BE CIVIL

COURSE CODE	COURSE NAME	COURSE OUTCOMES
401001	**Foundation Engineering**	1.Perform subsurface investigations for foundations using different methods.
		2. Estimate the bearing capacity of shallow foundations.
		3. Calculate immediate and primary consolidation settlement of shallow foundations
		4. Decide the capacity of a pile and pile group.
		5. Decide the capacity of a pile and pile group.
		6. Analyze problems related to expansive soil and overcome them using design principles, Construction techniques in black cotton soil.
401002	**Transportation Engineering**	1. Understand principles and practices of transportation planning.
		2. Demonstrate knowledge of traffic studies, analysis and their interpretation
		3. Design Geometric Elements of road pavement.
		4. Decide the capacity of a pile and pile group
		5. Appraise different types of pavements and their design.
		6. Understand the fundamentals of Bridge Engineering and Railway Engineering
401012	**Quantity Surveying, Contracts and Tenders**	1.Understand concept of estimates and prepare approximate estimate for various for Civil Engineering works.
		02 Describe tendering process, construction contracts, and aspects of Arbitration and prepare tender documents.

		03 Prepare detailed estimate of various items of work by different methods and calculate quantity of steel from Bar bending schedule.
		4. Apply engineering knowledge to prepare estimate for roads, culverts, and water tank (Elevated storage tank)
		5. Apply concepts of specification to draft brief specification, detailed specification and prepare detailed rate analysis report.
		6.Evaluate depreciation and valuation of property on the basis of present condition, specifications and market trend.
401011	**Dams and Hydraulics Structures**	1. Understand types of dams and instrumentation working
		2. Understand types of dams and instrumentation working
		3.Understand types of spillways & Design of Ogee spillway
		4. Illustrate the failures and analyze stability of earthen dam
		5.Design Canals and understand the canal structures
		6. Analysis of the Diversion headwork and Cross Drainage work

TE CIVIL

COURSE CODE	COURSE NAME	COURSE OUTCOMES
301012	**Waste Water Engineering**	1.Recall sanitation infrastructure, quantification and characterization of wastewater, natural purification of streams.
		2. Design preliminary and primary unit operations in waste water treatment plant.
		3. Understand theory and mechanism of aerobic biological treatment system and to design activated sludge process
		4. Understand and design suspended and attached growth wastewater treatment systems.
		5. Explain and apply concept of contaminant removal by anaerobic, tertiary and emerging wastewater treatment systems
		6. Compare various sludge management systems and explain the potential of recycle and reuse of wastewater treatment
301013	**Design of Reinforced Concrete Structures**	1. Apply relevant IS provisions to ensure safety and serviceability of structures, understand the design philosophies and behavior of materials: steel & concrete.
		2. Recognize mode of failure as per LSM and evaluate moment of resistance for singly, doubly rectangular, and flanged sections.
		3. Design & detailing of rectangular one way and two-way slab with different boundary conditions
		4. Design & detailing of dog legged and open well staircase

		5. Design & detailing of singly/doubly rectangular/flanged beams for flexure, shear, bond and torsion.
		6. Design & detailing of short columns subjected to axial load, uni-axial/bi-axial bending and their footings.
301014	**Remote Sensing and Geographic Information System**	1. Articulate fundamentals and principles of RS techniques.
		2.Demonstrate the knowledge of remote sensing and sensor characteristics.
		3.Distinguish working of various spaces-based positioning systems.
		4.Analyze the RS data and image processing to utilize in civil engineering
		5.Explain fundamentals and applications of RS and GIS
		6.Acquire skills of data processing and its applications using GIS
301001	**Hydrology and Water Resource Engineering**	1. Understand government organizations, apply & analyze precipitation & its abstractions.
		2. Understand, apply & analyze runoff, runoff hydrographs and gauging of streams.
		3. Understand, apply & analyze floods, hydrologic routing & Q-GIS software in hydrology.
		4. Understand, apply & analyze reservoir planning, capacity of reservoir & reservoir economics.
		5. Understand water logging & water management, apply & analyze ground water hydrology
		6. Understand irrigation, piped distribution network and canal revenue, apply and analyze crop water requirement

301002	Water Supply Engineering	1. Define identify, describe reliability of water sources, estimate water requirement for various sectors
		2. Ascertain and interpret water treatment method required to be adopted with respect to source and raw water characteristics
		3. Design various components of water treatment plant and distribution system.
		4. Understand and compare contemporary issues and advanced treatment operations and process available in the market, including packaged water treatment plants.
		5. Design elevated service reservoir capacity and understand the rainwater harvesting.
		6. Understand the requirement of water treatment plant for infrastructure and Government scheme.
301003	**Design of Steel Structures**	01 Demonstrate knowledge about the types of steel structures, steel code provisions and design of the adequate steel section subjected to tensile force.
		2. Determine the adequate steel section subjected to compression load and design of built up columns along with lacing and battening.
		3. Design eccentrically loaded column for section strength and column bases for axial load and uniaxial bending.
		4. Design of laterally restrained and unrestrained beam with and without flange plate using rolled steel section.
		5. Analyze the industrial truss for dead, live and wind load and design of gantry girder for

		moving load.
		6.Understand the role of components of welded plate girder and design cross section for welded plate girder including stiffeners and its connections.
301004	**Engineering Economics and Financial Management**	1. Understand basics of construction economics.
		2. Develop an understanding of financial management in civil engineering projects.
		3. Prepare and analyze the contract account.
		4. Decide on right source of fund for construction projects.
		5. Understand working capital and its estimation for civil engineering projects.
		6. Illustrate the importance of tax planning & understand role of financial regulatory bodies

