Department of Civil Engineering

Course Outcomes

FE Semester-I		
FE Civil Course-2015	**COs**	**Course Outcome**
Basic Civil and Environmental Engineering 101005	101005.1	To learn the brief introduction of all area covered under the head of civil engineering.
	101005.2	To understand the need of monitoring land, air , water pollution and take remedial measures to control them.
	101005.3	To understand Basic Concepts of Ecology and Ecosystem.
FE Semester-II		
FE Civil Course-2015	**COs**	**Course Outcome**
Engineering Mechanics 101011	101011.1	To study of all force systems.
	101011.2	Equilibrium of force system
	101011.3	Mechanics also involves the kinematics of particle, particle dynamics, energy methods for particles, method of momentum for particles, kinetics of plane motion of rigid bodies, energy and impulse momentum methods and vibrations.
	101011.4	Analysis of structure and friction
	101011.5	Rectilinear motion of particles
	101011.6	Learn about the curvilinear motion of particles
SE Semester-I		
SE Civil Course-2015	**COs**	**Course Outcome**
Building Technology and Materials 201001	201001.1	Ability to identify types of building and basic requirements of building components.
	201001.2	Ability to Explain types of masonry, formwork, casting procedure and necessity of underpinning and scaffolding.
	201001.3	Ability to Elucidate different types of flooring and roofing materials.
	201001.4	Ability to Describe types of doors, windows, arches and lintel.
	201001.5	Ability to Illuminate means of vertical circulation and protective coatings.
	201001.6	Ability to Explain different materials especially eco-friendly materials and safety measures to be adopted at any construction site.
Engineering Mathematics III 207001	207001.1	Ability to Solve higher order linear differential equations and apply to civil engineering problems such as bending of beams and whirling of shafts.

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	207001.2	Solve system of linear equations using direct and iterative numerical techniques and develop solutions to ordinary differential equations using single step and multistep methods applied to structural systems.
	207001.3	Apply statistical methods like correlation, regression analysis in analyzing and interpreting experimental data and probability theory applied to construction management.
	207001.4	Ability to Perform vector differentiation and integration, analyze the vector fields and apply to fluid flow problems.
	207001.5	Ability to Solve various partial differential equations such as wave equation, one and two dimensional heat flow equations.
Surveying 201006	201006.1	Ability to Operate and use surveying equipment.
	201006.2	Ability to Draw plan or map of the existing permanent features on the ground.
	201006.3	Ability to Classify the ground features from the map or plan.
	201006.4	Ability to analyze temporary adjustments and check permanent adjustments of the Theodolite.
Strength of Materials 201002	201002.1	Ability to compute different type of stresses in determinate, indeterminate, homogeneous and composite structures.
	201002.2	Development of bending and shear stress diagram.
	201002.3	Ability to determine the torsional stresses and stresses due to strain energy for different loading conditions.
	201002.4	Explain the concept of principal stresses due to combined loading and able to compare the values of analytical and graphical (Mohr's circle) method.
	201002.5	Ability to plot loading diagram, Shear Force Diagram (SFD) and Bending Moment Diagram (BMD).
	201002.6	Ability to Analyze axially and eccentrically loaded column.
Geotechnical Engineering 201003	201003.1	Ability to differentiate the different types of soil and their engineering properties and classify them.
	201003.2	Ability to determine the soil properties in laboratory and develop a proficiency in handling experimental

