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Department of Civil Engineering

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COURSE OUTCOMES

DEPARTMENT	CV	SEMESTER	3	COURSE CODE	18CV32	COURSE ID	C302
COURSE TITLE		18CV32 Strength of Materials					
COURSE OUTCOME NO							
C302.1		Describe and evaluate stresses and strains of engineering materials					
C302.2		Describe and evaluate compound stresses. Analyse thick and thin cylinders.					
C302.3		Evaluate the Bending moment and shear force in determinate beams.					
C302.4		Evaluate bending and shear stresses in beams. Determine mechanical properties in circular shafts.					
C302.5		Evaluate the slope and deflection in determinate beams. Determine the Buckling loads for columns.					

DEPARTMENT	CV	SEMESTER	3	COURSE CODE	18CV33	COURSE ID	C303
COURSE TITLE		18CV33 Fluid Mechanics					
COURSE OUTCOME NO							
C303.1		Able to describe fundamental properties of fluids, fluid pressure and its applications.					
C303.2		Able to explain Hydrostatic laws and application to practical problem solving.					
C303.3		Able to apply basic principles of Kinematics and Hydro-Dynamics.					
C303.4		Able to analyze discharge measuring devices, pipe networks considering flow and its losses					

DEPARTMENT	CV	SEMESTER	3	COURSE CODE	18CV34	COURSE ID	C304
COURSE TITLE		18CV34 Building Materials and Construction					
COURSE OUTCOME NO							
C304.1		CO1- Select Suitable materials for buildings and adopt suitable construction techniques					
C304.2		CO2- Decide suitable type of foundation based on soil parameters					
C304.3		CO3- Describe the requirements of various building components					
C304.4		CO4- Exhibit the knowledge of various finishing processes					

DEPARTMENT	CV	SEMESTER	3	COURSE CODE	18CV35	COURSE ID	C305
COURSE TITLE		18CV35 Basic Surveying					
COURSE OUTCOME NO							
C305.1		Describe principles of surveying and maps. Able to measure linear distances.					
C305.2		Will be able to conduct compass surveying and traversing.					
C305.3		To carry out levelling and compute elevations and profile.					
C305.4		Carry out plane table surveying and develop maps.					
C305.5		Compute areas and volumes for infrastructure projects. Able to plot contours for construction.					

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DEPARTMENT	CV	SEMESTER	3	COURSE CODE	18CV36	COURSE ID	C306
COURSE TITLE		18CV36 Engineering Geology					
COURSE OUTCOME NO							
C306.1		CO1:Able to apply geology in civil engineering and mineralogical properties in selection of materials for engineering raw materials.					
C306.2		CO2: Able to apply Petrology in site selection for Civil Structure and rock as material for construction.					
C306.3		CO3: Able to analyze Structural geological features & their effect on civil structures through Rock Mechanics.					
C306.4		CO4: Able to analyze water potential zone & their diversity of fluctuations related to uncontrolled urbanization					
C306.5		CO5: Able to analyze Earthquake related engineering problems & their link with natural disasters and their mitigations					

DEPARTMENT	CV	SEMESTER	3	COURSE CODE	18CVL37	COURSE ID	C307
COURSE TITLE		18CVL37 Computer Aided Building Planning & Drawing					
COURSE OUTCOME NO							
C307.1		Understand the tools in AUTOCAD					
C307.2		Develop plan and schedule building project using AUTO CAD					
C307.3		Design the component of the structure using auto CAD					

DEPARTMENT	CV	SEMESTER	3	COURSE CODE	18CVL38	COURSE ID	C308
COURSE TITLE		18CVL38 Building Materials Testing Laboratory					
COURSE OUTCOME NO							
C308.1		Understand the test procedures for construction materials.					
C308.2		Determine the behavioural characteristics of test on the construction materials.					

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DEPARTMENT	CV	SEMESTER	4	COURSE CODE	18CV42	COURSE ID	C402
COURSE TITLE	18CV42 Analysis of Determinate Structures						
COURSE OUTCOME NO							
C402.1	Describe structural systems and their analysis methods.						
C402.2	Analyze the determinate beams for moving loads..						
C402.3	Evaluate the slope and deflection in determinate beams using moment area method and conjugate beam method.						
C402.4	Describe and Analyze slope and deflection in determinate beams using Energy principle and energy theorem.						
C402.5	Analyze Arches and cables.						

