CODE	CO No.	VTU Sub code & Name	COURSE OUTCOMES	Blooms Level
Course Outcomes (2019- 20)			
101	101.1	18MAT11	Make use of nth derivatives and polar curves	K3
	101.2		Apply partial derivatives to calculate rates of change of multivariate functions.	K3
	101.3	Calculus & Linear Algebra	Analyze position, velocity, and acceleration in two or three dimensions using the calculus of vector valued functions.	K4
	101.4		Identify and solve first-order ordinary differential equations, Newton's law of cooling	K3
	101.5		Make use of matrices techniques to solve systems of linear equations in the different areas of Linear Algebra.	K3
102	102.1	18CHE12	Explain the concepts of electrochemical and concentration cells, classical & modern batteries and fuel cells.	K2
	102.2		Outline causes and effects of corrosion of metals, its control & explain the modification of surface properties of metals by electroplating & electrolessplating.	K2
	102.3	Engineering Chemistry	Summarize the various types of fuels and production & utilization of solar energy.	K2
	102.4		Outline the basics of polymers and their applications.	K2
	102.5		Explain the concepts of Water Technology and Nanomaterials.	K2
103	103.1	18CPS13	Develop programs using standard Input and Output functions	K3
	103.2		Design and implement programs using Control Structures	K3
	103.3	C programming for problem solving	Implement modularization techniques in programming	K3
	103.4		Write programs using the concept of files and structures	K3
	103.5		Explain the basic concepts of pointers and data structures	K2
104	104.1	18ELN14	Explain the concept of diode in rectifiers and filter circuits and Discuss simple diode circuits, Explain the transistors	K2
	104.2		Design simple basic BJT amplifier circuits, and explain different applications of Op-amps.	K5
	104.3	Basic Electronics	Analyze the different building blocks in digital electronics using logic gates and implement simple logic function using universal gates	K4
	104.4		Explain flip flops and outline microcontroller architecture	K2
	104.5		Explain the functioning of a communication system, different modulation technologies and the basic principles of different types of Transducers.	K2
105	105.1	18ME15	Demonstrate knowledge associated with various energy sources and boilers.	K3
	105.2		Describe the principle of working, types and differences of IC Engines and Turbines	K2
	105.3	Elements of Mechanical Engineering	Describe various material removal processes using Lathe, Milling, Drilling and Robotics.	K2
	105.4		Explain application and usage of various engineering materials, joining processes and composites.	K2
	105.5		Explain various refrigeration and Air-Conditioning systems.	K2
106	106.1	18CHEL16	Conduct Instrumental Experiments and Analyse the given sample and obtain quick and accurate results	K3
	106.2	Engineering Chemistry lab	Demonstrate chemical analysis of alloys and corroded products	K3
	106.3		Determine of impurities present in water by different methods	K3
	106.4		Explain different types of volumetric Titrations	K2
107	107.1	18CPL17	Apply the concept and write programs using Control Structures	K3
	107.2		Apply the concept and write programs using functions, arrays and strings	K3
	107.3	C Programming lab	Write programs using files and structures	K3
	107.4		Apply the concept and write programs using pointers	K3
108	108.1	18EGH18	Describe and explain the importance of using grammataically correct language	K2
	108.2		Form the sentences to write the ideas and concepts	K2
	108.3	Technical English I	Write Letters for official and personal purposes	K2
	108.4		Make presentations and explain the ideas in proper form	K2
109	109.1	18MAT21	Solve differential equations of electrical circuits, forced oscillation of mass spring and elementary heat transfer.	K3
	109.2		Solve partial differential equations fluid mechanics, electromagnetic theory and heat transfer.	K3
	109.3	Advanced calculus & Numerical methods	Determine double and triple integrals to find area , volume, mass and moment of inertia of plane and solid region.	K3
	109.4		Use curl and divergence of a vector valued functions in various applications of electricity, magnetism and fluid flows.	K3
	109.5		Use Laplace transforms to determine general or complete solutions to linear ODE	K3
110	110.1	18PHY22	Demonstrate concepts of Modern Physics & quantum Mechannics	K3
	110.2		Explain material properties and their application is the prime role to understand using engineering application & studies	K2
