

2018-19	
Course Outcome (COs) of CIVIL Department	
Department of Civil Engineering	
3CE2-01	ADVANCE ENGINEERING MATHEMATICS-I
3CE2-01.1	Apply a range of mathematical theorems and methods to solve routine and complex analytic and applied problems;
3CE2-01.2	Analyse data necessary for the solution of engineering problems
3CE2-01.3	Examine the effectiveness of proposed solutions to identified engineering problems.
3CE1-02	TECHNICAL COMMUNICATION
3CE1-02.1	Learner can improve his/her technical skills required at the industry levels.
3CE1-02.2	Learner can implement technical writing, grammar and speaking in the industrial world.
3CE1-02.3	Student can learn to write technical writings, its format and various uses.
3CE3-04	Engineering Mechanics
3CE3-04.1	Draw free body diagrams and determine the resultant of forces and/or moments. Determine the centroid and second moment of area of sections.
3CE3-04.2	Apply laws of mechanics to determine efficiency of simple machines with consideration of friction. Analyse statically
3CE3-04.3	determinate planar frames. Analyse the motion.
3CE3-04.4	Apply Newton's laws and conservation laws to elastic collisions and motion of rigid bodies
3CE4-05	SURVEYING
3CE4-05.1	Handle various survey instrument for a particular survey work.
3CE4-05.2	Collect and analysis survey data for preparing drawing and maps.
3CE4-05.3	To apply check for errors estimation.
3CE4-05.4	Calculate relative altitudes and distance of different points on ground.
3CE4-05.5	Perform setting of horizontal curves in field.
3CE4-06	FLUID MECHANICS
3CE5A.1	Students will be able to understand the concepts of fluid statics, dynamics & kinematics.
3CE5A.2	Students will learn to analyse the pressure, buoyancy and types of flow and its characteristics.
3CE5A.3	Students be able to design the economic section for channel flow
3CE5A.4	Students will be able to generate flow parameters such as discharge, velocity, acceleration etc on the basis of flow problems.
3CE5A.5	Students be able to differentiate between types of flow, types of weirs & notches.
3CE4-07	BUILDING MATERIALS AND CONSTRUCTION
3CE4-07.1	Explain different materials especially eco-friendly materials and safety measures to be adopted at any construction site.
3CE4-07.2	Learn the various types of building materials and its engineering application.
3CE4-07.3	Gain knowledge in modern equipments and the recent techniques to be used.
3CE4-07.4	Understand the use of non-conventional Civil Engineering materials
3CE4-08	ENGINEERING GEOLOGY
3CE4-08.1	Explain different types of rocks & minerals found on earth.
3CE4-08.2	Explain faults and folds in earth crust.
3CE4-08.3	Explain the difference between several minerals by examining their physical & chemical properties.
3CE4-21	Surveying Lab
3CE4-21.1	Handle various survey instrument for a particular survey work.
3CE4-21.2	Collect and analysis survey data for preparing drawing and maps.
3CE4-21.3	To apply check for errors estimation.

3CE4-22	Fluid Mechanics Lab
3CE4-22.1	To verify the theorems in fluid mechanics and calibration of the instruments like venturimeter, orificemeter
3CE4-22.2	Determine different coefficients and factors involved in fluid flow
3CE4-22.3	Build knowledge on the working principles, components, functions of hydraulic equipment
3CE4-23	Computer Aided Civil Engineering Drawing
3CE4-23.1	Able to understand the basic command, principles and features behind autocad.
3CE4-23.2	Able to draft the plan, elevation and sectional views of buildings
3CE4-23.3	To draft 2D and 3D veivs of buildings
3CE4-24	Civil Engineering Maretils Lab
3CE4-24.1	To study about fly ash, different stones, different glasses, aluminum and steel sections
3CE4-24.2	To determine thevarious properties of cement
3CE4-24.3	To identification of building mateials by visual inspection
3CE4-25	Geolgy Lab
3CE4-25.1	To identification of minerals, rocks and woods by visual inspection and study
3CE4-25.2	Interpretation of geological map
3CE4-25.3	To understand the internal structure of earth for civil engineering aspect
3CE7-30	Industrial Training
3CE7-30.1	To understand the industrial work culture
3CE7-30.2	To understand the problems faced in real projects
3CE7-30.3	To enhanced communication skills and personality development
4CE2-01	ADVANCE ENGINEERING MATHEMATICS-II
4CE2-01.1	Apply a range of mathematical theorems and methods to solve routine and complex analytic and applied problems;
4CE2-01.2	Analyse data necessary for the solution of engineering problems
4CE2-01.3	Examine the effectiveness of proposed solutions to identified engineering problems.
