Course Outcomes

Dept	Year & Semester	Course Code	Course Name	Course Outcomes
		CIV111	CIV111 English	
			CIV111.1	Analyze the structure of the phrases, clauses and sentences
			CIV111.2	Apply his enriched vocabulary to give better shape to his communication skills.
			CIV111.3	Effectively use different formats of business correspondence.
			CIV111.4	Use idiomatic expressions and foreign phrases in his communication.
			CIV111.5	Use correct structures to write sentences.
		CIV112	CIV112 Engineering Mathematics – I	
			CIV112.1	Familiarize with functions of several variables
			CIV112.2	Apply Fourier series in solving boundary value problems
			CIV112.3	Applythe concept of three dimensional analytical geometry
			CIV112.4	Use mathematical tools needed in evaluating multiple integral and their usage.
			CIV112.5	Use the concepts of improper integrals, Gamma, Beta and Error functions which are needed in Engineering applications
		CIV113	CIV113 Engineering Physics	
			CIV113.1	Design and conduct simple experiments as well as analyse and interpret data in engineering applications
			CIV113.2	Understand advanced topics in engineering
			CIV113.3	Identify formulae and solve engineering problems
			CIV113.4	Apply quantum physics to electrical phenomena
		CIV114	CIV114 Engineering Drawing	
			CIV114.1	Draw various engineering curves and understand the basic geometrical constructions.
			CIV114.2	Prepare orthographic projections of points and lines
			CIV114.3	Produce orthographic projections of plane surfaces
			CIV114.4	Draw orthographic projections of solids in various orientations.
			CIV114.5	Prepare isometric projections and understand basics of Computer Aided Drafting.
	I-I	CIV115	CIV115 Environmental Sciences	
			CIV115.1	Understand the natural environment and its relationships with human activities
			CIV115.2	Characterize and analyze human impacts on the environment
			CIV115.3	Integrate facts, concepts, and methods from multiple disciplines and apply to environmental problems
			CIV115.4	Design and evaluate strategies, technologies, and methods for sustainable management of environmental systems and for the remediation or restoration of degraded environments
		CIV116	CIV116 Engineering Physics Lab	
			CIV116.1	Design and conduct experiments as well as to analyzeand interpret data.
			CIV116.2	Identify, solve and apply fundamental physics principles to solve engineering problems

		CIV117	CIV117 Programming With C Lab	
			CIV117.1	Gain a working knowledge on programming
			CIV117.2	Learn and use the fundamentals of a programming language (such as language-defined data types (int, float, char, double), control constructs (sequence, selection, repetition), program modules (including functions, modules, methods).
			CIV117.3	Exhibit the ability to formulate a program that correctly implements the algorithm.
			CIV117.4	Demonstrate the effective use the programming environmen used in the course.
		CIV118	CIV118 Workshop	
			CIV118.1	Make simple carpentry and fitting works
			CIV118.2	Understand and do different types of wiring for practical requirements
			CIV118.3	Develop cross-sections of models for tin smithy and make them.
			CIV118.4	It also helps in understanding of relevant skills required by the engineer working in engineering industries and workshops.
	I-II	CIV121	CIV121 Engineering Mathematics-II	
			CIV121.1	Solve linear system equations using of matrix algebra techniques
			CIV121.2	Determine the Eigen values and vectors of a matrix
			CIV121.3	Apply different techniques in solving differential equations that model engineering problem
			CIV121.4	Use the application of Differential equations like simple electric circuits, Newton's law of cooling and to solve any higher order linear ordinary differential equation with constant coefficients
			CIV121.5	Solve linear differential equations and Network analysis using Laplace transforms
		CIV122	CIV122 Engineering Chemistry	
			CIV122.1	Adopt suitable technologies for domestic and industrial water
			CIV122.2	Identify & generalize the properties of semi conducting materials used in various engineering fields
			CIV122.3	Design suitable batteries for different applications.
			CIV122.4	Select and design of suitable materials to prevent corrosion and protect various parts from corrosion.
			CIV122.5	Develop green technologies for industrial processes.
			CIV122.6	Solve scientific problems related to various engineering works
		CIV123	CIV123 Professional Ethics And Human Values	
			CIV123.1	Understand the right code of conduct from Human values
			CIV123.2	Draw Inspiration from great personalities and assess his/her role as a proactive member of the society
			CIV123.3	Understand basics of professional ethics and its implementation for harmony with nature
			CIV123.4	Able to practice professional ethics and solve moral dilemmas and issues
			CIV123.5	Understand and implement code of ethics of relevant professional societies and solve global issues.
		CIV124	CIV124 Mathematics For Civil Engineers	

