Course code	Course Name	CO-numbering	Statement
18CV14/24	Elements of civil Engineering and Engineering	C104.1	Mention the Application of various fields of Civil Engineering.
		C104.2	Compute the resultant of given force system subjected to various loads.
		C104.3	Comprehend the action of force moment and other loads on system of rigid bodies.
		C104.4	Locate the Centroid and compute the Moment of Inertia of regular and built-up sections.
		C104.5	Express the relationship between the motion of bodies and analze the bodies in motion.

Course code	Course Name	CO-numbering	Statement
18CV32	STRENGTH OF MATERIALS	C302.1	Apply the basic concepts of the stresses and strains for different materials and strength of structural elements.
		C302.2	To know the development of internal forces and resistance mechanism for one dimensional and two dimensional
		C302.3	To analyse and understand different internal forces and stresses induced due to representative loads on structural
		C302.4	To analyse and understand principal stresses due to the combination of two dimensional stresses on an element and
		C302.5	To evaluate the behavior of torsional members, columns and struts.

Course code	Course Name	CO-numbering	Statement
18CV33	FLUID MECHANICS	C303.1	Apply the basic knowledge of fluid mechanics on fluid properties & sove problems on fluid pressure
		C303.2	solve problems on hydrostatics & fluid dynamics including practical applications
		C303.3	Evaluate the rate of flow through weirs & venturimeter
		C303.4	Evaluate the discharge through pipes using bernoulli's principal, discharge through notches
		C303.5	Evaluate the discharge through notches

Course code	Course Name	CO-numbering	Statement
18CV34	Building Materials and Construction	C304.1	Choose suitable building materials and test to be conducted.
		C304.2	Examine the soil properties to select suitable foundation
		C304.3	Classify the different Construction methods for building elements.
		C304.4	Design the stairs and also knowing about the doors, windows and formwork requirements
		C304.5	Relate the various materials required for building finishes.

Course code	Course Name	CO-numbering	Statement
18CV35	Basic Surveying	C305.1	Posses a sound knowledge of fundamental principles Geodetics
		C305.2	Measurement of horizontal plane, linear and angular dimensions to arrive at solutions to basic surveying problems.
		C305.3	Measurement of vertical plane, linear and angular dimensions to arrive at solutions to basic surveying problems.
		C305.4	Capture geodetic data to process and perform analysis for survey problems
		C305.5	Analyse the obtained spatial data and compute areas and volumes. Represent 3D data on plane figures as contours

Course code Course Name CO-numbering	code Course Name	CO-numbering
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18CV36	ENGINEERING GEOLOGY	C306.1	Understanding the earth and mineralogy concept
		C306.2	Identify kinds of rocks, asses their properties, Explain various terms in structural geology and rock mechanics
		C306.3	Explain aspects of landforms in construction and concept of earthquakes
		C306.4	Assess various structural features and geological tools in ground water Exploration, understanding hydrological cycle.
		C306.5	Apply remote sensing and GIS applications in civil engineering practice and concept of natural disaster

Course code	Course Name	CO-numbering	Statement
18CVL37	Computer Aided Building Planning & Drawing	C307.1	Use of different commands of AUTO CAD Software.
		C307.2	Create layout plan, sanction drawings, working drawing using concept of layers.
		C307.3	Select the tools in AUTO CAD software to draw the various building components.
		C307.4	Plan and design of residential or public building as per the given requirement.
		C307.5	Preparing the drawings and detailing of RCC structural elements and other civil related drawing.

Course code	Course Name	CO-numbering	Statement
18CVL38	Building Materials Testing Laboratory	C308.1	Identify Define materials properties and differentiate ideal construction materials
		C308.2	Know the importance of elastic constants such as youngs modulus, rigidity modulus and bulk modulus.
			Reproduce the basic knowledge of mathematics and engineering in finding the strength in tension, compression, shear
		C308.3	and torsion.
		C308.4	Identify, formulate and solve engineering problems of structural elements subjected to flexure.
		C308.5	Evaluate the impact of engineering solutions on the society and also will be aware of contemporary issues regarding

Course code	Course Name	CO-numbering	Statement
18CV42	Analysis of Determinate Structures	C402.1	Evaluate the forces i n determinate trusses by method of joints and sections.
		C402.2	Evaluate the deflection of cantilever, simply supported and overhanging beams by different methods
		C402.3	Apply the energy principles and energy theorems and its applications to determine the deflections of trusses and bent frames
		C402.4	Determine the stress resultants in arches and cables
		C402.5	Understand the concept of influence lines and construct the ILD diagram for the moving loads.