4CS1-03	MANAGERIAL ECONOMICS AND FINANCIAL ACCOUNTING
4CS1-03.1	Develop the ability to explain core economic terms, concepts, and theories. Apply the concept of equilibrium to both microeconomics and macroeconomics.
4CS1-03.2	Explain the function of market and prices as allocative mechanisms.
4CS1-03.3	Identify key macroeconomic indicators and measures of economics change, growth, and development
4CE3-04	BASIC ELECTRONICS FOR CIVIL ENGINEERING APPLICATIONS
4CE3-04.1	Learner gets and idea of Introduction to Semiconductors, Diodes, V-I characteristics, Bipolar junction transistors uses.
4CE3-04.2	Learner gets knowledge of Data acquisition system and data processing.
4CE3-04.3	Students get to know the basic of Sensors & Transducers used in various instruments.
4CE4-05	STRENGTH OF MATERIALS
4CE4-05.1	Analyze and design structural members subjected to tension, compression, torsion, bending and combined stresses using the fundamental concepts of stress, strain and elastic behavior of materials
4CE4-05.2	Utilize appropriate materials in design considering engineering properties, sustainability, cost and weight
4CE4-05.3	Perform engineering work in accordance with ethical and economic constraints related to the design of structures
4CE4-06	HYDRAULICS ENGINEERING

4CE4-06.1	Explain the flow of fluids in channels
4CE4-06.2	Explain different types of turbines & pumps used.
4CE4-06.3	Explain the analytical process of deriving equation by using dimensional methods.
4CE4-07	BUILDING PLANNING
4CE4-07.1	Build an Articulated Plan. The obvious place to start during the planning process is building a plan.
4CE4-07.2	Focus on Strategic Differentiation. Build a plan that's focused on your strategic differentiation
4CE4-07.3	Align Your Organization
4CE4-08	CONCRETE TECHNOLOGY
4CE4-08.1	Understand chemistry, properties, and classification of cement, fly ash, aggregates and admixtures, and hydration of cement in concrete.
4CE4-08.2	Prepare and test the fresh concrete.
4CE4-08.3	Test hardened concrete with destructive and non-destructive testing instruments.
4CE4-08.4	Design concrete mix of desired grade.
4CE4-08.5	Get acquainted to concrete handling equipments and different special concrete types.
4CE4-21	Material Testing Lab
4CE4-21.1	To study about fly ash, different stones, different glasses, aluminum and steel sections
4CE4-21.2	To determine the various properties of cement
4CE4-21.3	To identification of building materials by visual inspection
4CE4-22	Hydraulics Engineering Lab
4CE4-22.1	Explain the flow of fluids in channels
4CE4-22.2	Explain different types of turbines & pumps used.
4CE4-22.3	Explain the analytical process of deriving equation by using dimensional methods.
4CE4-23	Building Drawing
4CE4-23.1	To Planning and drawing of residential building with details of site plan, foundation plan, furniture plan, water supply and sanitary plan
4CE4-23.2	To planning and drawing of institutional building with details of site plan, foundation plan, furniture plan
4CE4-23.3	To planning and drawing of commercial building with details of site plan, foundation plan, furniture plan
4CE4-24	Advanced Surveying Lab
4CE4-24.1	Calculate relative altitudes and distance of different points on ground.
4CE4-24.2	Perform setting of horizontal curves in field.
4CE4-24.3	Carry out Survey work using Total-station.
4CE4-25	Concrete Lab
4CE4-25 .1	To determine the different properties of building materials like cement, concrete, aggregates through practicals
4CE4-25 .2	To design concrete mix (M-20 and M-40) in lab
4CE4-25 .3	Study about Non Destructive testing
5CE3-01	CONSTRUCTION TECHNOLOGY AND EQUIPMENT
5CE3-01.1	Understand the construction practices and techniques.
5CE3-01.2	Gain the knowledge about Construction Equipment and Management.
5CE3-01.3	Identify the factors to be considered in planning and construction of buildings.