	CIV124.1	Impart knowledge in basic concepts on complex variables and analytical functions.
	CIV124.2	Enable the students to concepts of complex integration and their applications.
	CIV124.3	Impart knowledge in basic concepts of Numerical techniques and Numerical Integration and their applications.
	CIV124.4	Enable the student to solve ordinary differential equations by numerical techniques.
	CIV124.5	Impart knowledge in basic concepts on probability and distributions.
CIV125	CIV125 Civil Engineering Materials	
	CIV125.1	Suggest the suitability of various clay products based on their characteristics
	CIV125.2	Recommend the suitability of stone and timber products for civil engineering purposes
	CIV125.3	Identify the various types of metals and glasses
CIV126	CIV126 Engineering Chemistry Lab	
	CIV126.1	Able to identify the suitable method for analyzing samples.
	CIV126.2	Able to analyze different types of water samples to test quality parameters.
CIV127	CIV127 Language Lab	
	CIV127.1	Handle CBT (Computer Based Tests) of the qualifying examinations.
	CIV127.2	Receive, interpret, remember and evaluate information by practicing effective listening skills.
	CIV127.3	Speak English with neutralized accent.
	CIV127.4	Narrate, describe and report incidents and situations using appropriate terminology.
CIV211	CIV211 Engineering Mathematics-III	
	CIV211.1	Understand the concepts of Gradient, Divergence and Curl and finding scalar potential function of irrotational vector fields.
	CIV211.2	Understand the concepts of Green's Theorem, Stokes' Theorem and the Divergence Theorem and to evaluate line integrals, surface, integrals and flux integrals.
	CIV211.3	Understand some basic techniques for solving linear partial differential equations and how to identify a partial differential equation in order to determine which technique(s) can best be applied to solve it
	CIV211.4	Understand the methods to solve the Laplace, heat, and wave equations.
	CIV211.5	Gain good knowledge in the application of Fourier Transforms.
CIV212	CIV212 Building Technology	
	CIV212.1	Know the various building Bye-Laws laid by town planning authorities and local regulatory bodies for Planning various buildings like residential, educational, office buildings and hospital buildings.
	CIV212.2	Learn about masonry types in brick and stone construction
	CIV212.3	Understand about various Building components.
	CIV212.4	Learn about various types of foundation
	CIV212.5	Know about damp prevention and fire protection methods.
	CIV212.6	Understand about various types of roofs

		CIV213	CIV213 Engineering Geology	
			CIV213.1	Identify and classify the different minerals and rocks based on their physical properties and geological genesis
			CIV213.2	Map the various geological structures present in the subsurface and their importance in the study of natural hazards like earthquakes etc.
			CIV213.3	Apply the different investigation techniques from initial stage to final stage for the selection of proper project site.
			CIV213.4	Do the interpretation of available data to determine the favorable geological considerations (i.e., Lithological structural and ground water) in the study area for the construction of different civil engineering projects dams etc.
			CIV213.5	Classify and measure the earthquake, Landslides and subsidence prone areas to practice the hazard zonation.
	II-I	CIV214	CIV214 Engineering Mechanics	
			CIV214.1	Analyze a given physical problem into a suitable forces and moments.
			CIV214.2	Identify the centroid of a given plane area and find its area/ mass moment of inertia.
			CIV214.3	Apply the concept of friction to simple engineering problems.
			CIV214.4	Calculate the displacement, velocity and acceleration of a moving particle.
			CIV214.5	Apply the work-energy, D ALEMBERTS principle to particles and connected systems.
		CIV215	CIV215 Surveying– I	
			CIV215.1	Calculate angles, distances and levels.
			CIV215.2	Identify data collection methods and prepare field notes.
			CIV215.3	Understand the working principles of survey instruments.
			CIV215.4	Estimate measurement errors and apply corrections
			CIV215.5	Demonstrate an ability to compute volume of reservoirs using contours.
		CIV216	CIV216 Strength of Materials	
			CIV216.1	Understand and solve simple problems involving stresses and strain in two and three dimensions.
			CIV216.2	Analyses stress in two dimensions and understand the concepts of principal stresses and the use of Mohr circles to solve two dimensional stress problems.
			CIV216.3	Draw shear force and bending moment diagrams of simple beams and understand the relationships between loading intensity, shearing force and bending moment.
			CIV216.4	Compute the bending stresses in beams with one or two materials.
			CIV216.5	Apply sound analytical techniques and logical procedures in the solution of engineering problems
		CIV217	CIV217 Surveying Field Work-I	
			CIV217.1	Improve ability to function as a member of a survey party in completing the assigned field work
			CIV217.2	Conduct survey and collect field data
			CIV217.3	Prepare field notes from survey data