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		data.
	201003.3	Ability to understand of the concept of effective stress and its influence on soil behaviour.
	201003.4	Ability to develop an understanding of the influence of water flow on the engineering behaviour of soils.
	201003.5	Analyze engineering properties like compaction, permeability, soil shear strength.
	201003.6	Compute the lateral thrust due to backfill on the retaining walls.
	201003.7	Classify soil slopes and identify their modes of failure.
Audit Course 1 (Awareness to Civil Engineering Practices) 201011	201011.1	Ability to understand different types of civil engineering industries and their functioning.
	201011.2	To study applications of different documents, drawings, regulations in Civil Engineering industries.
	201011.3	Code of ethics to be practiced by a Civil Engineer and understand duties and responsibilities as a Civil Engineer
	201011.4	To study different safety practices on the site.
Fluid Mechanics-I 201004	201004.1	Ability to use fluid properties, dimensional analysis for solving problems of fluid flow.
	201004.2	Ability to solve fluid statics problems.
	201004.3	Ability to measure fluid pressure.
	201004.4	Ability to calibrate discharge measuring instrument like venturimeter, orifice meter.
	201004.5	Ability to Distinguish between various types of fluid flows and find the fluid velocity using principles of Kinematics and Dynamics.
	201004.6	Ability to Design pipes to carry particular amount of discharge.
Architectural Planning and Design of Buildings 201005	201005.1	Ability to make use of principles of planning and principles of architectural Planning.
	201005.2	Ability to analyze the available primary or secondary data and plan different types of structures considering futuristic need of an area.
	201005.3	Ability to improve the status of existing structures by proposing appropriate green measures.
	201005.4	Ability to plan effectively various types of buildings according to their utility with reference to different codes.

	201005.5	Ability to understand and resolve contemporary issues at multi-dimensional functional levels.
Structural Analysis I 201008	201008.1	Ability to understand the basic concept of static and kinematic indeterminacy, slope and deflection of determinate and indeterminate beams for analysis of structures.
	201008.2	Ability to analyze indeterminate beams structures and frames.
	201008.3	Ability to evaluate determinate and indeterminate trusses and its application in the field.
	201008.4	Ability to apply influence line diagrams for the analysis of structures under moving load.
	201008.5	Ability to analyze two and three hinged arches and its application.
	201008.6	Ability to apply plastic analysis for indeterminate steel structures by limits state method.
Engineering Geology 207009	207009.1	Ability to Explain the basic concepts of engineering geology.
	207009.2	Ability to Differentiate between the different rock types, their inherent characteristics and their application in civil engineering.
	207009.3	Ability to Understand physical properties, mechanical properties of the minerals and their application in civil engineering.
	207009.4	Ability to Identify favourable and unfavourable conditions for the buildings, roads, dam, tunneling etc through the rocks.
	207009.5	Ability to Explain mass wasting processes, effects of mass wasting process on the civil engineering structures and remedial measures.
	207009.6	Ability to Interpret geohydrological characters of the rocks present at the foundations of the dams, percolation tanks, tunnels.
	207009.7	Ability to Understand Seismic activities and its effect on the civil engineering construction.
	207009.8	Ability to Identify geological hazards and presence of ground water.
Concrete Technology 201007	201007.1	Ability to Understand chemistry, properties, and classification of cement, fly ash, aggregates and admixtures, and hydration of cement in concrete.
	201007.2	Ability to Prepare and test the fresh concrete

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	201007.3	Ability to Test hardened concrete with destructive and non-destructive testing instruments.
	201007.4	Ability to Get acquainted to concrete handling equipments and different special concrete types.
	201007.5	Design concrete mix of desired grade
	201007.6	Ability to Predict deteriorations in concrete and repair it with appropriate methods and techniques.
Soft Skill 201010	201010.1	Ability to Make use of techniques for self-awareness and self-development.
	201010.2	Ability to Apply the conceptual understanding of communication into everyday practice.
	201010.3	Ability to Understand the importance of teamwork and group discussions skills.
	201010.4	Ability to Develop time management and stress management.
	201010.5	Ability to Apply business etiquette skills effectively an engineer requires.
Audit Course - II (Road Safety Management) 201011	201011.1	Ability to Show changes in awareness levels, knowledge and understanding.
	201011.2	Ability to Demonstrate a change in attitudes / behaviour e.g. against drink-drive.
	201011.3	Ability to Utilize remedial education for those who make mistakes and for low level offences where this is more effective than financial penalties and penalty points.
	201011.4	Ability to Improve road safety together leading to casualty reduction.
TE Semester-I		
TE Civil Course-2015	**COs**	**Course Outcome**
Hydrology and water resource engineering. 301001	301001.1	To explain different phases involved in hydrological cycle, precipitation, evaporation and infiltration.
	301001.2	To understand various methods for irrigation and assessment of canal revenue.
	301001.3	To understand hydraulics of wells under steady flow condition in confined and unconfined aquifers.
	301001.4	To describe unit hydrograph, S-curve hydrograph, synthetic unit hydrograph and uses of unit hydrograph.
	301001.5	To explain basics of reservoir planning, fixation of reservoir capacity and useful life of reservoir

