Civil Engineering Department

COURSE OUTCOMES

U.G.Courses

S.E Civil

SEMESTER I

Course Name:-Building Technology and Materials	
Course Code	**Course Outcomes**
201001.1	Identify types of building and basic requirements of building components.
201001.2	Explain types of masonry, formwork, casting procedure and necessity of underpinning and scaffolding.
201001.3	Elucidate different types of flooring and roofing materials.
201001.4	Describe types of doors, windows, arches and lintel.
201001.5	Illuminate means of vertical circulation and protective coatings.
201001.6	Explain different materials especially eco-friendly materials and safety measures to

Course Name:-Engineering Mathematics III	
Course Code	**Course Outcomes**
207001.1	Solve higher order linear differential equations and apply to civil engineering problems such as bending of beams and whirling of shafts.
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	Perform vector differentiation and integration, analyze the vector fields and apply to fluid flow problems.
207001.5	Solve various partial differential equations such as wave equation, one and twodimensional heat flow equations.

Course Name:-Surveying	
Course Code	**Course Outcomes**
201006.1	Operate and use surveying equipment.
201006.2	Draw plan or map of the existing permanent features on the ground.

201006.3	Classify the ground features from the map or plan.
201006.4	Analyze temporary adjustments and check permanent adjustments of the Theodolite.

Course Name:- Strength of Materials(201002)	
Course Code	**Course Outcomes**
201002.1	Compute different type of stresses in determinate, indeterminate, homogeneous and composite structures.
201002.2	Develop bending and shear stress diagram.
201002.3	Determine the torsional stresses and stresses due to strain energy for different loading conditions.
201002.4	circle) method.
201002.5	Plot loading diagram, Shear Force Diagram (SFD) and Bending Moment Diagram (BMD).
201002.6	Analyze axially and eccentrically loaded column

Course Name:- Geotechnical Engineering	
Course Code	**Course Outcomes**
201003.1	Differentiate the different types of soil and their engineering properties and classify them;
201003.2	Determine the soil properties in laboratory and develop a proficiency in handling experimental data;
201003.3	Understand of the concept of effective stress and its influence on soil behavior.
201003.4	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.

Course Name:- Awareness to Civil Engineering Practices Audit Course	
Course Code	**Course Outcomes**
	Different types of civil engineering industries and their functioning.
	Applications of different documents, drawings, regulations in Civil Engineering Industries.
	Code of ethics to be practiced by a Civil Engineer and understand duties and responsibilities as a Civil Engineer
	Different safety practices on the site.

Course Name:- Fluid Mechanics-I	
Course Code	**Course Outcomes**
201004.1	Use fluid properties, dimensional analysis for solving problems of fluid flow.

201004.2	Solve fluid statics problems.
201004.3	Measure fluid pressure.
201004.4	Calibrate discharge measuring instrument like ventrurimeter, orifice meter.
201004.5	Distinguish between various types of fluid flows and find the fluid velocity using principles of Kinematics and Dynamics.
201004.6	Design pipes to carry particular amount of discharge.

SEMESTER II

Course Name:- Architectural Planning and Design of Buildings	
Course Code	**Course Outcomes**
201005.1	Make use of principles of planning and principles of architectural Planning.
201005.2	Analyze the available primary or secondary data and plan different types of structures considering futuristic need of an area.
201005.3	Improve the status of existing structures by proposing appropriate green measures.
201005.4	Plan effectively various types of buildings according to their utility with reference to different codes.
201005.5	Understand and resolve contemporary issues at multi-dimensional functional levels.
Course Name:- Engineering Geology	
Course Code	**Course Outcomes**
207009.1	The course of Engineering Geology enables Students to acquire basic knowledge of different types of Rocks and Minerals occurring at construction sites and at the foundations.
207009.2	Students can identify various structural features that are occurring in the rocks and can determine whether these features are favorable or unfavorable at the foundations of Civil Engineering structures.
207009.3	Students can understand nature of various land forms created by natural processes and their importance in Civil engineering activities.
207009.4	Engineering structures.
207009.5	They can acquire knowledge of site selection for construction of Dams and Excavation of Tunnels.
207009.6	Students can understand effects of various natural hazards on Civil engineering Structures and can suggest remedial measures.

Course Name:- Structural Analysis I	
Course Code	**Course Outcomes**
201008.1	Understand the basic concept of static and kinematic indeterminacy, slope and deflection of determinate and indeterminate beams for analysis of structures.

