Course Name	Course Code	CO No.	Co Statement (On completion of the course, learner will be able to:)
Building Technology and Architectural Planning	201001	C201.1	Identify types of building and basic requirements of building components.
		C201.2	Make use of Architectural Principles and Building byelaws for building construction.
		C201.3	Plan effectively various types of Residential Building forms according to their utility, functions with reference to National
		C201.4	Plan effectively various types of Public Buildings according to their utility functions with reference to National Building Code.
		C201.5	Make use of Principles of Planning in Town Planning, Different Villages and Safety aspects.
		C201.6	Understand different services and safety aspects.
Mechanics of structure	201002	C202.1	Understand concept of stress-strain and determine different types of stress, strain in determinate, indeterminate homogeneous and composite structures.
		C202.2	Calculate shear force and bending moment in determinate beams for different loading conditions and illustrate shear force and bending moment diagram.
		C202.3	Explain the concept of shear and bending stresses in beams and demonstrate shear and bending stress distribution diagram.
		C202.4	Use theory of torsion to determine the stresses in circular shaft and understand concept of Principal stresses and strains.
		C202.5	Analyze axially loaded and eccentrically loaded column.
		C202.6	Determine the slopes and deflection of determinate beams and
Fluid Mechanics	201003	C203.1	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.
		C203.2	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
		C203.3	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.
		C203.4	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.
		C203.5	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.

Course Name	Course Code	CO No.	Co Statement (On completion of the course, learner will be able to:)
FM	201003	C203.6	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.
Engineering Mathematics III	207001	C204.1	Solve Higher order linear differential equations and its analysing Civil engineering problems such as bending of beams, whirling of shafts and massapplications to modelling and spring systems.
		C204.2	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.
		C204.3	Apply Statistical methods like correlation, regression and probability theory in data analysis and predictions in civil engineering.
		C204.4	Perform Vector differentiation &integration, analyze the vector fields and apply to fluid flow problems.
		C204.5	Solve Partial differential equations such as wave equation, one and two dimensional heat flow equations.
Engineering Geology	207009	C205.1	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.
		C205.2	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.
		C205.3	Recognize effect of plate tectonics, structural geology and their
		C205.4	Incorporate the various methods of survey, to evaluate and interpret
		C205.5	Assess the Importance of geological nature of the site, precautions and treatments to improve the site conditions for dams, reservoirs, and tunnels.
		C205.6	Explain geological hazards and importance of ground water and uses of common building stones.
Road Safety Management	201007	C206.1	Summarize the existing road transport scenario of our country
		C206.2	Explain the method of road accident investigation
		C206.3	Describe the regulatory provisions needed for road safety
		C206.4	Identify the safety issues for a road and make use of IRC's road safety manual for conducting road safety audit.
MOS (Lab)	201005	C207.1	Conduct Tension and bend-rebend test, Shear test on mild and TMT steel, Torsion test on mild steel and aluminum, Izod and Charpy impact test on mild steel, aluminum, brass and copper
		C207.2	Perform Compression test, Bending test on timber and plywood.
		C207.3	Find Water absorption, efflorescence test and Compressive strength test on bricks
		C207.4	Compute Flexural strength, perform abrasion test of flooring tiles

Course Name	Course Code	CO No.	Co Statement (On completion of the course, learner will be able to:)
Fluid Mechanics (Lab)	201006	C208.1	To understand the behaviour and applications of fluid properties and fluid pressure
		C208.2	To study the concept of fluid kinematics and fluid dynamics with reference to bernoullis theorem, venturimeter etc.
		C208.3	To determine friction factor and analyze pipe network using Hardy Cross Method
		C208.4	To understand the concept of open channel flow with reference to velocity distribution, uniform flow formulae etc.
		C208.5	To Recognize the idea of drag and lift forces
Engineering Geology (Lab)	207010	C209.1	Categorize different mineral specimens.
		C209.2	Categorize different rock specimens.
		C209.3	Interprete and construct the geological sections from contoured geological maps.
		C209.4	Analyse engineering geological problems such as alignment of dams, tunnels, roads, canals,bridges, etc. based on geological maps.
		C209.5	Prepare a core log from drilling data.
Awareness to Civil Engineering Practices (Audit Course I)	201007	C210.1	Describe functioning/working of different types of industries/sectors in Civil Engineering.
		C210.2	Describe drawings and documents required and used in different Civil Engineering works.
		C210.3	Understand the importance of Code of Ethics to be practiced by a Civil Engineer and also understand the duties and responsibilities as a Civil Engineer.
		C210.4	Understand different health and safety practices on the site.
Geotechnical Engineering	201008	C211.1	Identify and classify the soil based on the index properties and its formation process
		C211.2	Explain permeability and seepage analysis of soil by construction of flow net.
		C211.3	Illustrate the effect of compaction on soil and understand the basics of stress distribution.
		C211.4	Express shear strength of soil and its measurement under various drainage conditions.
		C211.5	Evaluate the earth pressure due to backfill on retaining structures by using different theories.
		C211.6	Analysis of stability of slopes for different types of soils.
Survey	201009	C212.1	Define and Explain basics of plane surveying and differentiate the instruments used for it.
		C212.2	Express proficiency in handling surveying equipment and analyse the
		C212.3	Describe different methods of surveying and find relative positions of points on the surface of earth.
		C212.4	Execute curve setting for civil engineering projects such as roads, railways etc.