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	301001.6	To understand various components of lift irrigation scheme and their design.
Infrastructure Engineering and Construction Techniques 301002	301002.1	To understand the meaning and importance of Infrastructure Engineering
	301002.2	To study railway systems and its construction techniques
	301002.3	To study tunnels and docks and harbours along with their importance
	301002.4	To study different construction equipments
Structural Design-I 301003	301003.1	Ability to learn different method of design of steel structures and design of tension member
	301003.2	Ability to design compression member and built up section used as column.
	301003.3	Ability to design eccentrically loaded column and its base.
	301003.4	Ability to design laterally supported and laterally unsupported beam..
	301003.5	Ability to study beam to beam connection, beam to column connection and design of welded plate girder.
	301003.6	Ability to design roof truss and gantry girder.
Structural Analysis-II 301004	301004.1	Analyze one dimensional and two dimensional structures using matrix methods of structural analysis.
	301004.2	Analyze structures up to three degrees of indeterminacy
	301004.3	Analyze indeterminate structures.
	301004.4	Different indeterminate analysis methods like Slope deflection, moment distribution, Stiffness and flexibility method.
	301004.5	Introduction of Finite element method.
Fluid Mechanics- II 301005	301005.1	**Understand** and **describe** the basic fundamentals of fluid flow around submerged objects, open channel flow, hydraulic machinery, hydropower generation and gradually varied flow.
	301005.2	**Apply** the knowledge of basics for **design**ing the objects submerged in fluid flow, open channel and hydraulic machinery in field.
	301005.3	Conduct the **experiments** in the laboratory to **verify** the designs and **derive** the equations.
	301005.4	**Evaluate** and **inspect** the execution, performance

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		and functioning of the open channel and hydraulic machinery.
Employability Skills Development 301006	301006.1	Ability to understand need of technical competence required for problem solving.
	301006.2	Ability to understand professional and group behavioural ethics.
	301006.3	Ability to understand employers requirements.
TE Semester-II		
TE Civil Course-2015	**COs**	**Course Outcome**
Advanced Surveying 301007	301007.1	Aware of Study of application of GPS in geodetic surveying.
	301007.2	Graduates are able to learn MPV of errors as MPE of angles.
	301007.3	Graduates are able to learn how can collect valuable information of object shape size position.
	301007.4	Students are able to learn the techniques aerial photogrammetry
	301007.5	Graduates are able to learn how can collect valuable information of object shape size position.
Project Management and Engineering Economics 301008	301008.1	To study importance of project Management.
	301008.2	To study project planning, scheduling, Monitoring and control.
	301008.3	To study project resources and site planning.
	301008.4	To study project economics and Appraisal.
Foundation Engineering 301009	301009.1	Understand soil exploration methods.
	301009.2	Analyze shallow foundations and bearing capacity.
	301009.3	Compute and analyze the consolidation settlements.
	301009.4	Analyze deep foundations.
	301009.5	Analyze cofferdams, foundations n expansive soils.
	301009.6	Study of Earthquake and soil reinforcements.
Structural Design-II 301010	301010.1	Apply relevant IS provisions to ensure safety and serviceability to structures, understand the design philosophies and behaviour of materials: steel & concrete.
	301010.2	Plan different elements of the structure and interpret their behavior under load.
	301010.3	Evaluate load calculations and load transfer phenomenon of the structure.
	301010.4	Analyze different components of the structure.