5CE4-02	STRUCTURE ANALYSIS-I
5CE4-02.1	To understand, analyze Fixed and continuous beams.

5CE4-02.2	Able to analyze moving loads and will be able to draw influence line diagrams for simply supported beams.
5CE4-02.3	Able to analyze three hinged arches and three hinge suspension bridges.
5CE4-02.4	The student will have the knowledge on advanced methods of analysis of structures like flexibility and stiffness method, kanis method, Moment distribution method, Slope and deflection method.
5CE4-02.5	Students are able to do the analysis of beams by using an advanced method of analysis.
5CE4-03	DESIGN OF CONCRETE STRUCTURES
5CE4-03.1	To design various components of the structures.
5CE4-03.2	Study the development length and shear reinforcement.
5CE4-03.3	To design the axially loaded column, isolated column footing
5CE4-03.4	Designing of Domes.
5CE4-03.5	Design and analysis of beams subjected to Torsion.
5CE4-04	GEOTECHNICAL ENGINEERING
5CE4-04.1	Explain different types of soil present on earth crust.
5CE4-04.2	Explain different types of soil properties and their use in engineering fields.
5CE4-04.3	Analyze engineering properties of soil like compaction, permeability, and shear strength.
5CE4-04.4	Analyze engineering properties of soil like compaction, permeability, shear strength.
5CE4-04.5	Compute the lateral thrust due to backfill on the retaining walls.
5CE4-05	WATER RESOURCE ENGINEERING
5CE4-05.1	Various components of the hydrologic cycle that affect the movement of water in the earth
5CE4-05.2	Various Stream flow measurements technique. the concepts of movement of groundwater beneath the earth
5CE4-05.3	The basic requirements of irrigation and various irrigation techniques, requirements
5CE5-13	Town Planning
5CE5-13.1	Explain different types of buildings depending upon their uses and occupancy level.
5CE5-13.2	Explain basic criteria for planning a industrial and residential buildings.
5CE5-13.3	Explain building by laws.
5CE5-14	Repair and Rehabilitation of Structures
5CE5-14.1	Treatment of develop cracks structure.
5CE5-14.2	Restore the structure integrity and shape of concrete elements.
5CE5-14.3	To maintain the good health of building .
5CE4-21	Concrete Structures Design
5CE4-21.1	To design various components of the structures.
5CE4-21.2	Study the development length and shear reinforcement.
5CE4-21.3	To design the axially loaded column, isolated column footing
5CE4-22	Geotechnical Engineering Lab
5CE4-22.1	Analyze engineering properties of soil like compaction, permeability, shear strength.
5CE4-22.2	Compute the lateral thrust due to backfill on the retaining walls.
5CE4-22.3	Classify soil slopes and identify their modes of failure.
5CE4-23	Water Resource Engineering Design
5CE4-23.1	Various components of the hydrologic cycle that affect the movement of water in the earth
5CE4-23.2	Various Stream flow measurements technique. the concepts of movement of groundwater beneath the earth

5CE4-23.3	The basic requirements of irrigation and various irrigation techniques, requirements
5CE7-30	Industrial Training
5CE7-30.1	To understand the industrial work culture
5CE7-30.2	To understand the problems faced in real projects
5CE7-30.3	To enhanced communication skills and personality development
6CE3-01	WIND AND SEISMIC ANALYSIS
6CE3-01.1	Understand the types of structures, symmetry and asymmetry in building forms, shear walls and multi-storey configurations.
6CE3-01.2	Analyze design loads for different types of buildings.
6CE3-01.3	Calculate wind load on flat roof, pitched roof and single sloped roof buildings.
6CE3-01.4	Calculate earthquake loads on framed structures and design of Earthquake Resistant Construction.
6CE4-02	STRUCTURAL ANALYSIS-II
6CE4-02.1	The student will have the knowledge on advanced methods of analysis of structures like flexibility and stiffness method, kanis method, Moment distribution method, Slope and deflection method.
6CE4-02.2	Students are able to do the analysis of beams by using an advanced method of analysis.
6CE4-02.3	Students are able to do analysis of portal frame
6CE4-03	ENVIRONMENTAL ENGINEERING
6CE4-03.1	Analyze characteristics of water and wastewater.
6CE4-03.2	Estimate the quantity of drinking water and domestic wastewater generated.
6CE4-03.3	Design components of water supply systems.
