SECOND YEAR SEM I COs

Subject:	Fluid Mechanics	Subject Code:	201003
CO 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 problem		
CO 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		
CO 3	Understand the concept of Dimensional analysis using Buckingham's theorem, Similarity & Model Laws and boundary layer theory and apply it for solving practical problems of fluid flow		
CO 4	Understand the concept of laminar and turbulent flow and flow through pipes and its application to determine major and minor losses and analyse pipe network using Hardy Cross method		
CO 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		
CO 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		
Subject:	BTAP	Subject Code:	201001
CO 1	A. To relate different types of structure and their requirement.		
CO 2	A. To interpret Building Planning Principles and Bye-laws and plan a building by applying these Principles and Bye-laws		
CO 3	A. To Classify various Building Components		
CO 4	A. To outline functional requirements of Residential Buildings, features and benefits of green buildings		
CO 5	A. To Plan Public Buildings as per Functional requirements		
CO 6	To demonstrate Legal Aspects for Town Planning		
Subject:	MOS	Subject Code:	201002
CO 1	Recognize concept of stress-strain and determine different types of stress, strain in determinate, indeterminate homogeneous and composite structures.		
CO 2	Calculate shear force and bending moment in determinate beams for different loading conditions and illustrate shear force and bending moment diagram.		
CO 3	Explain the concept of shear and bending stresses in beams and demonstrate shear and bending stress distribution diagram.		
CO 4	Apply theory of torsion to determine the stresses in circular shaft and understand concept of Principal stresses and strains.		
CO 5	Analyze axially loaded and eccentrically loaded column.		
CO 6	Evaluate the slopes and deflection of determinate beams and trusses.		
Subject:	Engineering Mathematics III	Subject Code:	207001
CO 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 massspring systems.		
CO 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.		
CO 3	Apply Statistical methods like correlation, regression and probability theory in data analysis and predictions in civil engineering.		
CO 4	Perform Vector differentiation &integration, analyze the vector fields and apply to fluid flow problems.		
CO 5	Solve Partial differential equations such as wave equation, one and two dimensional heat flow equations.		
Subject:	Engineering Geology	Subject Code:	207009
CO 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.		

CO 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.
CO 3	Recognize effect of plate tectonics, structural geology and their significance and utility in civil engineering activities.
CO 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.
CO 5	Assess the Importance of geological nature of the site, precautions and treatments to improve thesite conditions for dams, reservoirs, and tunnels.
CO 6	Explain geological hazards and importance of ground water and uses of common buildingstones.

THIRD YEAR SEM I COs

Subject:	Hydrology & Water Resource Engineering	Subject Code:	301001
CO 1	Differentiate and understand government organizations & analyze precipitation & its abstractions		
CO 2	Ascertain & analyze runoff, runoff hydrographs and gauging of streams		
CO 3	Examine & analyze floods, hydrologic routing& Q-GIS software in hydrology		
CO 4	Design, analyze and understand reservoir planning, capacity of reservoir & reservoir economics.		
CO 5	Analyze water logging & water management and understand ground water hydrology		
CO 6	Design and analyze irrigation, piped distribution network and canal revenue, apply and analyze crop water requirement		
Subject:	Water Supply Engineering	Subject Code:	301002
CO 1	Define identify, describe reliability of water sources, estimate water requirement for various sectors.		
CO 2	Ascertain and interpret water treatment method required to be adopted with respect to source and raw water characteristics.		
CO 3	Design various components of water treatment plant and distribution system.		
CO 4	Understand and compare contemporary issues and advanced treatment operations and process available in the market, including packaged water treatment plants.		
CO 5	Design elevated service reservoir capacity and understand the rainwater harvesting.		
CO 6	Understand the requirement of water treatment plant for infrastructure and Government scheme.		
Subject:	Design of Steel Structures	Subject Code:	301003
CO 1	Able to demonstrate the types of steel structures, steel code provisions, connection details and design the adequate steel section subjected to tension		
CO 2	Able to determine the adequate steel section subjected to compression		
CO 3	Able to determine the section strength of eccentrically loaded column and choose the suitable type of column base		
CO 4	Able to decide the adequate steel section as a flexural member		
CO 5	Able to design beam to beam connection, beam to column connection and plate girder		
CO 6	Able to evaluate the forces in the members of roof truss and its design, gantry girder dimension		
Subject:	Engineering Economics Finacial Managment	Subject Code:	301004
CO 1	To recognize basics of construction economics.		
CO 2	To develop an understanding of financial management in civil engineering projects		
CO 3	To prepare and analyze the contract account		
CO 4	To decide on right source of fund for construction projects.		
CO 5	To articulate working capital and its estimation for civil engineering projects.		
CO 6	To Illustrate the importance of tax planning & understand role of financial regulatory bodies.		
Subject:	Construction Management	Subject Code:	301005 C
CO 1	To illustrate infrastructure development, construction management and project monitoring		