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	301010.5	Design different components of the structures such as slab, staircase, beam, column, and footing
	301010.6	Prepare structural drawings with all the necessary schedules and detailing of the structures designed by them.
Environmental Engineering-I 301011	301011.1	Ability to explain Noise and Air pollution and its remedies of control.
	301011.2	Ability to describe Water Supply Scheme and Population Forecasting.
	301011.3	Ability to understand Physical Treatments of potable water.
	301011.4	Ability to understand Chemical treatments on water to purify.
	301011.5	Ability to explain how the water is treated Biologically and Special treatments given of water.
	301011.6	Ability to get knowledge of design of water distribution and Rainwater Harvesting.
BE Semester-I		
BE Civil Course-2012	**COs**	**Course Outcome**
Environmental Engineering II 401001	401001.1	An ability to analyze design and execute the wastewater works.
	401001.2	An ability to improve the existing wastewater work systems.
	401001.3	An ability to function as the leader, or member, of a multidisciplinary team.
	401001.4	An ability to perform post-graduation in the subject and to use the knowledge in competitive examinations.
Transportation Engineering 401002	401002.1	To study Importance, classification of highway.
	401002.2	To study the geometric design of highways and traffic engineering.
	401002.3	To study highway materials and pavement design and its construction process.
	401002.4	To study airports and its components.
	401002.5	To study various types of bridges, its bearing and Erection of bridges.
Structural Design and Drawing III 401003	401003.1	Understand prestressing systems, methods, various prestressing losses, cable profiles; knowledge of which is mostly required in construction of bridges

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		and slabs.
	401003.2	Design prestressed beams & slabs.
	401003.3	Analyse and design multistoried buildings (3-4 storeys) for earthquake loads along with dead load & live loads.
	401003.4	Design aspects of retaining walls, their practical significance.
	401003.5	Know in what situations combined footings are opted and their design.
	401003.6	Design liquid retaining structures resting on ground only. This knowledge is mostly required in the design and construction of water tanks.
Systems Approach in Civil Engineering 401004	401004.1	Understand the meaning of Local & Global optima, unimodal function, convex and concave function (with reference to objective function, constraints).
	401004.2	Analyze Lagrange Multiplier Technique.
	401004.3	Solve optimization problem using Sequencing– n jobs through 2, 3 and M machines.
	401004.4	Explain the concept of Multi stage decision processes, Principle of optimality, recursive equation.
	401004.5	Understand the basics of The simplex method, Method of Big M, Two phase method, duality.
	401004.6	Analyze The Transportation Model & Assignment Model.
TQM & MIS in Civil Engineering 401005	401005.1	To study the importance of quality in construction.
	401005.2	To study MIS and its application in construction.
	401005.3	To identify defects and its prevention and TQM philosophy of Six Sigma.
	401005.4	Importance of Total Quality Management and ISO in construction.
	401005.5	To study applications of TQM and different philosophies like Kaizen, Benching and Supply chain management.
	401005.6	To study ERP system and its importance.
BE Semester-II		
BE Civil Course-2012	**COs**	**Course Outcome**
Dams and Hydraulic Structures 401007	401007.1	To learn about dams, their types, safety of dam and dam instrumentations.
	401007.2	To study of reservoir planning and selection of site for reservoir.

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	401007.3	Study of gravity dam, its components, forces acting on it, design and analysis.
	401007.4	Study of spillway and gates, its capacity, types, operation, energy dissipation.
	401007.5	Study of earthen dam, its components, forces acting on it, design and analysis.
	401007.6	Study of inlet structures, head regulators and discharge measuring structures.
	401007.7	Study of diversion head works- site selection, types and design of weir.
	401007.8	To learn canal, its types, design, alignment and site selection.
	401007.9	To study river training works, its objectives, methods, principles of design.
Quantity Surveying, Contracts and Tenders 401008	401008.1	Prepare quantity estimates for buildings, roads, rails and canal works.
	401008.2	Calculate the quantity of materials required for civil engineering works as per specifications.
	401008.3	Evaluate contracts and tenders in construction practices.
	401008.4	Prepare cost estimates.
Hydropower Engineering 401009	401009.1	Estimate hydropower potential.
	401009.2	Identify types of hydropower plants.
	401009.3	Design penstocks and surge shaft.
	401009.4	Plan the layout of a hydropower plant.
Construction Management 401010	401010.1	Understand the roles and responsibilities of a project manager.
	401010.2	Prepare schedule of activities in a construction project.
	401010.3	Prepare tender and contract document for a construction project.
	401010.4	Understand safety practices in construction industry.
	401010.5	Identify the equipment used in construction.

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