Course code	Course Name	CO-numbering	Statement
18CV43	Applied Hydraulics	C403.1	Apply dimensional analysis to develop mathematical modeling
		C403.2	compute the parametric values in prototype by analyzing the corresponding model parameters
		C403.3	Design the open channels of various cross sections including economical channel sections
		C403.4	Apply Energy concepts to flow in open channel sections, Calculate Energy dissipation, Compute water surface profiles at different conditions
		C403.5	Design turbines for the given data, and to know their operation characteristics under different operating conditions

Course code	Course Name	CO-numbering	Statement
18CV44	Concrete Technology	C404.1	Choose the materials used to make concrete; including their sources, and its characteristics.
		C404.2	Demonstrate the tests relevant to the application of concrete at laboratory and site.
		C404.3	Identify the durability properties of concrete.

	C404.4	Evaluate properties of concrete in fresh and hardened state.
	C404.5	Design the concrete mix as per IS code specifications

Course code	Course Name	CO-numbering	Statement
18CV45	Advanced Surveying	C405.1	Apply the knowledge of geometric principles to arrive at surveying problems
		C405.2	Select modern instruments to obtain geo-spatial data and analyse the same to appropriate Engineering problems.
		C405.3	Analyse survey problems with the use of electronics instrumnents.
		C405.4	Design the different types of curves for deviating type of alignmnets.
		C405.5	Design of transition and vertical curves

Course code	Course Name	CO-numbering	Statement
18CV46	Water Supply & Treatment Engineering	C406.1	Adopt average and peak water demand for a community in water resource management.
		C406.2	Identify available sources of water, quantitatively & qualitatively and make apropriate choice for a community.
		C406.3	Examine the water quality and environmental significance of various parameters and plan suitable tretment system.
		C406.4	Design a comprehensive water treatment and distribution system to purify and distribute water to the required water quality star
		C406.5	Design a water supply system to purify and distrribute water to the required water quality standards

Course code	Course Name	CO-numbering	Statement
18CVL47	Engineering Geology Laboratory	C407.1	Identify different kinds of minerals, rocks and maps
		C407.2	identify various minerals and rock properties
		C407.3	apply and solve structural problems related to dip and strike
		C407.4	analyse interpretation of geological maps and satellite imageries
		C407.5	conduct experiment on electrical resistivity method for groundwater exploration

Course code	Course Name	CO-numbering	Statement
18CVL48	Fluid Mechanics and Hydraulic Machines	C408.1	Apply the basic fundamentals to find the effect of fluid properties on a flow system
	Laboratory	C408.2	Analyse variety of a fluid flow and mesauring devices
		C408.3	Conduct experiments in pipe flows and open channel flows
		C408.4	Select and analyse an appropriate turbines with respect to given situtation in power plants
		C408.5	To estimate performance parameter of a given centrifugal and reciprocating pump

Course code	Course Name	CO-numbering	Statement
18CV51	Construction Management & Entrepreneurship	C501.1	List and explain the different characteristics , functions, purpose of management, types of organization, project plans, prepare
		C501.2	Basic concepts of resource management, classify different types of construction equipments, estimate various costs, explain mate
		C501.3	Explain the concept of quality control, quality standards, factors affecting quality, ISO standards, TQM, concepts of HSE, ethics
		C501.4	Solve problems related to interests rates, payments & comparison of alternatives.
		C501.5	Describe entrepreneurship, MSME & different schemes of entrepreneurship, types of business plans and planning process, explai

Course code	Course Name	CO-numbering	Statement

18CV52	ANALYSIS OF INDETERMINATE	C502.1	Apply the knowledge of mathematics and engineering in calculating slope, deflection, bending moment and shear force
	STRUCTURES	C502.2	Formulate and solve problems in Moment distribution method
		C502.3	Analyze structural system and interpret data by kanis method
		C502.4	Analyze the beams & indeterminate frames by stiffness matrix method
		C502.5	Evaluate flexibility methods to solve engineering problems

Course code	Course Name	CO-numbering	Statement
18CV53	DESIGN OF RC STRUCTURAL ELEMENTS	C503.1	Apply the concepts of design philosophy, and principles of limit state in the analysis of RC structures.
		C503.2	Analyse the forces and moments acting on RC elements using limit state method
		C503.3	Design the singly, doubly and flange RC beam sections for shear and torsion as per IS Code 456-2000
		C503.4	Design slabs and staircases by using the limit state concepts as per IS Code 456-2000.
		C503.5	Design of column and footing for different loading conditions.