	110.3	Engineering Physics	Explain lasers & optical fibers and it application are to import knowledge and to develop skills to use modern instrument in the engineering apllications	K2
	110.4		Explain crystal Structure and their applications.	K2
	110.5		Explain shock waves concepts and its applications	K2
111	111.1	18ELE23	Analyze the behavior of electrical and magetic circuits	K4
	111.2		Analyze the behavior of AC circuits	K4
	111.3	Basic Electrical Engineering	Explain the measuring equipments, Wiring, Electric shock and earthing.	K2
	111.4		Analyze the 3 phase circuits and systems	K4
	111.5		Explain the principle and working of AC motors and transformers.	K2

112	112.1	18CIV24	Explain the different fields of Civil Engineering, its scope of study and the infrastructure by using basic knowledge of engineering.	K2
	112.2		Comprehend the action of Forces, Moments and other loads on systems of rigid bodies;	K2
	112.3	Elements of Civil Engineering & Mechanics	Compute the reactive forces and the effects that develop as a result of the external loads by using non-concurrent force systems.	K3
	112.4		Compute the Centroid and the Moment of Inertia of regular cross sections by using basics of engineering formulas.	K3
	112.5		Describe the relationship between the motion of bodies by using kinematics	K2
113	113.1	18EGDL25	Draw the Orthographic projections, projection of points and lines	K3
	113.2		Construct the different types of plane surfaces	K3
	113.3	Engineering Graphics	Construct the various forms prisms and pyramids	K3
	113.4		Draw isometric views of different combination of solids	K3
	113.5		Construct the different cut section for lateral surfaces.	K3
114	114.1	18PHYL26	Apply and evaluate the elastic properties of materials.	K3
	114.2		Evaluate and correlate the structural properties of simple and composite materials .	K4
	114.3	Engineering Physics lab	Evaluate the intereference and diffraction of light.	K4
	114.4		Design new electrical components and circuits for real time applications	K5
115	115.1	18ELEL27	Analyze the behavior of electrical and magetic circuits	K3
	115.2		Analyze the behavior of AC circuits	K3
	115.3	Basic Electrical Engineering lab	Explain the measuring equipments, Wiring, Electric shock and earthing.	K2
	115.4		Analyze the 3 phase circuits and systems	K3
	115.5		Explain the principle and working of AC motors and transformers.	K2
116	116.1	18EGH28	Describe and explain the importance of using grammataically correct language	K2
	116.2		Form the sentences to write the ideas and concepts	K2
	116.3	Technical English II	Write Letters for official and personal purposes	K2
	116.4		Make presentations and explain the ideas in proper form	K2
201	201.1	18MAT31	Use of periodic signals and Fourier series to analyze circuits and system communications.	K3
	201.2		Apply the general linear system theory for continuous-time signals and digital signal processing using the Fourier Transform and z-transform.	K3
	201.3	Transform Calculus, Fourier series & Numerical techniques	Employ appropriate numerical methods to solve algebraic and transcendental equations.	K3
	201.4		Apply Green's Theorem, Divergence Theorem and Stokes' theorem in various applications in the field of electro-magnetic and gravitational fields and fluid flow problems.	K3
	201.5		Determine the extremals of functionals and solve the simple problems of the calculus of variations.	K3
202	202.1	18CV32	Evaluate the basic concepts of stresses and strains for different materials and strength of structural element.	K4
	202.2		Evaluate the development of internal forces & resistance mechanism for one dimension and two dimension.	K4
	202.3	Strength of Materials	Analyse different internal forces & stresses induced due to representative loads on structureal element	K4
	202.4		Evaluate Slope and deflections of beams	K4
	202.5		Evaluate the behaviour of torsion members, columns and struts.	K4
203	203.1	18CV33	Explain the importance, application and inter relationship of various properties of fluids	K2
	203.2		Evaluate hydrostatic forces and its application to practical problem	K4
	203.3	Fluid Mechanics	Apply the principles of kinematics and hydrodynamics for practical application	K3
	203.4		Analyse and design of pipes along with pipe networks for various pressure and losses	K5
	203.5		Calculate discharge problems using various flow measuring devices	K3
204	204.1	18CV34	Select suitable materials for buildings from available materials considering engineering properties	K2