DEPARTMENT	CV	SEMESTER	4	COURSE CODE	18CV43	COURSE ID	C403
COURSE TITLE	18CV43 Applied Hydraulics						
COURSE OUTCOME NO							
C403.1	Express the Types of Dimensional analysis, Model Studies, Buoyancy and flotation.						
C403.2	Describe Open Channel flows, economical channel sections and parameters of specific energy curve.						
C403.3	Derive expressions for hydraulic jump, gradually varied flow and description of curves and profile slopes.						
C403.4	Explain general layout of hydroelectric power plant, components, velocity triangles and working proportions of pelton turbine						
C403.5	Explain components, velocity triangles, working of kaplan turbine and centrifugal pump.						

DEPARTMENT	CV	SEMESTER	4	COURSE CODE	18CV44	COURSE ID	C404
COURSE TITLE	18CV44 Concrete Technology						
COURSE OUTCOME NO							
C404.1	CO1: Describe material characteristics and their influence on concrete						
C404.2	CO 2: Explain concrete manufacturing procedure and its behavior based on its fresh state						
C404.3	CO 3: Explain concrete behavior based on its hardened state						
C404.4	CO 4: Compute the proportions of ingredients of concrete to arrive at most desirable mechanical properties of concrete using professional codes						
C404.5	CO 5: Explain special concrete and its properties						

DEPARTMENT	CV	SEMESTER	4	COURSE CODE	18CV45	COURSE ID	C405
COURSE TITLE	18CV45 Advanced Surveying						
COURSE OUTCOME NO							
C405.1	Apply the knowledge of geometrical principles to solve the surveying problems						
C405.1	Classify the triangulation system, marking of stations.						
C405.1	Design and implement the different types of curves for deviating type of alignments.						
C405.1	Capture geodetic data to process and perform analysis for survey problems with the use of electronic instruments						
C405.1	Use modern instruments to obtain geo-spatial data and analyse the same to appropriate engineering problems.						

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DEPARTMENT	CV	SEMESTER	4	COURSE CODE	18CV46	COURSE ID	C406
COURSE TITLE		18CV46 Water Supply & Treatment Engineering					
COURSE OUTCOME NO							
C406.1		Estimate average and peak water demand for a community.					
C406.2		Evaluate available sources of water, quantitatively and qualitatively and make appropriate choice for a community.					
C406.3		Evaluate water quality and environmental significance of various parameters and plan suitable treatment system.					
C406.4		Design a comprehensive water treatment and distribution system to purify and distribute water to the required quality standards.					

DEPARTMENT	CV	SEMESTER	4	COURSE CODE	18CVL47	COURSE ID	C407
COURSE TITLE		18CVL47 Engineering Geology Laboratory					
COURSE OUTCOME NO							
C407.1		CO1: Students will be able to identify the minerals, rocks and utilize them in civil engineering practices.					
C407.2		CO2: Students will be able to analyze subsurface information including weathered zone, dynamic Features like Fault, Joints by Satellite Image Interpretations.					
C407.3		CO3: Students will be able to interpret subsurface extension of rock type details with known data of dip And strike.					
C407.4		CO4: Students will be able to interpret the geological condition of the area by converting the geological map into typical cross sections for feasibility of civil engineering projects.					

DEPARTMENT	CV	SEMESTER	4	COURSE CODE	18CVL48	COURSE ID	C408
COURSE TITLE		18CVL48 Fluid Mechanics and Hydraulic Machines Laboratory					
COURSE OUTCOME NO							
C408.1		Understand the working of various flow measuring devices and hydraulic machines.					
C408.2		Conduct experiment on flow measuring devices and hydraulic machines					
C408.3		Determine hydraulic co-efficient of flow measuring devices and efficiency of hydraulic machines.					
C408.4		Determine major and minor losses.					