			CIV217.4	Learn the measurement of elevation difference between two points using Level instruments.
			CIV217.5	Interpret survey data and compute areas and volumes
		CIV218	CIV218 Strength of Materials Lab	
			CIV218.1	Determine the engineering and mechanical properties of materials.
			CIV218.2	To interpret the test results
		CIV221	CIV221 Concrete Technology	
			CIV221.1	Understand the composition, manufacturing process and properties of cement.
			CIV221.2	Understand the classification, characteristics and properties of aggregate.
			CIV221.3	Acquire the skill of testing, supervision of concrete work & interpretation of tests results.
			CIV221.4	Understand the behaviour of hardened concrete
			CIV221.5	Understand the need for special concretes
		CIV222	CIV222 Environmental Engineering-I	
			CIV222.1	Understand the sources of water, quality of water, types of water borne diseases.
			CIV222.2	Learn to estimate demand for water supply, and can apply the physical principles of flow in water distribution networks and pumping stations.
			CIV222.3	Design water treatment systems and operations and working of different units.
			CIV222.4	Design elements of public water systems, pumping and transportation of water, distribution systems, and components of water supply network in a town/city, functioning of water/sewer pipe appurtenances
		CIV223	CIV223 Fluid Mechanics-I	
			CIV223.1	Determine the physical properties of fluids and different types of forces acting on a fluid element extended to forces on various gates.
			CIV223.2	Determine the forces that are acting on immersed bodies in static fluids through application of buoyancy and floatation.
			CIV223.3	Determine different types of fluid flows to find out the local and convective accelerations in 1D, 2D flows fields and derive the Laplace equation
			CIV223.4	Apply conservation principles of mass momentum and energy on fluids through system and control volume approaches.
		CIV224	CIV224 Surveying – II	
			CIV224.1	Learn to determine horizontal and vertical angles between points by theodolite and Total Station
			CIV224.2	To impart experimental skills to determine heights and distances of inaccessible objects
			CIV224.3	Apply surveying skills in aligning highways and railway curves.
	II-II		CIV224.4	Demonstrate the ability to solve surveying problems
			CIV224.5	Gain the ability to use modern survey equipment (Total Station) to measure angles and distances.
			CIV224.6	Learn basics in GIS and GPS.
		CIV225	CIV225 Structural Analysis – I	
			CIV225.1	Calculate deflections in statically determinate beams and trusses.
			CIV225.2	Analyze columns and struts under axial loading
			CIV225.3	Calculate strain energy due to different types of forces

			CIV225.4	Analyze statically indeterminate beams
			CIV225.5	Analyze fixed and continuous beams
			CIV225.6	Understand how shear force and bending moment vary with application of moving loads.
		CIV226	CIV226 Building Planning & Drawing	
			CIV226.1	Understand various types of buildings and housing concept.
			CIV226.2	Apply the concepts of climatology and orientation of both residential and commercial buildings.
			CIV226.3	Apply the principles of planning and bylaws used for building planning.
			CIV226.4	Recommend appropriate planning for 2 Bed room and 3 Bed room houses.
			CIV226.5	Draw plan, elevation and section for various structures.
			CIV226.6	Design individual rooms with attention to functional and furniture requirements.
		CIV227	CIV227 Concrete Technology Lat	
			CIV227.1	Determine the properties of concrete and its ingredients
			CIV227.2	Check the suitability of various ingredients of concrete in constructions
		CIV228	CIV228 Fluid Mechanics Lab-I	
			CIV228.1	Calibrate various flow measuring devices
			CIV228.2	Apply Bernoulli's Principle for pipes and open flows
		CIV229	CIV229 Surveying Field Work –II	
			CIV229.1	Demonstrate an ability to conduct surveying for any infrastructure project.
			CIV229.2	Analyses data and report results.
			CIV229.3	Work in teams doing field work and computer analysis
		CIV312	CIV312 Environmental Engineering-II	
			CIV312.1	Plan and design the sewerage systems
			CIV312.2	Select the appropriate appurtenances in the sewerage systems
			CIV312.3	Selection of suitable treatment flow for sewage treatment
			CIV312.4	Identify the critical point of pollution in a river for a specific amount of pollutant disposal into the river
		CIV313	CIV313 Reinforced Concrete Structures-I	
			CIV313.1	Understand the principles of limit state method and design of singly reinforced beams, doubly reinforced beams, flanged beams
			CIV313.2	Enable the students to understand the concept of shear; bond and design shear reinforcement in beams
			CIV313.3	Enable the students to design one way and two way slabs
			CIV313.4	Enable the students to design columns, footings
			CIV313.5	Draw the reinforcement detailing for all the structural elements of a reinforced concrete structure
		CIV314	CIV314 Structural Analysis – II	
			CIV314.1	Formulate equilibrium & compatibility equations for indeterminate structural members.
CIVIL			CIV314.2	Analyze statically indeterminate trusses
			CIV314.3	Analyze statically indeterminate frames