201008.2	Analyze indeterminate beams structures and frames.
201008.3	Evaluate determinate and indeterminate trusses and its application in the field.
201008.4	Apply influence line diagrams for the analysis of structures under moving load.
201008.5	Analyze two and three hinged arches and its application.
201008.6	Apply plastic analysis for indeterminate steel structures by limits state method.

Course Name:- Concrete Technology	
Course Code	**Course Outcomes**
201007.1	concrete.
201007.2	Prepare and test the fresh concrete
201007.3	Test hardened concrete with destructive and nondestructive testing instruments
201007.4	Get acquainted to concrete handling equipment and different special concrete types.
201007.5	Design concrete mix of desired grade
201007.6	Predict deteriorations in concrete and repair it with appropriate methods and techniques.

Course Name:-Soft Skill	
Course Code	**Course Outcomes**
201010.1	Make use of techniques for self-awareness and self-development.
201010.2	Apply the conceptual understanding of communication into everyday practice.
201010.3	Understand the importance of teamwork and group discussions skills.
201010.4	Develop time management and stress management.
201010.5	Apply business etiquette skills effectively an engineer requires.

T.E Civil

SEMESTER I

Course Name:-	**Infrastructure Engineering and Construction Techniques**
Course Code	**Course Outcomes**
301002.1	Students should be able to recognize necessity, importance and provisions for Infrastructural Development
301002.2	Students should acquire the knowledge of Railway track
301002.3	Students should learn various dewatering techniques, construction forms, types of lifting devices
301002.4	They should gain knowledge of various types of tunnels and methods of Tunneling

301002.5	They should know different types of Harbors, ports and methods of construction of their components
301002.6	Students should acquire skill of selection, performance &economics of major construction equipment
Course Name	**Hydrology and water resources engineering**
Course Code	**Course Outcomes**
301001.1	Students should aquire detail knowledge of hydrological cycle and its application
301001.2	Students should have detailed information about irrigation methods and its neccessity.
301001.3	Students should be aware of ground water occurrence and its distribution.
301001.4	Student should be able to know surface runoff and flood frequency analysis.
301001.5	Student should be able to know about planning of reserviour
301001.6	They should have idea about water management.

Course Name:- Structural Analysis II	
Course Code	**Course Outcomes**
301004.1	Analyze statically indeterminate beams and frames using Slope &Deflection method.
301004.2	Analyze statically indeterminate beams and frames using Moment Distribution method.
301004.3	Ability to solve statically indeterminate structures using Flexibility method.
301004.4	An ability to solve statically indeterminate structures using matrix (stiffness) method.
301004.5	An ability to find deflection of beams and multi storied rigid jointed frames by approximate methods.
301004.6	Study of 1D, 2D, 3D elements and their shape function by using finite element methods
Course Name:- Structural Design I	
Course Code	**Course Outcomes**
301003.1	Student should be able to design tension and compression member.
301003.2	Student should be able to design axially loaded column.
301003.3	Student should be able to design eccentrically loaded column.
301003.4	Student should be able to design laterally supported beams
301003.5	Student should be able to design welded plate girder.
301003.6	Student should be able to design gantry girder.

Course Name:- Fluid Mechanics-II	
Course Code	**Course Outcomes**

301005.1	Student should aquire knowledge of fluid flow around submerged objects.
301005.2	Student should able to solve problems of Open channel flow.
301005.3	Student should able to design most efficient channel section.
301005.4	Student should aquire knowledge of impact jet and centrifugal force.
301005.5	Student should aquire knowledge of Hydropower generation.
301005.6	Student should aquireknowledge of gradually varied flow in open channels.

Course Name:- Employability Skills development	
Course Code	**Course Outcomes**
301006.1	Student should be able to know what is employability and its skills.
301006.2	Student should be able to know interpersonal skills.
301006.3	Student should be able to know presentation skills.
301006.4	Student should be able to know communication skills
301006.5	Student should be able to know professional etiquettes and maners
301006.6	Student should be able to know personal skills.

SEMESTER II

Course Name:- Advanced Surveying	
Course Code	**Course Outcomes**
301007.1	Students should acquire detailed knowledge of Geodetic surveying and space based positioning system
301007.2	Students should be capable of performing sounding, shoreline survey and plotting of sounding during hydrographic survey
301007.3	Students should be able to determine elevation difference by trigonometric leveling and setting out bridge and tunnel alignment
301007.4	They should be capable of determining most probable values by triangulation adjustments Students should be conversant with Aerial photogrammetry.
301007.5	They should be aware of GIS and Remote sensing techniques in surveying

Course Name:- Environmental Engineeering-I	
Course Code	**Course Outcomes**
301011.1	Get Introduction to water supply scheme
301011.2	Imbibe Water intake structures
301011.3	Know Water treatment

301011.4	Learn Aeration , Filtration, Disinfection
301011.5	Aware of Water softening methods
301011.6	Study Water distribution system and Learn and implement of Rainwater harvesting
Course Name:-	**Structural Design II**
Course Code:- Course Outcomes	
301010.1	Student should know WSM and LSM.
301010.2	Student should be able to design one way and two way slab.
301010.3	Student should be able to design staircase.
301010.4	Student should be able to design flexural member.
301010.5	Student should know redistribution of moments in continuous reinforced concrete beam .
301010.6	Student should be able to design isolated column footing.