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DEPARTMENT	CV	SEMESTER	5	COURSE CODE	17CV51	COURSE ID	C501
COURSE TITLE		17CV51 Design of RC Structural Elements					
COURSE OUTCOME NO							
C501.1		CO1-Describe the principles of limit state method of design of RC elements and calulate the deflection parameters					
C501.2		CO2- Analyse RC Rectangular sections for deflection, shear and flexure					
C501.3		CO3- Design Rectangular RC beams					
C501.4		CO4- Design RC Slabs and Stairs					
C501.5		CO5- Design RC Columns and Footings					

DEPARTMENT	CV	SEMESTER	5	COURSE CODE	17CV52	COURSE ID	C502
COURSE TITLE		17CV52 Analysis of Indeterminate Structures					
COURSE OUTCOME NO							
C502.1		CO1 Analyze indeterminate structures using slope deflection method.					
C502.2		CO2 Analyze indeterminate structures using moment distribution method.					
C502.3		CO3 Analyze indeterminate structures using Kani's method.					
C502.4		CO4 Develop the flexibility matrix to analyze the indeterminate structures by system approach.					
C502.5		CO5 Develop the stiffness matrix to analyze the indeterminate structures by system approach.					

DEPARTMENT	CV	SEMESTER	5	COURSE CODE	17CV53	COURSE ID	C503
COURSE TITLE		17CV53 Applied Geotechnical Engineering					
COURSE OUTCOME NO							
C503.1		Plan & Execute geotechnical site investigation in civil engineering projects.					
C503.2		Describe the stress distribution in subsoil beneath the loaded footings.					
C503.3		Apply the effect of soil particle interaction to predict the ground response under different Loading conditions.					
C503.4		Analyze problems of bearing capacity in soil and able to proportionate footings for uniform bearing pressure.					
C503.5		Estimate the load carrying capacity of single and group of piles.					

DEPARTMENT	CV	SEMESTER	5	COURSE CODE	17CV54	COURSE ID	C504
COURSE TITLE		17CV54 Computer Aided Building Planning and Drawing					
COURSE OUTCOME NO							
C504.1		Demonstrate commands in Auto CAD as applied to building drawings					
C504.2		Draft components of building using Auto-CAD					
C504.3		Plan Residential and nonresidential building using local bylaws					

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DEPARTMENT	CV	SEMESTER	5	COURSE CODE	17CV551	COURSE ID	C551
COURSE TITLE		**17CV551 Air pollution and Control**					
COURSE OUTCOME NO							
C551.1		Identify the major sources of air pollution and understand their effects on health and environment.					
C551.2		Evaluate the dispersion of air pollutants in the atmosphere and to develop air quality models					
C551.3		Evaluate sampling techniques for atmospheric and stack pollutants.					
C551.4		Design control techniques for particulate and gaseous emissions.					

DEPARTMENT	CV	SEMESTER	5	COURSE CODE	17CV552	COURSE ID	C552
COURSE TITLE		**17CV552 Railways, Harbours, tunneling and Airports**					
COURSE OUTCOME NO							
C552.1		Understand the basics Railway, Airport, Tunnels and Harbours engineering.					
C552.2		Explain the layout and types Railway, Airport, Tunnels and Harbours engineering.					
C552.3		Solve problems involved in various parameters in Railways, Airport, Tunnels and Harbours engineering.					

DEPARTMENT	CV	SEMESTER	5	COURSE CODE	17CV561	COURSE ID	C561
COURSE TITLE		**17CV561 Traffic Engineering**					
COURSE OUTCOME NO							
C561.1		Describe the scope and importance ,management, and safety in traffic engineering					
C561.2		Interpret the traffic data and its use in planning					
C561.3		Determine the traffic parameters for its effectiveness					

DEPARTMENT	CV	SEMESTER	5	COURSE CODE	17CV563	COURSE ID	C563
COURSE TITLE		**17CV563 Remote Sensing and GIS**					
COURSE OUTCOME NO							
C563.1		Define terminologies in Remote sensing and GIS.					
C563.2		Describe basic concepts of remote sensing, satellite imagery to extract the required units, GIS data and data projection, concepts of data models.					
C563.3		Utilize the concepts of data models and concepts of Remote sensing and GIS in various fields.					