6CE-04	DESIGN OF STEEL STRUCTURES
6CE-04.1	Design tension and compression members.
6CE-04.2	Design beams and beam columns.
6CE-04.3	Design bolt and weld connections.
6CE-04.4	Design the gantry girder.
6CE4-05	Estimating & Costing
6CE4-05.1	Estimate of quantities for a Residential Building & Abstract cost Estimate
6CE4-05.2	Analyse the rates of work quantities and labour.
6CE4-05.3	Estimate the calculation of earth work quantity for roads and canals, Analyse different types of contracts, tender document for building & valuation
6CE5-12	SOLID AND HAZARDOUS WASTE MANAGEMENT
6CE5-12.1	To know about the solid waste management and disposal techniques.
6CE5-12.2	To know the waste management rules to generators of solid waste and its generation rate.
6CE5-12.3	To know about the biomedical waste management and hazardous solid waste management.
6CE5-16	Geographic Information System & Remote Sensing
6CE5-16.1	Analyse the principles and components of photogrammetry and remote sensing.
6CE5-16.2	Describe the process of data acquisition of satellite images and their characteristics.
6CE5-16.3	Compute an image visually and digitally with digital image processing techniques.
6CE4-21	Environmental Engineering Design and Lab
6CE4-21.1	Analyze characteristics of water and wastewater.
6CE4-21.2	Estimate the quantity of drinking water and domestic wastewater generated.

6CE4-21.3	Design components of water supply systems.
6CE4-22	Steel Structure Design
6CE4-22.1	Design tension and compression members.
6CE4-22.2	Design beams and beam columns.
6CE4-22.3	Design bolt and weld connections.
6CE4-23	Quantity Surveying and Valuation
6CE4-23.1	To learn about quantity surveying
6CE4-23.2	To prepare estimation for earth work, building work etc.
6CE4-23.3	To understand the aspects about valuation of building
6CE4-24	Water and Earth Retaining Structures Design
6CE4-24.1	To understand the design aspects about retaining structures
6CE4-24.2	Stability criteria of water and earth retaining structures
6CE4-24.3	To understand the seepage problems in retaining structures
6CE4-25	Foundation Design
6CE4-25.1	To design isolated shallow footings, combined footings, raft footings
6CE4-25.2	To design retaining structures
6CE4-25.3	To design pile foundation
7CE1A	WATER RESOURCES ENGINEERING – I
7CE1A.1	Various components of the hydrologic cycle that affect the movement of water in the earth
7CE1A.2	Various Stream flow measurements technique. the concepts of movement of groundwater beneath the earth
7CE1A.3	The basic requirements of irrigation and various irrigation techniques, requirements
7CE2A	DESIGN OF STEEL STRUCTURES – I
7CE2A.1	Design tension and compression members.
7CE2A.2	Design beams and beam columns.
7CE2A.3	Design bolt and weld connections.
7CE2A.4	Design built up members and column base.
7CE3A	DESIGN OF CONCRETE STRUCTURES-II
7CE3A.1	Designing of Domes.
7CE3A.2	Design and analysis of beams subjected to Torsion.
7CE3A.3	Explain the pre-stress concept used in concrete.
7CE4A	TRANSPORTATION ENGINEERING – II
7CE4A.1	Basic concept about Highway Engineering
7CE4A.2	To understand the principles of Highway geometrics design as per IRC standards
7CE4A.3	Perform geometric design for the Highway& Basic concept of Pavement design
7CE5A	Applications Numerical Methods in Civil Engineering
7CE5A.1	To develop the mathematical skills of the students in the areas of numerical methods.
7CE5A.2	To teach theory and applications of numerical methods in a large number of engineering subjects which require solutions of linear systems, finding eigen values, eigenvectors, interpolation and applications, solving ODEs, PDEs and dealing with statistical problems like testing of hypotheses.
7CE5A.3	To lay foundation of computational mathematics for post-graduate courses, specialized studies and research.

7CE6.1A	ADVANCE TRANSPORTATION ENGINEERING
7CE6.1A.1	Understand the factors influencing road vehicle performance characteristics and design.
7CE6.1A.2	Apply basic science principles in estimating stopping and passing sight distance requirements.
7CE6.1A.3	Design basic horizontal alignment of the highway, Design of flexible pavement layers
7CE8A	Steel Structures Design-I Lab
7CE8A.1	Design tension and compression members.