Course code	Course Name	CO-numbering	Statement
18CV54	Basic Geotechnical Engineering	C504.1	Identify and classify the soil based on index properties
		C504.2	Describe the soil structure and compaction characterstics of soils
		C504.3	Explain the permeability of soil and ground water seepage.
		C504.4	Solve practical problems related to estimation of consolidation settlement of soil deposits also time required for the same
		C504.5	Estimate shear strength parameters of different types of soils using the data of different shear tests

Course code	Course Name	CO-numbering	Statement
18CV55	Municipal Wastewater Engineering	C505.1	Apply the methods of sewage disposal system in municipal & industrial waste water.
		C505.2	Acqurie capability to design sewer and sewer treatment plant.
		C505.3	Evaluate degree of treatment and type of treatment for disposal, reuse and recycle.
		C505.4	Identify the waste streams and design the industrial waste water treatment plant.
		C505.5	Inspect sewage and industrail effluent issues.

Course code	Course Name	CO-numbering	Statement
18CV56	Highway Engineering	C506.1	Identify the different modes of transportation, type of roads and pattern and phasing development in India.
		C506.2	Apply various engineering surveys to select ideal allignment to prepare drawings and report for new and realligned projects.
		C506.3	Design road gerometrics, structural components of pavement and drinage.
		C506.4	Examine the engineering properties of materials and suggest suitability of the same for construction of different components of fl
		C506.5	Estimate highway economics by different methods and knowledge of highway finance.

Course code	Course Name	CO-numbering	Statement
18CVL57	Surveying Practice	C507.1	Apply the basic principles of engineering surveying for linear measurements.
		C507.2	Apply the basic principles of engineering surveying for angular measurements.
		C507.3	Comprehend effectively field procedures required for a professional surveyor
		C507.4	Use techniques, skills and conventional surveying instruments necessary for horizontal plane measurements.
		C507.5	Use techniques, skills and conventional surveying instruments necessary for vertical plane measurements.

Course code	Course Name	CO-numbering	Statement
18CVL58	Concrete and Highway Materials Laboratory	C508.1	Conduct appropriate laboratory experiments and interpret the results.
		C508.2	Determine the quality and suitability of cement
		C508.3	Design appropriate concrete mix and Determine strength and quality of concrete.
		C508.4	Examine the road aggregates and bitumen for their suitability as road material.
		C508.5	Test the soil for its suitability as sub grade soil for pavements.

Course code	Course Name	CO-numbering	Statement
18CV61	Design of Steel Structural	C601.1	Apply the basic concepts of limit state method in steel structures.
	Elements	C601.2	Recognize the design philosophy of steel structures also design structural steel joints
		C601.3	Design of steel members subjected to compression as per codel provision
		C601.4	Analyze and design of tension members & column bases.
		C601.5	Design of beams as per IS code specifications.

Course code	Course Name	CO-numbering	Statement
18CV62	Applied Geotechnical	C602.1	Identify the different geotechnical site investigation methods for different civil engineering projects
	Engineering	C602.2	Analyze the Stresses in soils due to different load conditions
		C602.3	Estimate factor of safety against failure of slopes and to compute lateral pressure distribution behind earth retaining structures
		C602.4	Design shallow foundation of soil and achieve proficiency in proportioning shallow isolated and combined footings for uniform b
		C602.5	Capable of estimating load carrying capacity of single and group of piles

Course code	Course Name	CO-numbering	Statement
18CV63	Hydrology and Irrigation	C603.1	Understand the importance of hydrology and Irrigation its components.
	Engineering	C603.2	Measure precipitation and analyse the data and analyse the losses in precipitation.
		C603.3	Estimating runoff from deriving unit hydrographs for various durations and construction of S-curve
		C603.4	Discuss the benefits and methods of Irrigation, Finding the quantity of irrigation water and frequency of irrigation for various
		C603.5	Design the canal and computation of the reservoir capacity.