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DEPARTMENT	CV	SEMESTER	5	COURSE CODE	17CVL57	COURSE ID	C507
COURSE TITLE		17CVL57 Geotechnical Engineering Laboratory					
COURSE OUTCOME NO							
C507.1		Identify the soils based on field investigations through geotechnical engineering practice.					
C507.2		Demonstrate suitable laboratory compaction and in-place density test for fill quality control.					
C507.3		Determine index and engineering properties of soil as per IS Codal procedures.					
C507.4		Analyse and interpret soil design parameters by performing laboratory tests.					

DEPARTMENT	CV	SEMESTER	5	COURSE CODE	17CVL58	COURSE ID	C508
COURSE TITLE		17CVL58 Concrete and Highway Materials Laboratory					
COURSE OUTCOME NO							
C508.1		Ability to identify the type of test required for cement, aggregates, concrete and bitumen.					
C508.2		Ability to describe its physical and strength properties based on the experimental data.					
C508.3		Ability to interpret and summarize the results and draw the conclusion from them.					

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DEPARTMENT	CV	SEMESTER	6	COURSE CODE	17CV61	COURSE ID	C601
COURSE TITLE		**17CV61 Construction Management and Entrepreneurship**					
COURSE OUTCOME NO							
C601.1		Apply management principles to originate new business.					
C601.2		Apply management concepts to generate project plans and schedules.					
C601.3		Employ quality control and safety procedures during construction process.					
C601.4		Apply the concepts of engineering economics to compare the available alternatives and recommend the feasible solution.					
C601.5		Exercise human values and professional ethics as a professional/ an entrepreneur in an endeavor of his choice.					

DEPARTMENT	CV	SEMESTER	6	COURSE CODE	17CV62	COURSE ID	C602
COURSE TITLE		**17CV62 Design of Steel Structural Elements**					
COURSE OUTCOME NO							
C602.1		1. To describe the importance of type of load combination in structural members, codal provisions, and plastic behavior of structural steel.					
C602.2		2. To design bolted and welded connections.					
C602.3		3. To analyse and design compression members in steel structure.					
C602.4		4. To analyse and design tension members in steel structure.					
C602.5		5. To design different type of beam connections.					

DEPARTMENT	CV	SEMESTER	6	COURSE CODE	17CV63	COURSE ID	C603
COURSE TITLE		**17CV63 Highway Engineering**					
COURSE OUTCOME NO							
C603.1		Gain knowledge of different modes of transportation systems, history, development of highways and the organizations associated with research and development of the same in INDIA.					
C603.2		Understand Highway planning and development considering the essential criteria's (engineering and financial aspects, regulations and policies, socio economic impact).					
C603.3		Get insight to different aspects of geometric elements and train them to design geometric elements of a highway network					
C603.4		Understand pavement and its components, pavement construction activities and its requirements.					
C603.5		Gain the skills of evaluating the highway economics by B/C, NPV, IRR methods and also introduce the students to highway financing concepts.					

DEPARTMENT	CV	SEMESTER	6	COURSE CODE	17CV64	COURSE ID	C604
COURSE TITLE		**17CV64 Water Supply and Treatment Engineering**					
COURSE OUTCOME NO							
C604.1		Estimate average and peak water demand for a community.					
C604.2		Evaluate available sources of water, quantitatively and qualitatively and make appropriate choice for a community.					
C604.3		Evaluate water quality and environmental significance of various parameters and plan suitable treatment system.					
C604.4		Design a comprehensive water treatment and distribution system to purify and distribute water to the required quality standards.					

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DEPARTMENT	CV	SEMESTER	6	COURSE CODE	17CV652	COURSE ID	C652
COURSE TITLE		**17CV652 Matrix Method of Structural Analysis**					
COURSE OUTCOME NO							
C652.1		CO1	Able to write element flexibility and stiffness matrix for beam and truss members.				
C652.2		CO2	Able to analyse indeterminate structures by matrix flexibility method using element approach.				
C652.3		CO3	Able to analyse indeterminate structures by matrix stiffness method using element approach.				
C652.4		CO4	Able to analyse by matrix flexibility and stiffness method with temperature effect.				
C652.5		CO5	Able to assemble overall stiffness matrix and analyse structure using direct stiffness method.				