		CIV314.4	Analyze cables and suspension bridges.
		CIV314.5	Analyze two and three hinged structural members
	CIV315	CIV315 Fluid Mechanics-II	
		CIV315.1	Apply the principles of modelling pumps, turbines, propellers etc using various dimensionless numbers
		CIV315.2	Determine discharge and design most economical channel section for uniform flow in open channels
		CIV315.3	Use momentum and energy principles for design of turbines and pumps
		CIV315.4	Recommend suitable type of turbines and pumps for the given project.
	CIV316	CIV316 Geotechnical Engineering – I	
		CIV316.1	Determine the physical characteristics of soils and use their interrelationships to solve civil engineering problems
		CIV316.2	Determine plasticity characteristics and classify the soil based on Standard codes
		CIV316.3	Analyze the effective stress in soils and determine permeability
		CIV316.4	Analyze the effect of seepage in soils and recommend measures for effective compaction in the field
		CIV316.5	Determine the long term settlements in soils due to consolidation
	CIV317	CIV317 Geotechnical Engineering Lab-I	
III-I		CIV317.1	Determine the physical and plasticity properties of soils
		CIV317.2	Estimate their behaviour and suitability
	CIV318	CIV318 Environmental Engineering Lab	
		CIV318.1	Estimation some important characteristics of water and wastewater in the laboratory.
		CIV318.2	Decide whether the water body is polluted or not with reference to the state parameters in the list of experiments.
	CIV319	CIV319 Fluid Mechanics Lab-II	
		CIV319.1	Apply principles of impulse moment equation in pipe flows and hydraulic machines
		CIV319.2	Determine the performance characterstics of hydraulic machines and flow through pipes.
	CIV3110	CIV3110 Quantitative & Verbal Aptitude -I	
		CIV3110.1	Solve problems related to numerical computations in company specific and other competitive tests
		CIV3110.2	Able to recall and use the concepts to solve problems numerical estimation with respect to company specific and competitive tests.
		CIV3110.3	Apply basic principles related to geometry and mensuration & solve questions in company specific and competitive tests.
		CIV3110.4	Detect grammatical errors in the text/sentences and rectify them while answering their competitive/ company specific tests and frame grammatically correct sentences while writing.
		CIV3110.5	Answer questions on synonyms, antonyms, hyponyms, hypernyms and other vocabulary based exercises while attempting company specific and other competitive tests.

			CIV3110.6	Use their logical thinking ability and solve questions related to reasoning based exercises.
			CIV3110.7	Choose the appropriate word/s/phrases suitable to the given context in order to make the sentence/paragraph coherent.
			CIV3110.8	Analyze the given data/text and find out the correct responses to the questions asked based on the reading exercises; identify relationships or patterns within groups of words or sentences.
		CIV3111	CIV3111 Technical Seminar	
			CIV3111.1	Make presentation on a given topic related to civil engineering.
			CIV3111.2	Improve the communication skills and cultivate lifelong learning.
			CIV3111.3	Broaden their knowledge about Civil Engineering and its practical applications.
			CIV3111.4	Update their knowledge on the latest developments in civil engineering.
			CIV3111.5	Understand the environmental, safety, economical and sustainability aspects of any civil engineering structure.
		CIV321	CIV321 Reinforced Concrete Structures-II	
			CIV321.1	Design and draw the reinforcement detailing of staircase.
			CIV321.2	Design and draw the reinforcement detailing of cantilever & counterfort retaining walls.
			CIV321.3	Design and draw the reinforcement detailing of pile and pile caps
			CIV321.4	Understand the basic concepts of pre-stressed concrete, know the different prestressing systems, analyze the prestressed concrete members and evaluate the losses in prestressing.
			CIV321.5	Understand the structural drawings for practical execution.
		CIV322	CIV322 Estimation & Costing	
			CIV322.1	Estimate the construction cost from the rate analysi
			CIV322.2	Understand about specifications for various items in framed buildings
			CIV322.3	Do the detailed estimate of load bearing and framed buildings
		CIV323	CIV323 Geotechnical Engineering – II	
			CIV323.1	Estimate the shear strength parameters of a soil under different drainage conditions
			CIV323.2	Plan soil exploration and analyse and interpret the soil properties
			CIV323.3	Calculate lateral earth pressure on a retaining structure
			CIV323.4	Estimate the allowable bearing pressure of soil needed for the design of shallow foundation
			CIV323.5	Determine the load capacity of piles and analyse the stability of slope of an earth structure
		CIV324	CIV324 Transportation Engineering-I	
			CIV324.1	Carry out surveys involved in planning and highway alignment
			CIV324.2	Design cross section elements, sight distance, horizontal and vertical alignment
			CIV324.3	Design flexible and rigid pavements as per IRC

