

DEPARTMENT OF CIVIL ENGINEERING

Sl. No.	Subject Code	Subject Name	Course Outcomes	
1	C207	BUILDING DRAWING USING AUTO CAD	CO 1	Provide a plan, elevation and side view of residential/office building.
			CO 2	Give the detailing of doors and windows in a building.
			CO 3	Draw several types of footings, brick works, staircase, masonry arches and lintels.
			CO 4	Work on the project on establishment like bank building, post office, library, hostel, auditorium etc.
			CO 5	Differentiate the type of steel roof Trusses
			CO 6	Provide the details of floor and wall joints
2	C205	FMHM	CO 1	Determine metacentric Height.
			CO 2	Calculate the pressure impacts of Jets.
			CO 3	Calculate the discharge of fluid through orifices. Calculate the pressure impacts of Jets.
			CO 4	Calculate the performance of gear pump.
			CO 5	Define hydraulic, mechanical, volumetric and overall efficiency and calculate the overall efficiency of various kinds of turbines.
			CO 6	Verify the momentum equation.
3	C211	SURVEYING	CO 1	Able to understand the basic of survey engineering like chain surveying, Plane table surveying, levelling, counteracting etc.
			CO 2	The students are able to understand the use of different surveying instruments and their use.

			CO 3	Ability to formulate and solve various problems in levelling and appreciate the need for understanding various type of curves used in surveying.
			CO 4	To prepare topographical map and contour map on an area.
			CO 5	To learn the use of theodolite and modern surveying instruments.
			CO 6	Students are able to do the surveying of different civil engineering projects.
4	C214	CONCRETE TECHNOLOGY	CO 1	Understand the theoretical concept and the physical & chemical properties of Concrete material which includes Cement, Admixtures and Aggregates.
			CO 2	Study the behaviour of concrete at its fresh and hardened state, describe and carry out tests of Fresh concrete.
			CO 3	Understand the properties & tests of hardened concrete.
			CO 4	Understand the factors affecting Elasticity, creep & Shrinkage in concrete.
			CO 5	Learn about different types of Special & No fines concrete and their uses.
			CO 6	Understand the concept and factors influencing concrete mix design utilizing various methods.
5	C231	STRUCTURAL ANALYSIS-I	CO 1	Ability to distinguish between determinate and indeterminate structures.
			CO 2	Learn different theorems and methods of analyzing a structure.
			CO 3	Ability to analyze indeterminate plane trusses.
			CO 4	Ability to use influence line diagrams as a valid tool for structural analysis.

			CO 5	Student will also be able to analyze columns.
			CO 6	Student will also be able to analyze three hinge arches and three hinge suspension bridges.
6	C212	TRANSPORTATION ENGINEERING	CO 1	To learn the importance of highway transportation and Principle of highway planning.
			CO 2	Understand the Highway Materials and introduction to Traffic Engineering.
			CO 3	Learn the basics design of highway pavements.
			CO 4	Understand the concept of highway construction and maintenance.
			CO 5	To understand the Traffic engineering& different types of traffic control device.
			CO 6	Basic idea about the Bridge engineering & Components parts of a bridge.
7	C301	DESIGN OF CONCRETE STRUCTURES	CO 1	To develop basic understanding of reinforced concrete as a construction material.
			CO 2	To develop understanding of various design philosophies and their differences.
			CO 3	To understand behaviour of RCC beams.
			CO 4	To understand behaviour of RCC members under flexural shear.
			CO 5	To understand behaviour of compression members.
			CO 6	To understand behaviour of one –way and two-way slabs using moment coefficient.
8	C305	ADVANCED MECHANICS OF MATERIALS	CO 1	Understand the advanced concept of stress-strain behaviour of materials.
			CO 2	Determine stress and strain transformations and derive constitutive equations in elasticity & understand different elastic functions.