DEPARTMENT	CV	SEMESTER	6	COURSE CODE	17CV61	COURSE ID	C601
COURSE TITLE							
COURSE OUTCOME NO							
C601.1							

DEPARTMENT	CV	SEMESTER	6	COURSE CODE	17CV661	COURSE ID	C661
COURSE TITLE		**17CV661 Water Resource Management**					
COURSE OUTCOME NO							
C661.1		CO1: Understand & apply the knowledge of Water Resources Management					
C661.2		CO2: Interpretation of IWRM after understanding the Global Water Resources					
C661.3		CO3: Interpret the various aspects of water governance & Various techniques of water harvesting.					
C661.4		CO4: Determine yield from a catchment & dimensions of various water harvesting structures					

DEPARTMENT	CV	SEMESTER	6	COURSE CODE	17CV662	COURSE ID	C662
COURSE TITLE		**17CV662 Environmental Protection and Management**					
COURSE OUTCOME NO							
C662.1							

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DEPARTMENT	CV	SEMESTER	6	COURSE CODE	17CVL67	COURSE ID	C607
COURSE TITLE		17CVL67 Software Application Laboratory					
COURSE OUTCOME NO							
C607.1		Analyze and interpret the given data suitably for the given project using Staad Pro.					
C607.2		Develop plan and schedule building project using MSP.					
C607.3		Design the component of the structure using MS Excel.					

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DEPARTMENT	CV	SEMESTER	7	COURSE CODE	15CV71	COURSE ID	C701
COURSE TITLE		15CV71 Municipal and Industrial Waste Water Engineering					
COURSE OUTCOME NO							
C701.1		1. Select the appropriate sewer appurtenances and materials in sewer network.					
C701.2		2. Design the sewers network and understand the self purification process in flowing water.					
C701.3		3.Deisgn the varies physic- chemical treatment units					
C701.4		4. Design the various biological treatment units					
C701.5		5. Design various AOPs and low cost treatment units.					

DEPARTMENT	CV	SEMESTER	7	COURSE CODE	15CV72	COURSE ID	C702
COURSE TITLE		15CV72 Design of RCC and Steel Structures					
COURSE OUTCOME NO							
C702.1		Classify RC elements subjected to flexure and shear by codal provisions.					
C702.2		Interpret different structural element and its working behaviour and apply the same in the design.					

DEPARTMENT	CV	SEMESTER	7	COURSE CODE	15CV73	COURSE ID	C703
COURSE TITLE		15CV73 Hydrology and Irrigation Engineering					
COURSE OUTCOME NO							
C703.1		Define all the terminologies in Hydrology & Irrigation engineering					
C703.2		Describe the process of precipitation, hydrological abstractions & water requirement of crops.					
C703.3		Calculate the hydrological losses, canal dimensions & reservoir parameters.					
C703.4		Interpret the precipitation, hydrograph data & reservoir data.					

DEPARTMENT	CV	SEMESTER	7	COURSE CODE	15CV741	COURSE ID	C741
COURSE TITLE		15CV741 Design of Bridges					
COURSE OUTCOME NO							
C741.1		Knowledge on bridges					
C741.2		Classify the bridges					
C741.3		Solve the problem on bridges					

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DEPARTMENT	CV	SEMESTER	7	COURSE CODE	15CV743	COURSE ID	C743
COURSE TITLE		15CV743 Design Concepts of Building Services					
COURSE OUTCOME NO							
C743.1		CO1: Describe the basics of water supply & plumbing system and select suitable solid waste disposal method.					
C743.2		CO2: Identify suitable HVAC system for health and comfort of the occupants.					
C743.3		CO3: Select efficient electrical and firefighting components for proper functioning of building.					
C743.4		CO4: Decide the suitable engineering service required as per user needs.					
C743.5		CO5: Develop house plumbing and firefighting plans.					

