Department of Civil Engineering

Course Outcome (CO)

Third Year- 2012 Course			
Semester I			
301001	**Hydrology and Water Resources Engineering**	CO 1	To impart knowledge of hydrological processes, precipitation, abstractions in precipitation and stream gauging.
		CO 2	To introduce students the concept of irrigation and water requirement of crops and assessments of canal revenue.
		CO 3	To inculcate an ability to apply the theories of groundwater hydrology along with the concepts of groundwater movement and storage to solve problems related to yield of wells
		CO 4	To impart knowledge of rainfall-runoff relationship and flood using hydrograph theory and to solve problems related to runoff and flood discharge.
		CO 5	To introduce students the concept of, Reservoir planning, yield of reservoir, demand and supply conditions and flood routing.
		CO 6	To expose the students to water management, water logging and drainage
301002	**Infrastructure Engineering and Construction Techniques**	CO 1	Student will understand to know the scope of infrastructure engineering in national and global development
		CO 2	Student will Able to determine various components of railway engineering, the types and

			functions of track, junctions and railway stations
		CO 3	Applying different construction techniques as dewatering, dredging, slip form and hoists cranes
		CO 4	Remembering of tunnelling methods and various operations required in tunnelling
		CO 5	To discuss about the types and components of docks and harbours.
		CO 6	Concepts of Construction techniques and its practical applications, Earth moving equipment
301003	**Structural design I**	CO 1	Understand the behaviour and properties of structural steel members to resist shear, tension ,bending and compression and apply relevant I.S. codes
		CO 2	Understand the concepts of analysis and design of compression member
		CO 3	Understand the concepts of built up section used as column
		CO 4	To understand concept of analysis and design of laterally restrained and unrestrained beams
		CO 5	Ability to study beam to beam connection, beam to column connection and design of welded plate Girder

		CO 6	Analysis and Design of roof truss and gantry girder for industrial building
301004	**Structural Analysis II**	CO 1	Use slope deflection equations to solve statically indeterminate structures.
		CO 2	Apply concepts of moment distribution for analysis of continuous beams.
		CO 3	Find support reactions and end moments of structure by flexibility methods.
		CO 4	Find slopes and end moments of structure by stiffness matrix methods.
		CO 5	Find slopes at nodes in simple beams and internal stresses of members of multi-storied frames by portal and cantilever methods.
		CO 6	Understand the basics of the finite element method.
301005	**Fluid Mechanics II**	CO 1	To impart knowledge about Fluid flow around submerged objects and understand the characteristics of unsteady flow
		CO 2	Students will be able to study and learn about Open Channel Flows and their depth energy relationship
		CO 3	Students will be able to learn about Uniform Flow and its computations also study analyse the hydraulic jump
		CO 4	To impart the knowledge about Impact of Jet

			studying the Centrifugal Pump along with its efficiencies
		CO 5	To impart the knowledge about Hydro-Power generation and basic design of turbines along with their performances
		CO 6	Students will be able to learn about Gradually varied flow and its computations through various analysis
301006	**Employability Skills Development**	CO 1	Ability to understand employer's requirements.
		CO 2	Ability to understand need of technical competence required for problem solving.
		CO 3	Ability to understand presentation skills
		CO 4	Ability to understand Communication skills
		CO 5	Ability to understand professional, group behavioural ethics and commercial interaction skill.
		CO 6	Development of personal skills to manage work load.
Semester II			
301007	**Advanced Surveying**	CO 1	Determine intervisisbility of stations
		CO 2	Describe various methods of Hydrographic Surveying

		CO 3	Apply setting out principles to construction work
		CO 4	Identify errors in triangulation
		CO 5	Interpret the concepts of Photogrammetry and its applications such as determination of heights of objects on terrain.
		CO 6	Describe the systems of Remote sensing and GIS
301008	**Project Management and Engineering Economics**	CO 1	To study importance of project management.
		CO 2	Tostudy project planning, scheduling, Monitoring and control.
		CO 3	To study project related finance and economics
		CO 4	To study project economics and Appraisal.
		CO 5	To study project resources and site planning.
		CO 6	To study feasibility of construction project.
301009	**Foundation Engineering**	CO 1	To understand the purpose and methods of soil exploration
		CO 2	To determine the bearing capacity of footing by different methods