			CIV324.4	Learn various highway constructions techniques and its maintenance
			CIV324.5	Understand traffic studies, traffic regulations and control.
		CIV325	CIV325 Water Resources Engineering – I	
			CIV325.1	Measure and analyze the rainfall in any given area and prepare Intensity-Duration-Frequency curves
			CIV325.2	Determine the run off in a catchment and prepare the unit hydrograph which in-turn determines the runoff for any given rainfall.
			CIV325.3	Determine hydraulic properties of an aquifer & specific capacity, efficiency and yield of a well
			CIV325.4	Select a suitable site for the reservoir by conducting investigations and determine the capacity of the reservoir and its operating schedules.
			CIV325.5	Specify appropriate method of irrigation for different crops and cropping patterns and determine the quality and quantity of water required for a crop
	III-II	CIV 326(D)	CIV 326(D) RS & GIS applications in Civil Engineering	
			CIV 326(D).1	Learn about the principles of remote sensing and GIS
			CIV 326(D).2	Understand about the various image interpretation techniques and image classification techniques
			CIV 326(D).3	Know about the various applications of remote sensing and GIS in civil engineering projects
		CIV327	CIV327 Geotechnical Engineering Lab-II	
			CIV327.1	Determine the Engineering properties of various soil samples
			CIV327.2	Interpret test results and recommend its suitability in geotechnical practice
		CIV328	CIV328 Computer Applications in Civil Engineering Lab-I	
			CIV328.1	To construct various GIS data models
			CIV328.2	To summarize about project system
			CIV328.3	To executing the applications areas of GIS
		CIV329	CIV329 Quantitative & Verbal Aptitude –II	
			CIV329.1	Use their logical thinking and analytical abilities to solve reasoning questions from company specific and other competitive tests.
			CIV329.2	Solve questions related to permutation & combinations and probabilities from company specific and other competitive tests.
			CIV329.3	Understand and solve puzzle related questions from specific and other competitive tests.
			CIV329.4	Write paragraphs on a particular topic, essays (issues and arguments), e mails, summaries of group discussions, make notes, statement of purpose (for admission into foreign universities), letters of recommendation (for professional and educational purposes)
			CIV329.5	Converse with ease during interactive sessions/seminars in their classrooms, compete in literary activities like elocution, debates etc., raise doubts in class, participate in JAM sessions/versant tests with confidence and convey oral information in a professional manner using reason

			CIV3110.6	Use their logical thinking ability and solve questions related to reasoning based exercises.
			CIV3110.7	Choose the appropriate word/s/phrases suitable to the given context in order to make the sentence/paragraph coherent.
			CIV3110.8	Analyze the given data/text and find out the correct responses to the questions asked based on the reading exercises; identify relationships or patterns within groups of words or sentences.
		CIV3210	CIV3210 Soft Skills Lab	
			CIV3210.1	Comprehend the core engineering subjects using effective communication skills.
			CIV3210.2	Present accurate and relevant information efficiently, using suitable material aids.
			CIV3210.3	Work effectively as an individual as well in teams and emerge as responsible leaders.
			CIV3210.4	Participate in group discussions and interviews using analytical and problem solving abilities, which enhance their employability skills.
			CIV3210.5	Set time bound goals and realize them through strategic plans for successful career
		CIV411	CIV411 Open Elective-I (Nano Technology)	
			CIV411.1	
			CIV411.2	
			CIV411.3	
			CIV411.4	
			CIV411.5	
		CIV412	CIV412 Professional Elective - II (Air Pollution & control)	
			CIV412.1	Identify the Sources of Air pollutants and its classification.
			CIV411.2	Demonstrate the ability to design and operation of control units.
			CIV411.3	Implement the methods of monitoring the pollution
			CIV411.4	To effectively utilize the control equipments for controlling the air pollution.
		CIV413	CIV413 Project Planning & Management	
			CIV413.1	Prepare the schedule of actives in a construction project
			CIV413.2	Estimate project completion time using different techniques namely CPM and PERT
			CIV413.3	Prepare tender quotation for a construction projec
		CIV414	CIV414 Steel Structures	
			CIV414.1	Work with relevant IS codes
			CIV414.2	Student will able to design the connection in given situation
			CIV414.3	Carryout analysis and design of various structural member under tension, compression and flexure
			CIV414.4	Analyze & design plate girders for given conditions
		CIV415	CIV415 Water Resources Engineering - II	
			CIV415.1	Select a suitable site for construction of dam, conduct preliminary investigations and check the stability of the gravity dam through stability analysis
			CIV415.2	Design earth dam that has a controlled seepage from its body and foundation and design suitable spillways.
			CIV415.3	Determine the necessity of diversion head works and design weirs on permeable foundations.