			CO 3	Calculate fixing moments and support reactions in fixed and continuous beams.
			CO 4	Analyze stresses and deflection in curved beams.
			CO 5	Determine shear center in thin walled member and stress distribution in thick cylinders
			CO 6	Use analytical, experimental and computational tools needed to solve the idealized problem.
9	C308	RAILWAY AND AIRPORT ENGINEERING (5th SEMESTER)	CO 1	To understand permanent way components and technicalities of rails.
			CO 2	To design the geometry of railway track.
			CO 3	To understand different components and laws governing the site selection of airport.
			CO 4	To design various components of airport.
			CO 5	To design about basic orientation in harbour structural systems and performance of engineering structures.
			CO 6	To understand the different inland waterways transportation in India.
10	C312	WATER AND WASTE WATER ENGINEERING	CO 1	To understand the fundamentals of water treatment units and parts of water supply System.
			CO 2	To understands the importance of laboratory analysis for design of Water treatment units.
			CO 3	Understand the Design of water treatment plant.
			CO 4	Study of Miscellaneous treatment systems.
			CO 5	Study of water distribution system and rain water harvesting.
			CO 6	Apply knowledge of advanced water treatment processes for individual water purification.
11	C304	GEOTECHNICAL ENGINEERING	CO 1	Ability to understand the terminology and basic equations of the subject.

			CO 2	Ability to perform different tests on soil to determine the properties of soil.
			CO 3	Understand the different methods to determine Stress in soil.
			CO 4	Ability to Solve of Shear Strength problems.
			CO 5	Understand the different methods to determine earth pressure on retaining structure.
			CO 6	Understand the causes of Slope Failure and preventive measures.
12	C314	DESIGN OF STEEL STRUCTURES (6th SEMESTER)	CO 1	Gain knowledge about basic properties of steel and know about different connections.
			CO 2	Learn about tension and compression members and their design in steel structures.
			CO 3	Design of beams.
			CO 4	Learn about plate girders and roof trusses.
			CO 5	Design the short and long columns with axial and eccentric loadings.
			CO 6	Design the tanks on ground, underground and elevated watertanks.
13	C315	HYDROLOGY & IRRIGATION ENGINEERING (6th SEMESTER).	CO 1	Learn about basic concepts of hydrology and integrate the physical hydrological processes.
			CO 2	Study various process, measurement and estimation of hydrological components: evaporation, infiltration, stream flow etc.
			CO 3	To know the basics of irrigation and apply them to design irrigation canals.
			CO 4	Study various types of Cross-Drainage (CD) Works and dams
			CO 5	Plan and design diversion head works.

			CO 6	Analyze gravity and earthen dams, design spillways and energy Diversations works.
14	C220	FIELD SURVEY SESSIONAL	CO 1	State the interdependency and advancement of different surveying methods.
			CO 2	Comprehend the working principles of different surveying and geomatics instruments and experiments
			CO 3	Execute the different methods of surveying and geomatics to measure the features of interest
			CO 4	Examine the results obtained from the surveying and geomatics experiments
			CO 5	Critically appraise the different techniques of surveying and geomatics in measuring and assessing the features of interest
			CO 6	Design and construct solutions for real world problems related to surveying and geomatics.
15	C313	GEOTECHNICAL ENGINEERING LAB	CO 1	Identify different types of soil by visual inspection.
			CO 2	Determine natural moisture content and specific gravity of various types of soil.
			CO 3	Estimate in-situ density by core cutter method and sand replacement method.
			CO 4	Analyze grain size distribution and Atterberg limits for soil.
			CO 5	Perform laboratory tests to determine permeability and compaction characteristics of soil.
			CO 6	Determine shear strength parameters of soil by unconfined compression test and vane shear test.
16	C311	RCC LAB	CO 1	Understand material properties and design methodologies for reinforced concrete structures
			CO 2	Assess different type of loads and prepare layout for reinforced concrete structures

			CO 3	Identify and apply the applicable industrial design codes relevant to the design of reinforced concrete members
			CO 4	Analyse and design various structural elements of reinforced concrete building like beam, slab, column, footing, and staircase.
			CO 5	Assessment of serviceability criteria for reinforced concrete beam and slab
			CO 6	Prepare structural drawings and detailing and produce design calculations and drawing in appropriate professional format.
17	C221	Transportation Engineering Laboratory	CO 1	Identify and perform various experiments on soil, aggregate and bituminous materials in a group.
			CO 2	Interpret and apply the results of various experiments to design and solve various engineering problems related to bituminous overlay, sub base design and bituminous mix design.
			CO 3	Understand the knowledge of planning, design and the fundamental properties of highway materials in highway engineering.
			CO 4	Apply the knowledge of geometric design and draw appropriate
			CO 5	Interpret the concept of different methods in design, construction of the pavement.
			CO 6	Determine the CBR, GSB, WMM of soil subgrade.
18	C222	MATERIAL TESTING Laboratory	CO 1	Able to understand basic details like shape size, water absorption and compressive strength of brick