DEPARTMENT	CV	SEMESTER	7	COURSE CODE	15CV742	COURSE ID	C742
COURSE TITLE		15CV742 Ground Water & Hydraulics					
COURSE OUTCOME NO							
C742.1		Define all the terminologies in GROUNDWATER AND HYDRAULICS					
C742.2		Describe the process of well hydraulics, groundwater exploration and recharge techniques.					
C742.3		Calculate the aquifer parameters under steady and unsteady flow condition.					
C742.4		Interpret the types of groundwater exploration					

DEPARTMENT	CV	SEMESTER	7	COURSE CODE	15CV751	COURSE ID	C751
COURSE TITLE		15CV751 Urban Transportation and Planning					
COURSE OUTCOME NO							
C751.1		Recall basic concepts and methods of UTP in India					
C751.2		Summarize methods of designing, conducting and administering surveys to provide the data required for transportation planning					
C751.3		Examine and apply travel demand modelling, Mode choice modelling and traffic assessment modelling					
C751.4		Formulate the need of land use modelling and illustrate land use models for UTP					

DEPARTMENT	CV	SEMESTER	7	COURSE CODE	15CV71	COURSE ID	C701
COURSE TITLE							
COURSE OUTCOME NO							
C701.1							

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DEPARTMENT	CV	SEMESTER	7	COURSE CODE	15CVL76	COURSE ID	C706
COURSE TITLE		15CVL76 Environmental Engineering Laboratory					
COURSE OUTCOME NO							
C706.1		Acquire capability to conduct experiments and estimate the concentration of different parameters.					
C706.2		2. Compare the result with standards and discuss based on the purpose of analysis.					
C706.3		3. Determine type of treatment, degree of treatment for water and waste water.					
C706.4		4. Identify the parameter to be analyzed for the student project work in environmental stream.					

DEPARTMENT	CV	SEMESTER	7	COURSE CODE	15CVL77	COURSE ID	C707
COURSE TITLE		15CVL77 Computer Aided Detailing of Structures					
COURSE OUTCOME NO							
C707.1		Outline different sectional view of RC and steel elements.					
C707.2		Develop detailed working drawings of RC structural elements					
C707.3		Develop detailed working drawings of steel structural elements					

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DEPARTMENT	CV	SEMESTER	8	COURSE CODE	15CV81	COURSE ID	C801
COURSE TITLE		15CV81 Quantity Surveying and Contracts Management					
COURSE OUTCOME NO							
C801.1		Understand the importance of cost estimation and quantity estimation in any type of construction work.					
C801.2		Estimate the quantities of work, develop the bill of quantities and arrive at the Cost of civil engineering Project					
C801.3		Understand and apply the concept of Valuation for Properties					
C801.4		Understand, Apply and Create the Tender and Contract document.					

DEPARTMENT	CV	SEMESTER	8	COURSE CODE	15CV82	COURSE ID	C802
COURSE TITLE		15CV82 Design of Pre Stressed Concrete Elements					
COURSE OUTCOME NO							
C802.1		CO1:- Describe and analyze the stresses encountered in PSC elements.					
C802.2		CO2:- Describe and analyze the losses of stresses in PSC elements.					
C802.3		CO3:- Analyze and design at ultimate flexural strength in PSC elements.					
C802.4		CO4:- Analyze and design the components of shear resistance and modes of failure in PSC elements.					
C802.5		C05:- Analyze and design the flexural and shear strength for composite sections.					

DEPARTMENT	CV	SEMESTER	8	COURSE CODE	15CV832	COURSE ID	C832
COURSE TITLE		15CV832 Hydraulic Structures					
COURSE OUTCOME NO							
C832.1		Describe various aspects, design principles, elementary and practical profiles gravity dams.					
C832.2		Describe causes, failures of earthen dam and determination of phreatic line with quantity of seepage.					
C832.3		Describe various types of spillways, diversion head works and design of ogee spillway, apron's using different theories.					
C832.4		Explain various types of cross drainage works, design of protection works and aqueduct.					
C832.5		Explain canal regulation works function, types and its necessity.					

DEPARTMENT	CV	SEMESTER	8	COURSE CODE	15CV833	COURSE ID	C833
COURSE TITLE		15CV833 Pavement Design					
COURSE OUTCOME NO							
C833.1		Identify and categorize the factors affecting the design and performance of pavements.					
C833.2		Explain the basic concepts used to analyse flexible and rigid pavements					
C833.3		Explain different design methods for flexible and rigid pavement design.					