			CIV415.4	Determine the necessity of regulatory works on canals, determine the location of falls and design different types of falls.
			CIV415.5	Suggest suitable river training works wherever necessary and to assess the availability of Hydel power and its utilization.
		CIV416	CIV416 Transportation Engineering-II	
			CIV416.1	Know the components of permanent way and their functions.
			CIV416.2	Design geometrics in a railway track.
			CIV416.3	Understand the various points and crossings.
			CIV416.4	Know the airport pavement orientation, various visual aids and air traffic control.
			CIV416.5	Understand the basic elements of port and harbors
	IV-I	CIV417	CIV417 Computer Applications in Civil Engineering Lab-II	
			CIV417.1	Ability to use the software packers for drafting and modeling
			CIV417.2	The students will be able to draft the plan, elevation and sectional views of the buildings and truss, using computer software.
			CIV417.3	The students will be able to draft the detailing of basic RC structural elements, using computer software
			CIV417.4	The student acquires hands on experience in design and preparation of structural drawings for concrete / steel structures normally encountered in Civil Engineering practice.
		CIV418	CIV418 Transportation Engineering Lab	
			CIV418.1	To know the properties of the aggregates
			CIV418.2	To know the properties of the bitumen
			CIV418.3	To know the properties of the soil
		CIV419	CIV419 Project work-I	
			CIV419.1	An ability to apply knowledge of mathematics, science, and engineering to design and conduct experiments, as well as to analyze and interpret data.
			CIV419.2	An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
			CIV419.3	An ability to function on multi-disciplinary teams and engage themselves in life-long learning to be abreast with technological changes.
			CIV419.4	An ability to identify, formulate, and solve engineering problems using latest technological and software tools and also to communicate effectively with the engineering community and society at large
		CIV4110	CIV4110 Industrial Training	
			CIV4110.1	Investigate and analyze at least one complex civil engineering problem with substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
			CIV4110.2	Select and apply appropriate techniques, resources, and modern engineering and IT tools to complex civil engineering activities with an understanding of the limitations.

			CIV4110.3	Assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to one civil engineering problem.
			CIV4110.4	Function effectively as an individual, and as a member or leader in teams as well as to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
			CIV4110.5	Demonstrate knowledge and understanding of the engineering and management principles and apply these to manage at least one civil engineering project, as a member and leader in a team.
	IV-II	CIV 421(D)	CIV 421(D) Professional Elective – III (Ground Improvement Techniques)	
			CIV422.1	Possess the knowledge of various methods of ground improvement and their suitability to different field situations.
			CIV422.2	Learn the grouting techniques.
			CIV422.3	Learn the concept of Vertical drains, its construction and design principles.
			CIV422.4	Outline the various function of Geosynthetics and its application in Civil engineering
			CIV422.5	Understand the concept of Dewatering Techniques
		CIV423	CIV423 Engineering Economics & Finance	
			BIV423.1	Understand the economic environment and to give an idea on various concepts of Engineering economics
			BIV423.2	Gain knowledge about the concepts of cost estimating and financial management.
		CIV424	CIV424 Irrigation Structures Design & Drawing	
			CIV424.1	Design and Draw the Canal head regulator
			CIV424.2	Design and Draw the Surplus weir
			CIV424.3	Design and Draw the Type 3 Syphon Aqueduc
			CIV424.4	Design and Draw the Trapezoidal Notch fal
			CIV424.5	Design and Draw the Tank Sluice with tower heac
		CIV426	CIV426 Project Work - II	
			CIV426.1	An ability to apply knowledge of mathematics, science, and engineering to design and conduct experiments, as well as to analyze and interpret data.
			CIV426.2	An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
			CIV426.3	An ability to function on multi-disciplinary teams and engage themselves in life-long learning to be abreast with technological changes.
			CIV426.4	An ability to identify, formulate, and solve engineering problems using latest technological and software tools and also to communicate effectively with the engineering community and society at large

COURSE OBJECTIVES AND COURSE OUTCOMES (R19 Regulation)