		CO 3	To understand the settlement and consolidation of footing
		CO 4	To understand the deep foundation types and their uses
		CO 5	To understand the types, concept of cofferdams and the techniques in design of foundation in BC soil
		CO 6	To understand concepts of soil reinforcement, geosynthetics material in soil structure and Earthquake Geo-techniques
301010	**Structural Design II**	CO 1	Understand design philosophies of RC structure and relevant IS provisions to ensure safety and serviceability
		CO 2	Evaluate load transfer calculation and design of two dimensional structural element i.e. slab
		CO 3	Design and structural detailing of structural element staircase
		CO 4	Able to design the flexural members
		CO 5	Analyse flexural members for shear , bond and torsion
		CO 6	Design and structural drawing of column and isolated footing
301011	**Environmental Engineering-I**	CO 1	Engineers with the ability to analyze and control of Air pollution, noise pollution and solid waste.
		CO 2	Engineers with the ability to analyze and assess the quality of water.

		CO 3	Engineers with the ability to analyze design and execute the water works.
		CO 4	Engineers having the ability to improve the existing systems, coagulation and flocculation.
		CO 5	Engineers with the ability to working as entrepreneur in this stream by getting the knowledge of water softening
		CO 6	Engineers having ability to perform post-graduation in the subject and to use the knowledge in competitive examinations.
301012	**Seminar**	CO 1	To study research papers for understanding of a new field, in the absence of a textbook, to summarise and review them.
		CO 2	To identify promising new directions of various cutting edge technologies
		CO 3	To impart skills in preparing detailed report describing the project and results
		CO 4	To effectively communicate by making an oral presentation before an evaluation committee
Fourth Year-2012 Course			
Semester I			
401001	**Environmental Engineering II**	CO 1	An ability to analyze design and executive the wastewater works
		CO 2	An ability to improve the existing wastewater works system

		CO 3	An ability to design advance waste water systems
		CO 4	An ability to function as a leader or member of a multidisciplinary team
		CO 5	An ability to perform post-graduation in the subject and use the knowledge in competitive examinations
		CO 6	Students will learn advanced treatment technology
401002	**Transportation Engineering**	CO 1	Understand history of road development, roads classification in India, Understand traffic Engineering, controlling devices, Accident studies, types of road intersections, parking studies, highway lighting in India.
		CO 2	Able to fix road alignment, Geometric parameters, and highway drainage system.
		CO 3	Able to understand materials used in Highway Construction and related tests, flexible pavements, rigid pavements, Construction & Maintenance of roads.
		CO 4	Able to understand components of aeroplane, zoning requirements, wind rose diagrams etc.
		CO 5	Able to understand components of bridges, loads and stresses on bridges, abutments etc.
		CO 6	Able to understand types of bridges, types of bearings and maintenance of bridges.
401003	**Structural Design and Drawing III**	CO 1	Able to differentiate between pre-tensioning and post tensioning systems and analyse

		CO 2	Design of post tensioned prestressed concrete slab of structures
		CO 3	Able to analyze and design framed structures, Application of IS 1893:1984 for Earthquake resistant design of structures.
		CO 4	Understand and designing of Soil Retaining structures
		CO 5	Understanding the behaviour and designing of combined footing
		CO 6	Application of IS 3370 part II to part IV for water storage structures
401004	**Elective-I: Advanced Engineering Geology with Rock Mechanics**	CO 1	Explain distribution, characters and Civil Engineering significance of major rock formations of India.
		CO 2	Explain geo-hydrological characters, morphometric analysis, geological aspects of water conservation and process of soil formation.
		CO 3	Apply geological knowledge in planning, development and resource engineering.
		CO 4	Validate the suitability of rocks on the basis of physical and mechanical properties, R.Q.D. and geophysical investigation.
		CO 5	Explore subsurface Geology for various Civil Engineering projects, foundation, treatments and tail channel.
		CO 6	Illustrate the suitability of various rock fields for tunnelling and bridge.