Course Name:- Project Management and Engineering Economics	
Course Code	**Course Outcomes**
301008.1	Student will aquire basic knowledge and imprtance of project management.
301008.2	Student will able to do the project planning with network and barcharts.
301008.3	Student will able to do the time and cost optimizationof project with resourse levelling and use of project management softwares.
301008.4	Student will aquire basic knowledge of economics and finance.
301008.5	Student will aquire skill of Inventory control and knowledge of safety management.
301008.6	Student will aquire knowledge of project appraisal and role of PMC

Course Name:- Foundation Engineering	
Course Code	**Course Outcomes**
301009.1	Student should know about subsurface investigations for foundation.
301009.2	Student should know about bearing capacity and shallow foundation.
301009.3	Student should aquire knowledge of settlement in foundation and consolidation.
301009.4	Student should know about deep foundation.
301009.5	Student should aquire knowledge of foundation of coffar dam on black cotton soil
301009.6	Student should know about soil reinforcement and Earthquake Geo techniques.

B.E Civil

SEMESTER I

Course Name:- Environmental Engineering-II	
Course Code	**Course Outcomes**
401001.1	Study Sewage flow characteristics
401001.2	Learn Steam Sanitation
401001.3	Aware of Waste water treatment
401001.4	Know about Theory & design of treatment Plant
401001.5	Knowledge of Low cost treatment method and Anaerobic treatment Plant
401001.6	Learn various Industrial Waste water treatment methods
Course Name:- Transportation Engineering	
Course Code	**Course Outcomes**
401002.1	Students will acquire detail knowledge of Highways and Traffic engineering
401002.2	They will be able to prepare Geometric designs
401002.3	They will be capable of designing pavements
401002.4	They will acquire detail knowledge of airport Engineering
401002.5	Students will be able to construct different types of Bridges
401002.6	They will be able to work as maintenance Engineer for Bridges

Course Name:- Structural Design III	
Course Code	**Course Outcomes**
401003.1	Student should able to know Prestressed analysis.
401003.2	Student should able to Design of prestressed concrete element
401003.3	Student should able to Design of Flat Slab.
401003.4	Student should able to Design of Earth retaining Structure.
401003.5	Student should able to Design of Liquid retaining Structure.
401003.6	Student should able to know about vibration and earthquake analysis.

Course Name:- Structural Design of Bridges (Elective I)	
Course Code	**Course Outcomes**
401004.1	Learn Types of Bridges
401001.2	Aware of Standard specification of bridge, T-Type Bridge
400998.3	Knowledge of Prestressed concrete design
400995.4	Study of types of railway steel bridge, Truss Bridge, Bracing System.

Course Name:-	**Advanced Engineering geology with rock mechanics (Elective I)**
Course Code	**Course Outcomes**
401004.1	Student should know about indian stratigraphy and geology applied to civil engineering practices.
401004.2	Student should aquire knowledge of sub-surface exploration for water retaining structure.
401004.3	Student should know about geological process of soil formation.
401004.4	Student should aquire knowledge of rock mechanics and geophysical techniques.
401004.5	Student should aquire knowledge of engineering geological investigation for tunnels and bridges.
401004.6	Student should know about role of geology in planning and development.
Course Name:- TQM and MIS (Elective II)	
Course Code	**Course Outcomes**
401005.1	Studnts will realize the awareness about importance of quality for construction project.
401005.2	Studnts will gain the knowledge of management information system.
401005.3	Studnts will learn modern tool of six sigma.
401005.4	Studnts will aquire knowledge of Quality system standard-ISO9000 and utilization of check list, quality manual.
401005.5	Studnts will aquire knowledge of modern tools of management control-kizen,Benchmarking and cost of quality.