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COURSE OUTCOMES

DEPARTMENT	CV	SEMESTER	3	COURSE CODE	17CV32	COURSE ID	C302
COURSE TITLE		17CV32 Strength of Materials					
COURSE OUTCOME NO							
C302.1		Describe and evaluate stresses and strains of engineering materials					
C302.2		Describe and evaluate compound stresses. Analyse thick and thin cylinders.					
C302.3		Evaluate the Bending moment and shear force in determinate beams.					
C302.4		Evaluate bending and shear stresses in beams. Determine mechanical properties in circular shafts.					
C302.5		Evaluate the slope and deflection in determinate beams. Determine the Buckling loads for columns.					

DEPARTMENT	CV	SEMESTER	3	COURSE CODE	17CV33	COURSE ID	C303
COURSE TITLE		17CV33 Fluid Mechanics					
COURSE OUTCOME NO							
C303.1		Able to describe fundamental properties of fluids, fluid pressure and its applications.					
C303.2		Able to explain Hydrostatic laws and application to practical problem solving.					
C303.3		Able to apply basic principles of Kinematics and Hydro-Dynamics.					
C303.4		Able to analyse discharge measuring devices, pipe networks considering flow and its losses					

DEPARTMENT	CV	SEMESTER	3	COURSE CODE	17CV34	COURSE ID	C304
COURSE TITLE		17CV34 Basic Surveying					
COURSE OUTCOME NO							
C304.1		Describe principles of surveying and maps. Able to measure linear distances.					
C304.2		Will be able to conduct compass surveying and traversing.					
C304.3		To carry out levelling and compute elevations and profile.					
C304.4		Carry out plane table surveying and develop maps.					
C304.5		Compute areas and volumes for infrastructure projects. Able to plot contours for construction.					

DEPARTMENT	CV	SEMESTER	3	COURSE CODE	17CV35	COURSE ID	C305
COURSE TITLE		17CV35 Engineering Geology					
COURSE OUTCOME NO							
C305.1		· To apply geology in civil engineering and mineralogical properties in selection of materials for engineering raw materials.					
C305.2		· To apply Petrology in site selection for Civil Structure and rock as material for construction.					
C305.3		· To analyze geological features to find their effect on civil structures, their link with natural disasters and their mitigations					
C305.4		· To analyze Ground Water potential zone and resource mapping using Geodesy					

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DEPARTMENT	CV	SEMESTER	3	COURSE CODE	17CV36	COURSE ID	C306
COURSE TITLE		17CV36 Building Materials and Construction					
COURSE OUTCOME NO							
C306.1		CO1- Select Suitable materials for buildings and adopt suitable constrution techniques					
C306.2		CO2- Decide suitable type of foundation based on soil parameters					
C306.3		CO3- Describe the requirements of various building components					
C306.4		CO4- Exhibit the knowledge of various finishing processes					

DEPARTMENT	CV	SEMESTER	3	COURSE CODE	17CVL37	COURSE ID	C307
COURSE TITLE		17CVL37 Building Materials Testing Laboratory					
COURSE OUTCOME NO							
C307.1		Understand the test procedures for construction materials.					
C307.2		Determine the behavioural characteristics of test on the construction materials.					

DEPARTMENT	CV	SEMESTER	3	COURSE CODE	17CVL38	COURSE ID	C308
COURSE TITLE		17CVL38 Basic Surveying Practice					
COURSE OUTCOME NO							
C308.1		Define basic principles of engineering surveying & measurements.					
C308.2		Demonstrate effectively field procedures required for surveying.					
C308.3		Solve results based on techniques, skills and conventional surveying for Engineering practice.					

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DEPARTMENT	CV	SEMESTER	4	COURSE CODE	17CV42	COURSE ID	C402
COURSE TITLE		17CV42 Analysis of Determinate Structures					
COURSE OUTCOME NO							
C402.1		Outline structural systems and their analysis methods.					
C402.2		Classify various structural systems and interpret data.					
C402.3		Solve for internal forces - bending moment, shear force, deflections and slope for various structural systems.					
C402.4		Analyse determinate structures for moving loads.					