	204.2		Choose suitable foundation, wall, door, window, staircase and roof in compliance with National Building Code	K2
	204.3	Building materials & Construction	Explain construction methods and techniques with the help of applicable codes and sustainability concept	K2
	204.4		Explain the different methods of repair, painting and maintenance work to enhance durability of buildings	K2
205	205.1	18CV35	Measure horizontal distances by using surveying tools	K3
	205.2		Measure horizontal and vertical angles by using compass and theodolite.	K3
	205.3	Basic Surveying	Balance the closed traverse and determine distance & angles by tacheometry	K3
	205.4		Determine the elevations of points by different levelling methods	K3
	205.5		Compute areas and volume using different methods	K3
206	206.1	18CV36	Explain the basics of geology and its role in Civil Engineering	K2
	206.2		Summarize the need of effective use of earth's materials such as mineral, rocks and water in civil engineering practices	K2
	206.3	Engineering Geology	Explain the causes of natural disasters and their mitigation.	K2
	206.4		Outline various structural features and geological tools in ground water exploration, natural resource estimation and solving civil engineering problems.	K2
	206.5		Summarize the uses of building materials in construction	K2
207	207.1	18CVL37	Explain the concepts of planning and designing of buildings	K2
	207.2	Computer Aided Planning & Drawing	Prepare and interpret the drawings in a professional set up.	K3
	207.3		Explain the procedures of submission of drawings for building	K2
	207.4		Prepare the plan for a residential or public building as per the given requirements	K3

208	208.1	18CVL38	Identify and classify the Aggregate properties by performing laboratory tests.	K3
	208.2	Building materials Testing lab	Determine tension, compression, shear and torsion strength by lab tests for building materials	K3
	208.3		Obtain flexural stiffness of structural elements	K3
	208.4		Demonstration of strain gauges and strain indicators.	K3
209	209.1	18MAT41	Solve first and second order ordinary differential equations arising in flow problem using single step and multistep numerical methods.	K3
	209.2	Complex Anaysis, Probability & Statistical methods	Solve problems of quantum mechanics, hydrodynamics and heat conduction by employing Bessel's function relating to cylindrical polar coordinate systems and Legendre's polynomials relating to spherical polar coordinate systems.	K3
	209.3		Explain the analyticity, potential fields, residues and poles of complex potentials in field theory and electromagnetic theory. Describe conformal and bilinear transformation arising in aerofoil theory, fluid flow visualization and image processing.	K2
	209.4		Solve problems on probability distributions relating to digital signal processing , information theory and optimization concepts of stability of design and structural engineering.	K3
	209.5		Determine joint probability distributions and stochastic matrix connected with the multivariable correlation problems for feasible random events.	K3
210	210.1	18CV42	Identify different forms of structural system and explain the concept of influence line diagrams.	K2
	210.2	Analysis of Determinate structures	Construct the ILD and analysis of the beams and trusses subjected to moving load	K3
	210.3		Evaluate the deflections of cantilever, simply supported and overhanging beams by different methods	K3
	210.4		Determine the deflections of trusses and bent frames using energy principles and energy theorams	K3
	210.5		Determine the stress resultyants in areches and cables.	K3
211	211.1	18CV43	Apply the principles of dimensional analysis to design hydraulic models and various prototypes	K3
	211.2	Applied Hydraulics	Design the open channels of various cross section including optimum design sections and energy concepts of fluid in open channel	K5
	211.3		Apply energy concepts to flow in open channel sections, calculate energy dissipation, compute water surface profiles at different conditions	K3
	211.4		Apply concepts of velocity triangle of curved vanes for design of impulse turbines	K5
	211.5		Design reaction turbines and centrifugal pumps for given data	K5
212	212.1	18CV44	Explain the properties and role of constituents of concrete	K2
	212.2	Concrete Technology	Explain the properties of fresh concrete	K2
	212.3		Outline the properties of hardened concrete	K2
	212.4		Describe the techniques of measuring the strength of concrete using non destructing tests.	K2