SE CIVIL

COURSE CODE	COURSE NAME	COURSE OUTCOMES
201010	**Concrete Technology**	1. Able to select the various ingredients of concrete and its suitable proportion to achieved desired strength.
		2. Able to check the properties of concrete in fresh and hardened state.
		3. Get acquainted to concreting equipment's, techniques and different types of special concrete.
		4. Able to predict deteriorations in concrete and get acquainted to various repairing methods and techniques.
201011	**Structural Analysis**	1. Understand the basic concept of static and kinematic indeterminacy and analysis of indeterminate beams.
		2. Analyze redundant trusses and able to perform approximate analysis of multi-story multi-bay frames.
		3. Implement application of the slope deflection method to beams and portal frames.
		4. Analyze beams and portal frames using moment distribution method.
		5. Determine response of beams and portal frames using structure approach of stiffness matrix method.
		6. Apply the concepts of plastic analysis in the analysis of steel structures
201012	**Project Management**	1. Describe project life cycle and the domains of Project Management.
		2. Explain networking methods and their applications in planning and management

		3. Categorize the materials as per their annual usage and also Calculate production rate of construction equipment
		4. Demonstrates resource allocation techniques and apply it for manpower planning.
		5. Understand economical terms and different laws associated with project management
		6. Apply the methods of project selection and recommend the best economical project.
201001	**Building Technology and Architectural Planning**	1. Identify types of building and basic requirements of building components.
		2. Make use of Architectural Principles and Building byelaws for building construction.
		3. Plan effectively various types of Residential Building forms according to their utility, functions with reference to National Building Code.
		4. Plan effectively various types of Public Buildings according to their utility functions with reference to National Building Code.
		5. Make use of Principles of Planning in Town Planning, Different Villages and Safety aspects.
		6. Understand different services and safety aspects
201002	**Mechanics of Structures**	1. Understand concept of stress-strain and determine different types of stress, strain in determinate, indeterminate homogeneous and composite structures.
		2. Calculate shear force and bending moment in determinate beams for different loading conditions and illustrate shear force and bending moment diagram.
		3. Explain the concept of shear and bending stresses in beams and demonstrate shear and bending stress distribution diagrams.

		4. Use theory of torsion to determine the stresses in circular shaft and understand concept of Principal stresses and strains.
		5. Analyze axially loaded and eccentrically loaded column.
		6. Determine the slopes and deflection of determinate beams and trusses.
201003	**Fluid Mechanics**	1. Understand the use of Fluid Properties, concept of Fluid statics, basic equation of Hydrostatics, measurement of fluid pressure, buoyancy & floatation and its application for solving practical problems. method.
		2. Understand the concept of fluid kinematics with reference to Continuity equation and fluid dynamics with reference to Modified Bernoulli's equation and its application to practical problems of fluid flow
		3. Understand the concept of Dimensional analysis using Buckingham's π theorem, Similarity & Model Laws and boundary layer theory and apply it for solving practical problems of fluid flow.
		4. Understand the concept of laminar and turbulent flow and flow through pipes and its application to determine major and minor losses and analyze pipe network using Hardy Cross method.
		5. Understand the concept of open channel flow, uniform flow and depth-Energy relationships

		in open channel flow and make the use of Chezy's and Manning's formulae for uniform flow computation and design of most economical channel section.
		6. Understand the concept of gradually varied flow in open channel and fluid flow around submerged objects, compute GVF profile and calculate drag and lift force on fully submerged body.
207001	Engineering Mathematics III	1. Solve Higher order linear differential equations and its applications to modelling and analysing Civil engineering problems such as bending of beams, whirling of shafts and mass spring systems.
		2. Solve System of linear equations using direct & iterative numerical techniques and develop solutions for ordinary differential equations using single step & multistep methods applied to hydraulics, geotechnics and structural systems.
		3. Apply Statistical methods like correlation, regression and probability theory in data analysis and predictions in civil engineering.
		4. Perform Vector differentiation &integration, analyze the vector fields and apply to fluid flow problems.
		5. Solve Partial differential equations such as wave equation, one and two dimensional heat flow equations.
207003	Engineering Geology	1. Explain about the basic concepts of engineering geology, various rocks, and minerals both in lab and on the fields and their inherent characteristics and their uses in civil engineering

		constructions.
		2. Exploring the importance of mass wasting processes and various tectonic processes that hampers the design of civil engineering projects and its implications on environment and sustainability.
		3. Recognize effect of plate tectonics, structural geology and their significance and utility in civil engineering activities.
		4. Incorporate the various methods of survey, to evaluate and interpret geological nature of the rocks present at the foundations of the dams, percolation tanks, tunnels and to infer site / alignment/ level free from geological defects.
		5. Assess the Importance of geological nature of the site, precautions and treatments to improve the site conditions for dams, reservoirs, and tunnels.
		6. Explain geological hazards and importance of ground water and uses of common building stones.
201008	Geotechnical Engineering	1. Identify and classify the soil based on the index properties and its formation process
		2. Explain permeability and seepage analysis of soil by construction of flow net.
		3. Illustrate the effect of compaction on soil and understand the basics of stress distribution.
		4. Express shear strength of soil and its measurement under various drainage conditions.
		5. Evaluate the earth pressure due to backfill on retaining structures by using different theories.

		6. Analysis of stability of slopes for different types of soils.
201009	Surveying	1. Define and Explain basics of plane surveying and differentiate the instruments used for it.
		2. Express proficiency in handling surveying equipment and analyse the surveying data from these equipment.
		3. Describe different methods of surveying and find relative positions of points on the surface of earth.
		4. Execute curve setting for civil engineering projects such as roads, railways etc.
		5. Articulate advancements in surveying such as space based positioning systems6. Differentiate map and aerial photographs, also interpret aerial photographs
		6. Differentiate map and aerial photographs, also interpret aerial photographs