			CO 2	Demonstrate the method and findings of tension and compression tests on concrete.
			CO 3	Understand the concepts of different test on hardened concrete.
			CO 4	Calculate the specific gravity of concrete ingredients.
			CO 5	Find out the mix proportion of high grade of concrete.
			CO 6	Find out the mix proportion of high grade of concrete. 5. Measure the workability of concrete mix.
19	C320	Ground Improvement Technique	CO 1	gain competence in properly devising alternative solutions to difficult and earth construction
			CO 2	evaluate their effectiveness before, during and after construction.
			CO 3	understand different approaches to the ground modification.
			CO 4	Understand the soil stabilisation for reinforced earth construction.
			CO 5	Understand the concepts behind various ground improvement techniques.
			CO 6	Predict the behaviour of ground after improvement.
20	C322	Steel Structure Design Sessional	CO 1	Identify the material properties of structural steel. Moreover, the students will identify different bolted and welded connections, analyse and design them for axial and eccentric loads.
			CO 2	Design different steel sections subjected to axial compression and tension following Indian codes of practices.
			CO 3	Comprehend the differences between laterally supported and unsupported flexure members. Designing of the flexure members using Indian codes of practice.

			CO 4	Analyse and design rolled and built up compression members along with base connection subjected to axial compression, bending and tension.
			CO 5	Calculate shear force and bending moment on rolled and built up girders, dimension the section and finally design it following Indian standard design guidelines.
			CO 6	Identify different components of gantry system, calculate lateral and vertical loads acting on the system, dimension the components and design them.
21	C312	WATER AND WASTE WATER ENGINEERING LAB	CO 1	Experiment various physical characteristics for a given sample of water and wastewater
			CO 2	Determine various chemical characteristics for a given sample of water and wastewater
			CO 3	Examine the bacteriological characteristics for a given sample of water and wastewater
			CO 4	Examine the suitability of a few treatment options for a given sample of water and wastewater
			CO 5	Compare the determined quality parameters with standards to decide on the suitability of use for the tested water and disposal of tested wastewater
			CO 6	
22	C323	HYDROLOGY & IRRIGATION ENGINEERING LAB (6th SEMESTER).	CO 1	Determine Catchment area delineation (Manually and using DEM).
			CO 2	Compute average rainfall over a catchment area with arithmetic mean method, Thiessen polygon method and Isohyetal Method.
			CO 3	Use of different type of Rain gauges.
			CO 4	Measure infiltration rate using double ring infiltrometer.
			CO 5	Measure evaporation using evaporimeter.

			CO 6	Record bright sunshine hours using sunshine recorder.
23	C407	Water Resources Engineering	CO 1	Understand the fundamentals of flow in open channels.
			CO 2	Understand the concepts of irrigation.
			CO 3	Estimate the quantity of water required by different crops in different seasons, and accordingly the irrigation water requirement.
			CO 4	Design channels and other irrigation structures required for irrigation, drainage, soil conservation,
			CO 5	Learn about groundwater resources, aquifers and wells.
			CO 6	Learn about flood control and other water-management projects.
24	C419	Finite Element Method	CO 1	Obtain an understanding of the fundamental theory of the FEA method.
			CO 2	Develop the ability to generate the governing FE equations for systems governed by partial differential equations.
			CO 3	Understand the use of the basic finite elements for structural applications using truss, beam, frame, and plane elements
			CO 4	Understand the concepts of Nodes and elements
			CO 5	Understand use of FEA in Structural and thermal problem
			CO 6	Learn how to do analysis learn the various concepts and types of analysis
25	C402	Finite Element Method	CO 1	Have an idea of Economics in general, Economics of India particularly for public sector agencies and private sector businesses

			CO 2	Be able to perform and evaluate present worth, future worth and annual worth analyses on one of more economic alternatives.
			CO 3	Be able to carry out and evaluate benefit/cost, life cycle and breakeven analyses on one or more economic alternatives.
			CO 4	Be able to understand the technical specifications for various works to be performed for a project and how they impact the cost of a structure.
			CO 5	Be able to quantify the worth of a structure by evaluating quantities of constituents, derive their cost rates and build up the overall cost of the structure.
			CO 6	Be able to understand how competitive bidding works and how to submit a competitive bid proposal.