	212.5		Design a concrete mix which accomplishes the required properties for fresh and hardened concrete	K5
	212.6		Choose waste materials as alternative and innovative materials for use in concrete.	K3
213	213.1	18CV45	Apply geometric principles to solve surveying problems	K3
	213.2	Advanced Surveying	Conduct the geodetic survey and the principles of theory of errors for correction of measurements	K3
	213.3		Apply the knowledge of astronomy for solving civil engineering problems	K3
	213.4		Analysis of survey problems using captured geodetic data	K4
	213.5		Analyze geospatial data using modern instruments	K4
214	214.1	18CV46	Determine average and peak water demand and to estimate the future population by different forecasting methods.	K3
	214.2	Water Supply & Treatment Engineering	Analyze available sources of water, quantitatively and qualitatively and make appropriate choice for a Community.	K4
	214.3		Analyze the different sampling techniques and design sedimentation, coagulation and filtration processes.	K4
	214.4		Analyze different softening techniques and choose appropriate disinfection methods to treat water.	K4
	214.5		Design a comprehensive water treatment and distribution system to purify and distribute water to the required water Quality standards.	K5
215	215.1	18CVL47	Identify industrial important minerals and rocks and utilize them effectively in civil engineering practices.	K3
	215.2	Engineering Geology lab	Analyze the geological conditions of the area by studying topography maps and Structural Geology Maps for the implementation of civil engineering projects	K4
	215.3		Analyse subsurface information such as thickness of soil, weathered zone, depth of hard rock and saturated zone by solving thickness, Dip & Strike And Borehole Problems.	K4
	215.4		Apply techniques of drawing the curves of electrical resistivity data and its interpretation for geotechnical and aquifer boundaries to find out the groundwater availability.	K3
216	216.1	18CVL48	Calibrate water flow measuring devices such as notches and wiers	K3
	216.2	Fluid Mechanics & Hydraulic Machines lab	Apply calibration to water flow measuring devices such as venturimeter, orificemeter, venturiflume and orifice	K3
	216.3		Solve for forces in jets & determine major, minor losses in pipes	K3
	216.4		Evaluate performance of turbines and pumps	K4
301	301.1	18CV51	Explain the concepts of limit state method, working stress method in RC structural elements	K2
	301.2	Design of RC Structureal Elements	Analyse the engineering problems of RC elements subjected to different failures.	K4
	301.3		Demonstrate the procedural knowledge in design of RC structural elements	K3
	301.4		Design of RC structural elements like slabs and staircases	K5

	301.5		Design of RC structural elements like column and footings	K5
302	302.1	18CV52	Analyse the indeterminate beams and frames having variable moment of inertia using slope deflection method.	K4
	302.2		Solve structural analysis problems by using moment distribution method.	K3
	302.3	Analysis of Indeterminate structures	Analyse the indeterminate beams and frames having variable moment of inertia using Kani's method.	K4
	302.4		Solve structural analysis problems by using flexibility matrix method.	K3
	302.5		Solve structural analysis problems by using Stiffness matrix method.	K3
303	303.1	18CV53	Plan and execute geotechnical site investigation for different civil engineering problems.	K3
	303.2		Determine the stress distribution of the loaded footings on sand & clayey soils.	K3
	303.3	Applied Geotechnical Engineering	Estimate factor of safety against failure of slopes and to compute lateral earth pressure, and to describe different consolidation formulaes	K3
	303.4		Determine bearing capacity of soil and to proportion isolated and combined footings	K3
	303.5		Determine the load carrying capacity of single and group piles.	K3
304	304.1	18CV54	Explain the concepts of planning and designing of buildings	K2
	304.2		Prepare and interpret the drawings in a professional set up.	K3
	304.3	Computer Aided Planning & Drawing	Explain the procedures of submission of drawings for building	K2
	304.4		Prepare the plan for a residential or public building as per the given requirements	K3
305 (1)	305(1).1	18CV551	Outline the major sources of air pollutants in the environment and understand their effects on health and environment	K2
	305(1).2		Explain the dispersion of different air pollutants in the atmosphere and to develop air quality monitoring models	K2