Dept	Year & Semester	Course Code	Course Name	Course Outcomes

		CIV111	EngineeringMathematics – I	
			CIV111.1	Familiarize with functions of several variables
			CIV111.2	Apply Fourier series in solving boundary value problems
			CIV111.3	Applythe concept of three dimensional analytical geometry
			CIV111.4	Use mathematical tools needed in evaluating multiple integral and their usage.
			CIV111.5	Use the concepts of improper integrals, Gamma, Beta and Error functions which are needed in Engineering applications
		CIV112	Engineering Physics	
			CIV112.1	Design and conduct simple experiments as well as analyse and interpret data in engineering applications
			CIV112.2	Understand advanced topics in engineering
			CIV112.3	Identify formulae and solve engineering problems
			CIV112.4	Apply quantum physics to electrical phenomena
		CIV113	Engineering Chemistry	
			CIV113.1	Adopt suitable technologies for domestic and industrial water
			CIV113.2	Identify & generalize the properties of semi conducting materials used in various engineering fields
			CIV113.3	Design suitable batteries for different applications.
			CIV113.4	Select and design of suitable materials to prevent corrosion and protect various parts from corrosion.
			CIV113.5	Develop green technologies for industrial processes.
			CIV113.6	Solve scientific problems related to various engineering works
		CIV114	Building Technoogy	
			CIV114.1	Know the various building Bye-Laws laid by town planning authorities and local regulatory bodies for Planning various buildings like residential, educational, office buildings and hospital buildings.
			CIV114.2	Learn about masonry types in brick and stone construction
			CIV114.3	Understand about various Building components.
			CIV114.4	Learn about various types of foundation.
			CIV114.5	Know about damp prevention and fire protection methods.
			CIV114.6	Understand about various types of roofs.
	I-I	CIV115	Engineering Drawing	
			CIV115.1	Draw various engineering curves and understand the basic geometrical constructions.

	CIV115.2	Prepare orthographic projections of points and lines
	CIV115.3	Produce orthographic projections of plane surfaces
	CIV115.4	Draw orthographic projections of solids in various orientations.
	CIV115.5	Prepare isometric projections and understand basics of Computer Aided Drafting.
CIV116	Engineering Physics Lab.	
	CIV116.1	Design and conduct experiments as well as to analyzeand interpret data.
	CIV116.2	Identify, solve and apply fundamental physics principles to solve engineering problems
CIV117	Engineering Chemistry Lab.	
	CIV117.1	Able to identify the suitable method for analyzing samples.
	CIV117.2	Able to analyze different types of water samples to test quality parameters.
CIV118	Engineering Workshop	
	CIV118.1	Make simple carpentry and fitting works
	CIV118.2	Understand and do different types of wiring for practical requirements
	CIV118.3	Develop cross-sections of models for tin smithy and make them.
	CIV118.4	It also helps in understanding of relevant skills required by the engineer working in engineering industries and workshops.
CIV119	Human Values and Professional Ethics(Mandatory non-credit course)	
	CIV119.1	Understand the right code of conduct from Human values
	CIV119.2	Draw Inspiration from great personalities and assess his/her role as a proactive member of the society
	CIV119.3	Understand basics of professional ethics and its implementation for harmony with nature
	CIV119.4	Able to practice professional ethics and solve moral dilemmas and issues
	CIV119.5	Understand and implement code of ethics of relevant professional societies and solve global issues.
CIV121	EngineeringMathematics – II	
	CIV121.1	Solve linear system equations using of matrix algebra techniques

			CIV121.2	Determine the Eigen values and vectors of a matrix
			CIV121.3	Apply different techniques in solving differential equations that model engineering problem
			CIV121.4	Use the application of Differential equations like simple electric circuits, Newton's law of cooling and to solve any higher order linear ordinary differential equation with constant coefficients
			CIV121.5	Solve linear differential equations and Network analysis using Laplace transforms
		CIV122	English Language	
			CIV122.1	Analyze the structure of the phrases, clauses and sentences
			CIV122.2	Apply his enriched vocabulary to give better shape to his communication skills.
			CIV122.3	Effectively use different formats of business correspondence.
			CIV122.4	Use idiomatic expressions and foreign phrases in his communication.
			CIV122.5	Use correct structures to write sentences.
		CIV123	Engineering	
			CIV123.1	Analyze a given physical problem into a suitable forces and moments.
			CIV123.2	Identify the centroid of a given plane area and find its area/ mass moment of inertia.
			CIV123.3	Apply the concept of friction to simple engineering problems.
			CIV123.4	Calculate the displacement, velocity and acceleration of a moving particle.
			CIV123.5	Apply the work-energy, D ALEMBERTS principle to particles and connected systems.
		CIV124	Problem solving with C	
			CIV124.1	Gain a working knowledge on programming
CIVIL	**I-II**		CIV124.2	Learn and use the fundamentals of a programming language (such as language-defined data types (int, float, char, double), control constructs (sequence, selection, repetition), program modules (including functions, modules, methods).
			CIV124.3	Exhibit the ability to formulate a program that correctly implements the algorithm.
			CIV124.4	Demonstrate the effective use the programming environment used in the course.
		CIV125	Language Laboratory	
			CIV125.1	Handle CBT (Computer Based Tests) of the qualifying examinations.
			CIV125.2	Receive, interpret, remember and evaluate information by practicing effective listening skills.