SEMESTER II

Course Name:- Dams & Hydraulic Structure	
Course Code	**Course Outcomes**

401007.1	Student should acquire knowledge of different types of dams, safety and instrumentation
401007.2	Students should be capable of design and construction of gravity dam and introduction to arch dam
401007.3	They should have detailed knowledge of design of spillways and gates
401007.4	Students should be capable of design and construction of earth dam
401007.5	Students should be aware of classification of canal and able to design canal, canal structure.
401007.6	They should have knowledge of cross drainage work and river training structure.
Course Name:- Quantity surveying, contracts and tenders	
Course Code	**Course Outcomes**
401008.1	To learn type of estimates
401008.2	Students sholud be able to take out quantities and detailed estimate
401008.3	They should learn to calculate detailed estimation and valuation of structure.
401008.4	they should learn rate analysis
401008.5	They should have knowledge of tendering and execution of work
401008.6	They should have knowledge of contracts and arbitration.
Course Name:- Air Pollution (Elective III)	
Course Code	**Course Outcomes**
401009.1	Student should know metrological aspects and stack height determination per CPCB norms.
401009.2	student should know ambient air samplintg and analysis as per CPCB
401009.3	Students should know thecauses,effects,sources and control of indoor air pollution.
401009.4	students should be aware about air pollution control
401009.5	students should have knowledge of land use planning
401009.6	students should have knowledge of EIA and management.

Course Name:- Construction Management (Elective IV)	
Course Code	**Course Outcomes**
401010.1	Learn to manage various Resources
401010.2	Aware of Project Appraisal and development techniques.
401010.3	Study of various Disaster management skills.
401010.4	Inculcate Legal Aspects and Laws

401010.5	Develop Risk management techniques.

P.G.Courses

M.E First Year (Civil)

Course Name:- Quantity surveying, contracts and Tenders	
Course Code	**Course Outcomes**
401008.1	Students should aquire knowledge of different types of Contracts.
401008.2	Students should able to find various items of quantity upto plinth level.
401008.3	Students should able to find various items of quantity above plinth level.
401008.4	Student should able to know Rate analysis.
401008.5	Student should able to know about Tendering.
401008.6	Student should able to know about Contracts and its method of distribution.

Course Name:- AdvancedMechanics of Solids	
Course Code	**Course Outcomes**
501001.1	students should be able to Analyze of Stresses and Strains
501001.2	student should know about Stress-Strain Relationship
501001.3	student should gain knowledge about Polar Coordinate System
501001.4	Student should be able to analyze Stress concentration problems
501001.5	They should gain knowledge about Beams Curved in Plan
501001.6	They should gain knowledge about Beams Curved in Elevation
501001.7	Student should understand concept of Torsion
501001.8	They should gain knowledge about beams on Elastic Foundation
Course Name:- Structural Dynamics	
Course Code	**Course Outcomes**
501002.1	An ability to apply knowledge of mathematics, science, and engineering by developing the equations of motion for vibratory systems and solving for the free and forced response.

501002.2	Ability to identify, formulate and solve engineering problems. This will be accomplished by having students model, analyze and modify a vibratory structure order to achieve specified requirements.
501002.3	Understanding professional and ethical responsibilities. This will be accomplished by emphasizing the importance of understanding how structural vibrations may affect safety and reliability of engineering systems.
501002.4	An ability to communicate effectively will be accomplished by having students prepare a written report on their design/analysis project.
501002.5	An ability to use the techniques, skill and modern engineering tools necessary for engineering practice will be accomplished by giving students realistic problems which will require MatLab for solutions.
501002.6	An understanding of space structures by discussing vibration problems unique to large flexible structures
Course Name:-	**Advanced Design of Steel Structures**
Course Code	**Course Outcomes**
501003.1	Students should be able to analyze and design of hoarding structures under dead, live and wind load conditions
501003.2	Student gain knowledge about fabrication of the castellated beam from rolled steel section, design of castellated beam for bending and shear
501003.3	Students should have knoeledge of Microwave Towers and Transmission Towers
501003.4	Ttudents should be able to design tubular Trusses and scaffoldings using circular hollow, rectangular hollow sections
501003.5	They should know about Cold form light gauge section
501003.6	Students should be able to design chimneys
501003.7	They should know design of base plate, anchor bolt and foundation, stability of steel chimneys

Course Name:-	**Research Methodology**
Course Code	**Course Outcomes**
501004.1	Students should have knowledge about research
501004.2	Student should be able to develop a Research Proposal
501004.3	Students should have knowledge about literature survey
501004.4	Student should be able to do data collection ,Measuring,Sampling and Scaling.
501004.5	Students should have knowledge about preliminary data analysis
501004.6	Students should have knowledge advanced data analysis techniques
501004.7	Student should be able to writing report
501004.8	Student should be able to Present research.