CO 2	To make use of Construction Scheduling with help of work study, work breakdown structure, building information modeling
CO 3	To illustrate labour laws such as workman compensation, construction workers, child labour, migrant workers, minimum wages act and financial aspects of construction project such as project cash flow, project balance sheet, profit loss account statements
CO 4	To plan Risk management by taking help of sensitivity analysis, break even analysis, simulation analysis, decision tree analysis and value engineering with energy cost escalation
CO 5	To develop Material Management with inventory control methods, EOQ model, break even analysis, ERP
CO 6	To outline Human Resource Management and Artificial intelligence technique in Civil Engineering

FINAL YEAR SEM I COs

Subject:	**Transportaion Engineering**	Subject Code:	401002
CO 1	Explain principles and practices of transportation planning.		
CO 2	Demonstrate knowledge of traffic studies, analysis and their interpretation.		
CO 3	Design Geometric Elements of road pavement.		
CO 4	Evaluate properties of highway materials as a part of road pavement.		
CO 5	Appraise different types of pavements and their design.		
CO 6	Categorize the fundamentals of Bridge Engineering and Railway Engineering		
Subject:	**Advance Design of Concrete Structures**	Subject Code:	401003 b
CO 1	Analyze and design of flat slab		
CO 2	Analyze and design slabs of different shapes having different edge conditions by applying yield line theory		
CO 3	Analyze and design of retaining walls.		
CO 4	Analyze and design of liquid retaining structures.		
CO 5	Analyze and design of RC shear walls & apply the concepts of ductile detailing		
CO 6	Analyze and design of RC frames for lateral loads.		
Subject:	**Integrated Water Resources Planning and Management**	Subject Code:	401 003 c
CO 1	Understand concerned organizations, IWRP & M objectives, principles, challenges, application & analysis of IWRP&M approaches & principles in a case study.		
CO 2	Understand PIM, WDS, WALMI, agriculture in the concept of integrated water resources, apply and analyse water requirements for food production		
CO 3	Understand assessment of surface and ground water quality, EIA, CPCB regulations, application & analysis of effluent quality standards as per CPCB		
CO 4	Understand water economics and funding, application & analysis of planning for a sustainable water future		
CO 5	Understand legal regulatory settings of IWRP & M, application & analysis of inter-basin watertransfers and IWRP & M		
CO 6	Understand flood control & power generation for IWRP & M, application QIGIS for analysis ofa basin for IWRP & M		
Subject:	**Air Pollution and Control**	Subject Code:	401 004 a
CO 1	Recall air pollution, legislation and regulations.		
CO 2	Evaluate air pollutant concentrations as a function of meteorology.		
CO 3	Interpret sampling results with prescribed standards.		
CO 4	Assess emission inventory and air quality models.		
CO 5	Compare the air pollution control equipments.		
CO 6	Infer indoor air pollution and its mitigation.		
Subject:	**Foundation Engineering**	Subject Code:	401001
CO 1	Perform subsurface investigations for foundations using different methods.		
CO 2	Estimate the bearing capacity of shallow foundations.		
CO 3	Calculate immediate and primary consolidation settlement of shallow foundations.		

CO 4	Decide the capacity of a pile and pile group.
CO 5	Understand the steps in geotechnical design of shallow foundations and well foundations.
CO 6	Analyze problems related to expansive soil and overcome them using design principles,construction techniques in black cotton soil.