Course code	Course Name	CO-numbering	Statement		
18CV645	Railway, Harbours, Tunnelling & Airports	C604.1	Identify the variours components of different modes of transport.		
		C604.2	Identify the different design conspects of railways, tunnel, harbour and airports		
		C604.3	Sketch the different components, layout of railways, harbours, tunnels and airport	ort	
		C604.4	Execute and schedule the various construction and maintainance work of differer	ent modes of	f transport
		C604.5	Design the length, requirements and components of railway and runway orientation	ation of an ai	rport.

Course code	Course Name	CO-numbering	Statement
18CV65	Non Conventional Energy Resources ( Mechan	C605.1	
		C605.2	

1	[	C605.3	
		C605.4	
		C605.5	

Course code	Course Name	CO-numbering	Statement
18CVL66	Software Application	C606.1	Apply the fundamental concepts in the analysis and scheduling of different structural elements.
	Laboratory	C606.2	Analysis of plan trusses, continous beams and 3D framed structures usind Staad Pro.
		C606.3	Scheduling of building using microsoft project software.
		C606.4	Understanding the concept of spreadsheet to achieve various calculations in civil engineering field.
		C606.5	Prepare a map's using GIS software.

Course code	Course Name	CO-numbering	Statement
18CVL67	Environmental	C607.1	Identify the different equipments & safety standards of water & wastewater.
	Engineering Laboratory	C607.2	Conducting experiments & estimating the concentration of different parameters
		C607.3	Distinguish the characteristics of Water and Wastewater.
		C607.4	Compare the test results with water & wastewater standards to draw suitable conclusion.
		C607.5	Able to demonstrate various testing procedures for water & waste water.

Course code	Course Name	CO-numbering	Statement
18CVEP	Extensive Survey project	C608.1	Identify the topography and different surveys required for various civil engineering projects.
		C608.2	Apply the various equipment and methods of survey for different civil engineering projects.
		C608.3	Analyse the field data and prepare the drawings based on the survey field work.
		C608.4	Design the various elements of water tank, water supply and highway engineering project.
		C608.5	Evaluate and calculate the bill of quantities for various works based on the survey and drawings prepared.

Course code	Course Name	CO-numbering	Statement
17CV71	Municipal Wastewater Engineering	C701.1	Apply the methods of sewage disposal system in municipal & industrial waste water.
		C701.2	Acqurie capability to design sewer and sewer treatment plant.
		C701.3	Evaluate degree of treatment and type of treatment for disposal, reuse and recycle.
		C701.4	Identify the waste streams and design the industrial waste water treatment plant.
		C701.5	Inspect sewage and industrail effluent issues.

Course code	Course Name	CO-numbering	Statement
17CV72	Design of RCC and Steel Structures	C702.1	Aquires the basic knowledge of combined footing using codal provissions.
		C702.2	Apply the knowledge of retaining wall using codal provissions
		C702.3	Able to Analyse the gantry girder using codal provissions.
		C702.4	Able to Analyse design the plate girder using codal provissions
		C702.5	Analyse the truss for different loading condition using codal provissions.

Course code	Course Name	CO-numbering	Statement
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17CV73	HYDROLOGY AND IRRIGATION	C703.1	To know the importance of hydrology and Irrigation its components.
		C703.2	Measure precipitation and analyse the data and analyse the losses in precipitation.
		C703.3	Estimating runoff from deriving unit hydrographs for various durations and construction of S-curve
		C703.4	Discuss the benefits and methods of Irrigation, Finding the quantity of irrigation water and frequency of irrigation for
		C703.5	Design the canal and computation of the reservoir capacity

Course code	Course Name	CO-numbering	Statement
17CV744	Ground Water Hydraulics	C704.1	Characterize the properties of ground water & aquifier
		C704.2	Quantify the ground water flow
		C704.3	Analyse the flow of water in wells ( well hydraulics )
		C704.4	Locate the occurrence of ground water and augment ground water resource
		C704.5	Apply ground water development method

Course code	Course Name	CO-numbering	Statement
17CV75	Repair and Rehabilitation & Retrofitting	C705.1	Apply Suitable Methods To Find The Deterioration Of Concrete Structures
		C705.2	Assess The Damage For Different Type Of Structure In Different Conditions.
		C705.3	Examine The Various Effects Of Environment Its Durability And Serviceability
		C705.4	Summarise The Principles Of Repair And Rehabilitation Of Structures
		C705.5	Recognise Ideal Materials For Different Repair And Retrofitting Technique.