401004	**Elective-I: Advanced Concrete Technology**	CO 1	To understand types of Cement and properties of Concrete
		CO 2	To understand types of concrete and their applications
		CO 3	To use mix design and advanced non-destructive methods
		CO 4	To understand properties of Fiber Reinforced Concrete
		CO 5	To understand behaviour of hardened Fiber Reinforced Concrete
		CO 6	To understand specifications of Ferrocement
401005	**Elective II: TQM & MIS in Civil Engineering**	CO 1	students will get to knowabout the basic concepts and factors affecting the quality in civil engineering through TQM
		CO 2	students get knowledge of MIS concepts
		CO 3	students will be able to understand defect's in material and it's preventive measures through quality analysis and control
		CO 4	students will know about various certifications in quality management
		CO 5	students will get to know the techniques about quality control and supply management related to civil engineering field

		CO 6	students will be able to study the various methods of TQM implementation and modern tools related to it
401006	**Project Phase I**	CO 1	Work in a team to select a topic/problem for project work
		CO 2	Collect and review the literatures on selected topic
		CO 3	Formulate the methodology to work on project topic
		CO 4	Understand materials for work and its properties through observations and experimentation.
		CO 5	Identify an engineering problem, analyse and propose a work plan to solve it.
		CO 6	Prepare and present project stage 1 progress report
Semester II			
401007	**Dams and Hydraulic Structures**	CO 1	Students can understand Dam, its Safety and Behavioral aspects of Dam with Instruments.
		CO 2	Students can analyze and design Gravity Dam with different stability conditions.
		CO 3	Student's awarded the Spillway, Gates and layout of the Hydropower plant.
		CO 4	Students gained the knowledge in failure aspects of Earthen Dam and Design of Diversion Head Works.
		CO 5	Students are able to design canal and canal structures.

		CO 6	Students are understood C. D. Work and River Training Works.
401008	**Quantity Surveying, Contracts and Tenders**	CO 1	student should understandthe types of estimates , DSR and its pre-requisites
		CO 2	students will be able to learn various methods of estimation and determinequantities of various items up to plinth level of a building
		CO 3	Students will be able to apply methods for computing the quantity of items for superstructure of the building and will also learn the valuation of structure.
		CO 4	Students will be able to learn the specification of various items and calculating rates of items.
		CO 5	Students will be able to understand about tenders and methods of work execution
		CO 6	Students will be able to understand about contracts and arbitration
401009	**Elective III: Hydropower Engineering**	CO 1	Students can understand various sources of energy and its environmental effect
		CO 2	Students can understand various types of hydropower plant
		CO 3	Students can study and calculate load assessment in power plant
		CO 4	Students will be able to know and understand the working of power house.

		CO 5	Students can understand design of turbine
		CO 6	Students will be able to learn various law and regulatory aspect, policies regarding power sector along with economics of power sector.
401010	**Elective IV: Construction Management**	CO 1	To enrich the students with the concepts and applications of Management
		CO 2	To make the learners understand the basic functions of Financial Management
		CO 3	To facilitate the students with the fundamental concepts of Technology management
		CO 4	To facilitate the students with the Risk Management of Construction Sector
		CO 5	To impart the importance of Human Resources in the organizational context
		CO 6	To gain knowledge related to artificial intelligence and applications
401006	**Project (Phase-II)**	CO 1	Work in a team to select a topic/problem for project work
		CO 2	Collect and review the literatures on selected topic.
		CO 3	Formulate the methodology to work on project topic
		CO 4	Understand materials for work and its properties through observations and experimentation.

		CO 5	Able to use waste materials in construction industry with engineering knowledge, skill and modern engineering tools for planning, construction, analysis and designing of engineering structures.
		CO 6	Prepare and present project report with effective writing and communication skills.