Course Name:- Optimization Technique (Elective I)	
Course Code	**Course Outcomes**
501005.1	Applications of numerical methods like bisection method, false position method,etc
501005.2	Applications of numerical methods like newton Raphson,Gauss Quadrature,etc
501005.3	Applications of methods like Gauss legendre, jordan, siedel
501005.4	Concepts of standard deviation, types of data and importance of statistics
501005.5	Concepts of probability distributions like normal, poisson, binomial, etc
501005.6	Concepts and applications of corelation regression, test of hypothesis, inerpolation and extrapolation

Course Name:- Finite Element Method	
Course Code	**Course Outcomes**
501007.1	To obtain an understanding of the fundamental theory of the FEA method
501007.2	To develop the ability to generate the governing FE equations for systems governed by partial differential equations
501007.3	To understand the use of the basic finite elements for structural applications using truss, beam, frame, and plane elements
501007.4	To demonstrate the ability to create models for trusses, frames, plate structures, machine parts, and components using ANSYS general-p
501007.5	To model multi-dimensional heat transfer problems using ANSYS;
501007.6	To demonstrate the ability to evaluate and interpret FEA analysis results for design and evaluation purposes

Course Name:- Theory of Plates and shells	
Course Code	**Course Outcomes**
501008.1	students are able to Understand the Simple bending of Plates and Different Boundary Conditions for plates
501008.2	students are able to Understand the limitations and differences of plate/shell theories within the context of the theory of elasticity.
501008.3	students are able to Understand and Analyze circular plates subjected to different kinds of loads.
501008.4	students are able to Understand and analyse and design thin shell structures including domes, hyperbolic, paraboloid, elliptic and cylindrical shells
501008.5	students are able to Understand and Design various types of shells structures and folded pipes
501008.6	students are able to Understand Beam theory of cylindrical shells:

Course Name:- Advanced Design of Concrete Structures	
Course Code	**Course Outcomes**
501009.1	Student should know Yield line theory for analysis of slabs.
501009.2	Student should be able to design of various slabs.

501009.3	Student should be able to design grid and flat slab.
501009.4	Student should be able to design elevated service reservoir.
501009.5	Student should be able to design Bunkers, Silos, and chimney.
501009.6	Student should be able to design raft foundations, Pile foundations, single pile, group of piles, Pile cap.
501009.7	Student should be able to design of Shear wall, design of form work for slabs, girders, columns.

Course Name:- Elective II	
Course Code	**Course Outcomes**
501010.1	To develop an understanding of and appreciation for basic concepts in proportioning and design of bridges in terms of aesthetics, geographical location and functionality.
501010.2	To help the student develop an intuitive feeling about the sizing of bridge elements, ie. Develop a clear understanding of conceptual design.
501010.3	To understand the load flow mechanism and identify loads on bridges.
501010.4	To carry out a design of bridge starting from conceptual design, selecting suitable bridge,geometry to sizing of its elements

M.E Second Year (Civil)

Course Name:-	**Earthquake Engineering and Disaster Management**
Course Code	**Course Outcomes**
601013.1	Student should gain knowledge about disaster and its Management
601013.2	Student should be able to design of RCC Structures
601013.3	Student should be able to design of Steel Structures
601013.4	Students should have knowledge about blast Loading
601013.5	Learn analysis of steel structure subjected to fire
601013.6	To understant Post Disaster Measures

Course Name:-	**Structural Design of Concrete and Prestressed Bridges**
Course Code	**Course Outcomes**
601014.1	To obtain an understanding of bridge engineering
601014.2	To carry out a design of slab culvert, box culvert and skew bridge.
601014.3	To learn about Courbon's method, Henry-Jaegar method and Guyon-Massonet method
601014.4	To learn about Structural classification of Rigid Frame bridge
601014.5	To understand classification and design of bearings

601014.6	Analysis and design, types and design of wing walls
601014.7	To carry out a design of Bridge foundations, design of open well, pile and caisson foundation.

Course Name:-	**Elective –III**
Course Code	**Course Outcomes**
601015.1	To carry out a design of flat and concave plate circular in shape resting on ring beam
601015.2	To carry out a design of Multiple bay cylindrical shell, North light cylindrical shell, continuous cylindrical shell, hyperbolic paraboloid shell, Pre-stressed cylindrical shell and dome
601015.3	To understand Construction Safety And Safety Technology-
601015.4	To learn about Safety training, safety policy, safety committees, safety inspection, safety audit reporting accidents and dangerous occurrences.