Course Name	Course Code	CO No.	Co Statement (On completion of the course, learner will be able to:)
Survey	201009	C212.5	Articulate advancements in surveying such as space based positioning systems
		C212.6	Differentiate map and aerial photographs, also interpret aerial photographs.
Concrete Technology	201010	C213.1	Select the various ingredients of concrete and its suitable proportion to achieved desired strength.
		C213.2	Check the properties of concrete in fresh and hardened state.
		C213.3	Get acquainted to concreting equipments, techniques and different types of special concrete.
		C213.4	Predict deteriorations in concrete and get acquainted to various repairing methods and techniques.
Structural Analysis	201011	C214.1	Understand the basic concept of static and kinematic indeterminacy and analysis of indeterminate beams.
		C214.2	Analyze redundant trusses and able to perform approximate analysis of multi-story multi-bay frames.
		C214.3	Implement application of the slope deflection method to beams and portal frames.
		C214.4	Analyze beams and portal frames using moment distribution method.
		C214.5	Determine response of beams and portal frames using structure approach of stiffness matrix method.
		C214.6	Analyze redundant trusses and able to perform approximate analysis of multi-story multi-bay frames.
Project Management	201012	C215.1	Describe project life cycle and the domains of Project Management.
		C215.2	Explain networking methods and their applications in planning and management.
		C215.3	Categorize the materials as per their annual usage and also Calculate production rate of construction equipment.
		C215.4	Demonstrates resource allocation techniques and apply it for
		C215.5	Understand economical terms and different laws associated with project management.
		C215.6	Apply the methods of project selection and recommend the best economical project.
Geotechnical Engineering (Lab)	201013	C216.1	To conduct water content, specific gravity, sieve analysis, consistency limits, field density, coefficient of permeability of soil.
		C216.2	To conduct Direct shear test, unconfined compression test,vane shear test, triaxial test, standard proctor test, free swell test and swelling pressure test on soil.
Survey (Lab)	201014	C217.1	Compute true bearing of sides of a triangle or quadrilateral using prismatic compass
		C217.2	Draw traverse by using plane table survey

Course Name	Course Code	CO No.	Co Statement (On completion of the course, learner will be able to:)
Survey (Lab)	201014	C217.3	Calculate horizontal distance and vertical elevation using a Tacheometer
		C217.4	Find relative positions of points on the surface of earth.
		C217.5	Analyze temporary adjustments of the vernier transit Theodolite and to adjust closed traverse
		C217.6	Setting out a circular curve by Rankine's method of deflection angles
		C217.7	Comment on application of Electronic Total Station in construction
		C217.8	Differentiate map and aerial photographs, also interpret aerial photographs.
Concrete Technology (Lab)	201015	C218.1	Perform the practically tests on cement as per IS standard to check the various properties like Initial, final setting time and standard consistency.
		C218.2	Perform the practically tests on coarse and fine aggregate as per IS standard to check the various properties like Fineness modulus, Moisture content, bulk density and specific gravity.
		C218.3	Prepare the fresh concrete and take the workability test on concrete like Slump cone,Vee-Bee Consistometer and Compaction factor test.
		C218.4	Conduct test on harden concrete by using compressive and Universal testing machine.
		C218.5	Design the required grade of concrete as per IS guidelines
Project Based Learning	201017	C219.1	Identify the community/ practical/ societal needs and convert the idea into a product/ process/ service.
		C219.2	Analyse and design the physical/ mathematical/ ICT model in order to solve identified problem/project.
		C219.3	Create, work in team and applying the solution in practical way to specific problem.