7CE8A.2	Design beams and beam columns.
7CE8A.3	Design bolt and weld connections.
7CE9A	Concrete Structures Design-II Lab
7CE9A.1	Designing of Domes.
7CE9A.2	Design and analysis of beams subjected to Torsion.
7CE9A.3	Explain the pre-stress concept used in concrete.
7CE10A	Application of Numerical Methods in Civil Engineering Lab
7CE10A.1	To develop the mathematical skills of the students in the areas of numerical methods.
7CE10A.2	To teach theory and applications of numerical methods in a large number of engineering subjects which require solutions of linear systems, finding eigen values, eigenvectors, interpolation and applications, solving ODEs, PDEs and dealing with statistical problems like testing of hypotheses.
7CE10A.3	To lay foundation of computational mathematics for post-graduate courses, specialized studies and research.
7CETR	Practical Training & Industrial Visit
7CETR.1	Students will get experience in designing on various design problems related to civil Engineering
7CETR.2	Able to understand the meaning of team work and construction activities.
7CETR.3	Analysis and design of structure to meet desired needs within realistic constraints
7CEPR	Project-I
7CEPR.1	Start and manipulate proposed engineering solutions as per industry and research requirement
7CEPR.2	Use various tools and techniques to study existing systems
7CEPR.3	To learn do work as an individual or in a team in project
8CE1A	WATER RESOURCES ENGINEERING- II
8CE1A.1	Students understood all types of dams and reservoirs.
8CE1A.2	Students understood Spillways, Gates & Energy dissipators.
8CE1A.3	Students understood various canal structures, river training works.
8CE1A.4	Hydrologic cycles, rainfall, runoff, evaporation & transpiration. Quantitative hydrology.
8CE1A.5	Ground water hydrology, well hydraulics, aquifer characteristics. Analyze flow in open channels, hydraulic jumps, critical and subcritical flows.
8CE2A	DESIGN OF STEEL STRUCTURES-II
8CE2A.1	Design the gantry girder.
8CE2A.2	Design the plate girder.
8CE2A.3	Design of Deck type plate-girder bridges, design of its bracings and frames.
8CE2A.4	Design the Water tanks.
8CE3A	PROJECT PLANNING & CONSTRUCTION MANAGEMENT
8CE3A.1	Explain the basic procedure involved in managing a project.

8CE3A.2	Explain the basic concepts of tasks, event, crashing an activity.
8CE3A.3	Explain risk factors involved and resource allocation for a good project scheduling.
8CE4.2A	ADVANCED FOUNDATION ENGINEERING
8CE4.2A.1	Identify suitable foundation system for a structure.
8CE4.2A.2	Evaluate the importance of raft foundation and principles of design for buildings and tower structures
8CE4.2A.3	Analyse and design pile foundations.
8CE5A	Design of Water Resource Structures-II
8CE5A.1	Able to understand about the principles of design of earth dams
8CE5A.2	To understand the GIS approach in irrigation engineering
8CE5A.3	To understand general features of power house structures
8CE6A	Professional Practice & Estimating
8CE6A.1	To prepare estimation plan for a building
8CE6A.2	Able to analysis of rates for earthwork, concrete work, DPC, stone masonry, plastering
8CE6A.3	To understand the type of tendors
8CE7A	Steel Structures Design-II
8CE7A.1	To design of plate girder
8CE7A.2	To design bridges
8CE7A.3	To design water tanks
8CE8A	Design of Foundations
8CE8A.1	To design isolated shallow footings, combined footings, raft footings
8CE8A.2	To design retaining structures
8CE8A.3	To design pile foundation
8CE9A	Structural Analysis by Matrix Methods
8CE9A.1	To understand matrix methods
8CE9A.2	To understand stiffness and flexibility matrices for bar, plate and beam element
8CE9A.3	To understand Finite Element Method
8CESM	Seminar
8CESM.1	To identify the problems and their solutions for given problem statement
8CESM.2	To prepapre a report and presentation on given problem statement
8CESM.3	To deliver presentation with good communication skill
8CEPR	Project-II
8CEPR.1	Start and manipulate proposed engineering solutions as per industry and research requirement
8CEPR.2	Use various tools and techniques to study existing systems
8CEPR.3	To learn do work as an individual or in a team in project