	305(1).3	Air Pollution & Control	Explain the sampling techniques for atmospheric and stack pollutants for different indoor and outdoor pollutants	K2
	305(1).4		Explain the concepts of control techniques for particulate matter,gaseous emissions and able to design the model	K2
	305(1).5		Outline the concepts of automobile and noise pollution, various environmental issues and laws	K2
305 (2)	305(2).1	18CV553	Explain engineering properties, strength and stability of masonry units and of masonry	K2
	305(2).2		Explain permissible stresses and design criteria as per IS:1905 and SP - 20	K2
	305(2).3	Masonry Structures	Design of different types of walls for axial loads	K3
	305(2).4		Design different types of masonry walls for different load considerations	K3
	305(2).5		Design of solid walls under lateral and transverse load.	K3
306	306.1	18CV561	Explain the fundamentals of traffic engineering along with road user characteristics and vehicle characteristics.	K2
	306.2		Outline the different types of surveys, compute & interpret the collected data and apply the concepts level of service	K3
	306.3	Traffic Engineering	Identify the type of intersection and design the traffic signal	K5
	306.4		Explain the road accidents and environment hazards	K2
	306.5		Explain the traffic management and intelligent transport system	K2
307	307.1	18CVL58	Analyse the soil index properties and classify the soil	K4
	307.2	Geotechnical Engineering lab	Analyse shear and settlement parameters for different soils	K4
	307.3		Analyse coefficient of permeability for different soils	K4
	307.4		Analyse compaction characteristics by lab and field test.	K4
308	308.1	18CVL58	Apply the knowledge of concrete technology in various experiments	K3
	308.2	Concrete & Highway Materials lab	Analyse the physical properties of ingredients of cement and understand the significance of each property in mix design	K4
	308.3		Analyse the physical properties of concrete in fresh and hardened state	K4
	308.4		Analyse properties of Bitumen and the strength of subgrade soil	K4
309	309.1	18CV61	Explain the basic principles, concepts and project formulation of construction management	K2
	309.2		Develop the construction planning, scheduling and resource management by using critical path method	K3
	309.3	Construction Management & Entrepreneurship	Select the construction equipment, materials and safety measures for the construction project	K3
	309.4		Discuss the construction quality management using ISO standards, human values and ethics	K2
	309.5		Analyze the interest and time value of money by using one or more economical alternatives	K4
	309.6		Illustrate the meaning, functions, role of an entrepreneur. Explain in details about small scale industry and project report preparation.	K2
310	310.1	18CV62	Describe the Advantages and Disadvantages of Steel structures, steel code provisions and plastic behaviour of structural steel.	K2
	310.2		Design the Joints by applying the Concept of Bolted and Welded connections.	K5
	310.3	Design of Steel Strctctural Elements	Design of compression members, built-up columns and columns splices.	K5
	310.4		Design of tension members, simple slab base and gusseted base for design of structural elements	K5
	310.5		Design of laterally supported and un-supported steel beams for the design of beams	K5
311	311.1	18CV63	Plan a new alignment or re-alignment of existing roads, conduct necessary field investigation for generation of required data.	K3
	311.2		Determine the engineering properties of the materials and suggest the suitability of the same for pavement construction.	K3
	311.3	Highway Engineering	Design of road geometric elements	K5
	311.4		Design structural components of pavement and drainage.	K5

	311.5		Explain the highway economics and various highway financing concepts.	K2
312	312.1	18CV64	Determine average and peak water demand and to estimate the future population by different forecasting methods.	K3
	312.2		Analyze available sources of water, quantitatively and qualitatively and make appropriate choice for a Community.	K4
	312.3	Water Supply & Treatment Engineering	Analyze the different sampling techniques and design sedimentation, coagulation and filtration processes.	K4
	312.4		Analyze different softening techniques and choose appropriate disinfection methods to treat water.	K4
	312.5		Design a comprehensive water treatment and distribution system to purify and distribute water to the required water Quality standards.	K5