			CIV125.3	Speak English with neutralized accent.
			CIV125.4	Narrate, describe and report incidents and situations using appropriate terminology.
		CIV126	Problem solving with C– lab.	
			CIV126.1	Gain a working knowledge on programming
			CIV126.2	Learn and use the fundamentals of a programming language (such as language-defined data types (int, float, char, double), control constructs (sequence, selection, repetition), program modules (including functions, modules, methods).
			CIV126.3	Exhibit the ability to formulate a program that correctly implements the algorithm.
			CIV126.4	Demonstrate the effective use the programming environment used in the course.
		CIV127	Environmental Science (Mandatory non-credit course)	
			CIV127.1	Understand the natural environment and its relationships with human activities
			CIV127.2	Characterize and analyze human impacts on the environment
			CIV127.3	Integrate facts, concepts, and methods from multiple disciplines and apply to environmental problems
			CIV127.4	Design and evaluate strategies, technologies, and methods for sustainable management of environmental systems and for the remediation or restoration of degraded environments
		CIV211	Building Planning & Drawing	
			CIV211.1	Understand various types of buildings and housing concept.
			CIV211.2	Apply the concepts of climatology and orientation of both residential and commercial buildings.
			CIV211.3	Apply the principles of planning and bylaws used for building planning.
			CIV211.4	Recommend appropriate planning for 2 Bed room and 3 Bed room houses.
			CIV211.5	Draw plan, elevation and section for various structures.
			CIV211.6	Design individual rooms with attention to functional and furniture requirements.
		CIV212	Engineering Mathematics-III	
			CIV212.1	Understand the concepts of Gradient, Divergence and Curl and finding scalar potential function of irrotational vector fields.

			CIV212.2	Understand the concepts of Green's Theorem, Stokes' Theorem and the Divergence Theorem and to evaluate line integrals, surface, integrals and flux integrals.
			CIV212.3	Understand some basic techniques for solving linear partial differential equations and how to identify a partial differential equation in order to determine which technique(s) can best be applied to solve it.
			CIV212.4	Understand the methods to solve the Laplace, heat, and wave equations.
			CIV212.5	Gain good knowledge in the application of Fourie Transforms.
		CIV213	Environmental Engineering-I	
			CIV213.1	Understand the sources of water, quality of water, types of water borne diseases.
			CIV213.2	Learn to estimate demand for water supply, and can apply the physical principles of flow in water distribution networks and pumping stations.
			CIV213.3	Design water treatment systems and operations and working of different units.
			CIV213.4	Design elements of public water systems, pumping and transportation of water, distribution systems, and components of water supply network in a town/city, functioning of water/sewer pipe appurtenances.
	II-I	CIV214	Strength of Materials	
			CIV214.1	Understand and solve simple problems involving stresses and strain in two and three dimensions.
			CIV214.2	Analyses stress in two dimensions and understand the concepts of principal stresses and the use of Mohr circles to solve two dimensional stress problems.
			CIV214.3	Draw shear force and bending moment diagrams of simple beams and understand the relationships between loading intensity, shearing force and bending moment.
			CIV214.4	Compute the bending stresses in beams with one or two materials.
			CIV214.5	Apply sound analytical techniques and logical procedures in the solution of engineering problems.
		CIV215	Surveying– I	
			CIV215.1	Calculate angles, distances and levels.
			CIV215.2	Identify data collection methods and prepare field notes.
			CIV215.3	Understand the working principles of survey instruments.

			CIV215.4	Estimate measurement errors and apply corrections.
			CIV215.5	Demonstrate an ability to compute volume of reservoirs using contours.
		CIV216	Environmental Engineering Lab	
			CIV216.1	Estimation some important characteristics of water and wastewater in the laboratory.
			CIV216.2	Decide whether the water body is polluted or not with reference to the state parameters in the list of experiments.
		CIV217	Strength of Materials Lab	
			CIV217.1	Determine the engineering and mechanical properties of materials.
			CIV217.2	To interpret the test results
		CIV218	Surveying Field Work-I	
			CIV218.1	Improve ability to function as a member of a survey party in completing the assigned field work.
			CIV218.2	Conduct survey and collect field data
			CIV218.3	Prepare field notes from survey data
			CIV218.4	Learn the measurement of elevation difference between two points using Level instruments.
			CIV218.5	Interpret survey data and compute areas and volumes.