Course code	Course Name	CO-numbering	Statement
17CVL76	Environmental	C706.1	Identify the different equipments & safety standards of water & wastewater.
	Engineering Laboratory	C706.2	Conducting experiments & estimating the concentration of different parameters
		C706.3	Distinguish the characteristics of Water and Wastewater.
		C706.4	Compare the test results with water & wastewater standards to draw suitable conclusion.
		C706.5	Able to demonstrate various testing procedures for water & waste water.

Course code	Course Name	CO-numbering	Statement
17CVL77	Computer Aided Detailing of Structures	C707.1	Idetntify the autocad commands for detailing of structures
		C707.2	Apply the basic fundamentals of rcc and steel in structural drawings as per codal provisions
		C707.3	Select the tools in autocad software to draw the structural drawings of various RCC components
		C707.4	Prepare structural drawings of various steel connections by using autocad software
		C707.5	Presenting the reinforcement and other details of various structural elements for the purpose of field execution

Course code	Course Name	CO-numbering	Statement
17CV81	Quantity survey & Contract Management	C801.1	Apply engineering fundamentals to estimate and workout the quantities of civil engineering projects
		C801.2	Analyse the quantity of materials required for civil engineering works such as roads, manhole, septic tank as per specifications
		C801.3	Estimate the cost of expenditure of different items of works
		C801.4	Prepare contracts and tenders in construction practices.

C801.5 Prepare detailed report considering estimation and valuation process.
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Course code	Course Name	CO-numbering	Statement
17CV82	Design of Prestressed Concrete	C802.1	Apply the basic knowledge and understand the requirement of PSC members for present scenario.
		C802.2	Describe the methods of casting PSC members.
		C802.3	Analyse the stresses encountered in PSC element during transfer and at working, losses and efficiency
		C802.4	Apply the IS standards for designing the PSC elements
		C802.5	Design PSC beam for different requirements.

Course code	Course Name	CO-numbering	Statement
17CV833	PAVEMENT DESIGN	C803.1	List the characteristics, components and basic concepts of pavement.
		C803.2	Analyse stresses, strain and deflection by Boussinesq's, Burmister's and Westergaard's theory.
		C803.3	Design rigid pavement and flexible pavement confirming to IRC 58-2002 and IRC 37-2001.
		C803.4	Describe the different types of failures in flexible and rigid pavement and maintenance works.
		C803.5	Evaluate the functional and structural condition of pavement.

Course code	Course Name	CO-numbering	Statement
17CV84	INTERNSHIP	C804.1	Apply knowledge of the industry & skills learnt to classroom work.
		C804.2	Acquire practical experience in industry.
		C804.3	Recognize the areas for career and skill development.
	C804.4	Develop the skills to enable life long learning.	
		C804.5	Develop oral communication skills and develop technical reports ethically.

Course code	Course Name	CO-numbering	Statement
17CVP85	PROJECT WORK	C805.1	Identify real world civil engineering problems through survey and review of literature.
		C805.2	Design and develop project with consideration of environmental factors, economy, safety and societal needs.
		C805.3	Apply appropriate technology/modern tools
		C805.4	Demonstrate the leadership skills and ability to work individually as well as in team.
		C805.5	Develop oral Communication skills and write the project report ethically.

Course code	Course Name	CO-numbering	Statement
17CVS86	SEMINAR	C806.1	Identify topic of current, real-time issues in the field of Civil engineering. Through survey and review of literature
		C806.2	Attain the knowledge of topic selected through independent and collaborative learning.
		C806.3	Explore concepts in social and academic contexts
		C806.4	Apply principles of ethics and respect in interaction with others.
		C806.5	Communicate effectively to audience and develop technical reports ethically