313	313.1	18CV653	Interpret the various types of alternative building materials and technologies by considering local climatic condition and construction material.	K2
	313.2		Use the appropriate type of masonry unit and mortar for civil engineering constructions like Structural Masonry Elements under Axial Compression.	K3
	313.3	Alternative Building Materials	Compare the properties, manufacturing process and uses of building materials from agro and industrial wastes, fibre reinforced plastics, matrix materials using alternative building technologies.	K3
	313.4		Apply alternatives for wall constructions, Ferro cement, ferroconcrete, masonry vaults and domes using IS specifications.	K3
	313.5		Solve the problems of Environmental issues concerned to building materials by using cost effective building technologies	K3
314	314.1	18CV661	Assess the potential of groundwater and surface water resources.	K3
	314.2		Address the issues related to planning and management of water resources.	K2
	314.3	Water Resources Management	Make use of IWRM in different regions.	K3
	314.4		Explain the legal issues of water policy.	K2
	314.5		Select the method for water harvesting based on the area.	K3
315	315.1	18CVL68	Use software skills in a professional set up to automate the work and thereby reduce cycle time for completion of the work.	K3
	315.2		Analyse the beams and portal frames using STAAD PRO	K4
	315.3	Software Application lab	Make use of Project management Software for differen works	K3
	315.4		Design of structural components using MS Excel spreadsheets	K5
316	316.1	18CVL68	Apply the knowledge of surveying instruments to obtain required field data	K3
	316.2		Analyze the field survey data and draw required plans , maps and topographic profile.	K4
	316.3	Extensive Survey Project	Design and preparation of drawing with report for all projects	K5
	316.4		Estimate the quantity of earthwork for all the projects	K4
401	401.1	18CV71	Identify suitable sewer system and design the storm water flow	K5
	401.2		Choose the appropriate materials of sewer and design suitable sewers running full and partially full	K5
	401.3	Municipal and Industrial Waste Water Engineering	Analyze the different sampling techniques, sewer appartenances and illustrate the waste water charecterisation	K4
	401.4		Explain the construction of waste water treatement plant	K2
	401.5		Design the secondary treatement plant and disposal of sludge, reuse and recycle of waste water	K5
402	402.1	18CV72	Design and Detailing of RCC structuaral Elements	K5
	402.2	Design of RCC and Steel Structures	Design and Detailing of Steel structuaral Elements	K5
403	403.1	18CV73	Explain the concept of hydrology and compute precipitation data, mean rainfall over an area.	K3
	403.2		Determine hydrologic cycle components such as evaporation, evapotranspiration and infiltration.	K3
	403.3	Hydrology and Irrigation Engineering	Explain runoff characteristics and compute hydrographs & Unit hydrograph conversion.	K3
	403.4		Explain irrigation types and crop water requirements.	K2
	403.5		Design stable canals using Kennedy and Lacey methods and explain canal types, reservoir storage zones & mass curve.	K5
404(1)	404(1).1	18CV741	Understand the load distribution and IRC standards.	K2
	404(1).2		Design the striaight and skew slab bridges	K5
	404(1).3		Design the T beam bridges.	K5
	404(1).4	Design of Bridges	Design Box culvert, pipe culvert	K5
	404(1).5		Use bearings, hinges and expansion joints.	K2
	404(1).6		Design Piers and abutments.	K4
404(2)	404(2).1	18CV742	Explain the basic concepts of groundwater and aquifer types	K2
	404(2).2		Determine specific yield, specific retention, porosity, storage coefficient, permeability, hydraulic conductivity and transmissibility	K3
	404(2).3	Ground Water & Hydraulics	Explain concepts of groundwater exploration methods	K2
	404(2).4		Applying various concepts in well hydraulics	K3
	404(2).5		Explain types of well ,construction methods and artificial groundwater recharge	K2

405	405.1	18CV781	Plan the surveys to provide the data required for transportation planning	K3
	405.2		Develop zonal demand generation and attraction regression models	K3
	405.3	Urban Transportation and Planning	Develop demand distribution models (gravity models) and modal split models for mode choice analysis	K3
	405.4		Develop and calibrate trip generation rates for specific types of land use developments	K3
