understand role of road safety in planning the urban infrastructures design (Understand).

Elements of Civil Engineering

Course Outcomes:

CO-1	Understand basics of Civil Engineering concepts (Understand).
CO-2	Understand the surveying the elevations and mapping (Understand).
CO-3	Understand the construction materials and elements (Understand).
CO-4	Understand water resource development (Understand).
CO-5	Understand overall infrastructure development (Understand).

Estimation, Costing and Contracts Lab

Course Outcomes:

CO-1	Determine the quantities of different components of buildings (Evaluate).
CO-2	Find the cost of various building components (Evaluate).
CO-3	Capable of finalizing the value of structures (Evaluate).
CO-4	Learn various specifications and components of the buildings (Understand).
CO-5	Rate analysis of different quantities of the buildings components (Understand).

Remote Sensing and GIS Lab**Course Outcomes:**

CO-1	Work comfortably on GIS software (Understand).
CO-2	Digitize and create thematic map and extract important features (Create).
CO-3	Develop digital elevation model (Create).
CO-4	Interpretation and Estimation of features from satellite imagery (Evaluate).
CO-5	Analyze and Modelling using GIS software (Analyze).

Civil Engineering Practice Lab**Course Outcomes:**

CO-1	Gain adequate confidence to work as a consulting engineer in any field of Civil Engineering (Understand).
CO-2	Understand the duties, responsibilities and codal practices of Civil Engineering profession (Understand).
CO-3	Plan, design and execute Civil Engineering projects (Evaluate, Create).
CO-4	Build safety related and environmental impact related codal protocols into project planning and execution (Create).
CO-5	Optimize project costs using sustainability concepts (Evaluate, Create).

Skill Advanced/Computational Tools - Computer Aided Design Lab**Course Outcomes:**

CO-1	Model the geometry of real-world structure Represent the physical model of structural element/structure (Create).
CO-2	Perform analysis of different structures (Analyze).
CO-3	Interpret from the Post processing results (Understand).
CO-4	Design the structural elements and a system as per IS Codes (Evaluate).
CO-5	Create geometries using pre-processor (Create).

Mandatory Course - Employability Skills**Course Outcomes:**

CO-1	Solve aptitude and reasoning problems (Analyze).
CO-2	Apply the soft skills in dealing the issues related to Employability (Apply).
CO-3	Successful in getting employment in campus placement interview (Create).
CO-4	Acquire skills required for getting placement (Apply).

CO-5 | Improve personality development and communication skills (Apply).




Dr. R Vaikunta Rao
Principal
Dadi Institute of Engineering & Technology
Autonomous
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