	405.5		Compare transportation planning alternative that best integrate multiple objectives such as technical feasibility and cost minimization	K3
406	406.1	18CVL76	Analyse the solids, Electrical conductivity and pH of water	K4
	406.2	Environmental Engineering Laboratory	Analyse Alkalinity,Acidity and Hardness by titrimetric method	K4
	406.3		Analyse the DO and BOD by Winkler's iodometric method	K4
	406.4		Analyse the optimum dosage of Alum by Jar test apparatus	K4
407	407.1	18CVL77	Use software skills in a detailing of RCC structural elements	K3
	407.2	Computer Aided Detailing of Structures	Use software skills in a detailing of Steel structural elements	K3
408	408.1	18CVP78	Examine the literature to Identify the project objectives	K2
	408.2	Project Phase 1 + Project Seminar	Conduct the experimental/analytical work as per IS codes to achieve the objectives	K3
	408.3		Analyse the findings in detail of the experimental / analytical work as per IS codes.	K4
	408.4		Design and estimate the project based on findings using IS codes.	K5
409	409.1	18CV81	Explain the fundamentals of estimation and costing	K2
	409.2		Estimate the quantity of construction materials by different methods	K3
	409.3	Quantity Surveying and Contracts Management	Illustrate the process of rate analysis and bill preparation	K3
	409.4		Explain the specification of materials for construction work	K2
	409.5		Outline the fundamentals of land and building	K2
410	410.1	18CV82	Explain the requirement of PSC members in Civil Engineering	K2
	410.2		Analyse the stresses and losses encountered in PSC element during transfer and working condition	K4
	410.3	Design of Pre Stressed Concrete Elements	Design of PSC Elements for Flexure resistance	K5
	410.4		Design of PSC Elements for Shear resistance	K5
	410.5		Design of PSC Elements for Composite sections	K5
411(1)	411(1).1	18CV831	Explain the concept of ground motion and its characteristics	K2
	411(1).2	Earthquake Resistant Design of Structures	Outline seismic design methods,Response control concepts, seismic evaluation and retrofitting methods	K2
	411(1).3		Summarize the effect of Structural Irregularities on seismic performance of RC buildings	K3
	411(1).4		Analyse the RC building against seismic loads.	K4
	411(1).5		Design masonry buildings under seismic loading.	K5
411(2)	411(2).1	18CV833	Compare flexible pavement with rigid pavement and explain design factors effecting the performance of pavement	K3
	411(2).2		Design the flexible pavement by different methods	K5
	411(2).3	Pavement Design	Evaluate the stresses developed in the rigid pavement or concrete slab and design of flexible pavement	K4
	411(2).4		Analysis of failure of flexible pavement and propose a remedial measure for the failure	K4
	411(2).5		Analysis of failure of rigid pavement and propose a remedial measure for the failure	K4
412	412.1	18CV84	Practice and Implement the IS Code methods for construction and analysis	K5
	412.2	Internship /Professional Practice	Use of moden tools and techniques for Construction.	K5
	412.3		Design and Estimate the projects using modern softwares and tools	K5
	412.4		Develop and write technical reports.	K3
413	413.1	18CVP88	Explain the existing technologies in the area of Civil Engineering	K2
	413.2		Describe, compare and evaluate different technologies.	K3
	413.3	Project Work	Analyse the various concepts of new technologies in the field of Civil Engineering.	K4
	413.4		Summarize the merits and demerits of the new technologies.	K3
	413.5		Develop and write technical reports.	K3
414	414.1	18CVS86	Examine the literature to Identify the project objectives	K2
	414.2	Seminar on current trends in Engineering & Technology	Conduct the experimental/analytical work as per IS codes to achieve the objectives	K3
	414.3		Analyse the findings in detail of the experimental / analytical work as per IS codes.	K4
	414.4		Design and estimate the project based on findings using IS codes.	K5
	414.5		Develop and write technical reports.	K3

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21_CO_FIRST YEAR_SYLLABUS

21CIV14/24-ELEMENTS OF CIVIL ENGINEERING AND MECHANICS	
CO1	Understand the various fields of civil engineering.
CO2	Compute the resultant of a force system and resolution of a force
CO3	Comprehend the action for forces, moments, and other types of loads on rigid bodies andcompute the reactive forces.
CO4	Locate the centroid and compute the moment of inertia of regular and built-up sections.
CO5	Analyze the bodies in motion.

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