DEPARTMENT	CV	SEMESTER	4	COURSE CODE	17CV43	COURSE ID	C403
COURSE TITLE		17CV43 Applied Hydraulics					
COURSE OUTCOME NO							
C403.1		Express the Types of Dimensional analysis, Model Studies, Buoyancy and flotation.					
C403.2		Describe Open Channel flows, economical channel sections and parameters of specific energy curve.					
C403.3		Derive expressions for hydraulic jump, gradually varied flow and description of curves and profile slopes.					
C403.4		Explain general layout of hydroelectric power plant, components, velocity triangles and working proportions of pelton turbine					
C403.5		Explain components, velocity triangles, working of kaplan turbine and centrifugal pump.					

DEPARTMENT	CV	SEMESTER	4	COURSE CODE	17CV44	COURSE ID	C404
COURSE TITLE		17CV44 Concrete Technology					
COURSE OUTCOME NO							
C404.1		CO1: Describe material characteristics and their influence on microstructure of concrete.					
C404.2		CO 2: Explain concrete behaviour based on its fresh and hardened properties.					
C404.3		CO 3: Compute the proportions of ingredients of concrete to arrive at most desirable mechanical properties of concrete using professional codes.					

DEPARTMENT	CV	SEMESTER	4	COURSE CODE	17CV45	COURSE ID	C405
COURSE TITLE		17CV45 Basic Geotechnical Engineering					
COURSE OUTCOME NO							
C405.1		Understand the basic concepts of soil mechanics, clay minerals and index properties of soil.					
C405.2		Apply engineering knowledge to solve seepage problems associated with soils					
C405.3		Analyse stresses operative in soil mass and their determination using laboratory methods					
C405.4		Evaluate compression and shear strength characteristics of soil					

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DEPARTMENT	CV	SEMESTER	4	COURSE CODE	17CV46	COURSE ID	C406
COURSE TITLE		17CV46 Advanced Surveying					
COURSE OUTCOME NO							
C406.1		Apply the knowledge of geometrical principles to solve the surveying problems					
C406.2		Classify the triangulation system, marking of stations.					
C406.3		Design and implement the different types of curves for deviating type of alignments.					
C406.4		Capture geodetic data to process and perform analysis for survey problems with the use of electronic instruments					
C406.5		Use modern instruments to obtain geo-spatial data and analyse the same to appropriate engineering problems.					

DEPARTMENT	CV	SEMESTER	4	COURSE CODE	17CVL47	COURSE ID	C407
COURSE TITLE		17CVL47 Fluid Mechanics Laboratory					
COURSE OUTCOME NO							
C407.1		Understand the working of various flow measuring devices and hydraulic machines.					
C407.2		Conduct experiment on flow measuring devices and hydraulic machines					
C407.3		Determine hydraulic co-efficient of flow measuring devices and efficiency of hydraulic machines.					
C407.4		Determine major and minor losses.					

DEPARTMENT	CV	SEMESTER	4	COURSE CODE	17CVL48	COURSE ID	C408
COURSE TITLE		17CVL48 Engineering Geology Laboratory					
COURSE OUTCOME NO							
C408.1		Able to identify the minerals, rocks and to utilize them effectively in civil engineering practices.					
C408.2		Able to analyze subsurface information such as weathered zone, depth of hard rock and Saturated zone by using geophysical methods.					
C408.3		Able to analyze and interpret subsurface extension of rock type details with known data of dip and strike.					
C408.4		Able to interpret the geological condition of the area by converting the geological map to typical cross sections for feasibility of civil engineering projects.					

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DEPARTMENT	CV	SEMESTER	5	COURSE CODE	15CV51	COURSE ID	C501
COURSE TITLE		**15CV51 Design of RC Structural Elements**					
COURSE OUTCOME NO							
C501.1		Define terminologies, limit state of collapse and serviceability, working stress method of RC elements.					
C501.2		Explain RC structural elements and IS code methodologies.					
C501.3		Solve RC structural elements by limit state method					
C501.4		Analyse RC structural elements such as beams, slabs, columns and footings.					

DEPARTMENT	CV	SEMESTER	5	COURSE CODE	15CV52	COURSE ID	C502
COURSE TITLE		**15CV52 Analysis of Indeterminate Structures**					
COURSE OUTCOME NO							
C502.1		Define indeterminacy, end conditions, sway and non-sway type of structures.					
C502.2		Analyse indeterminate structures using slope deflection, moment distribution method and Kani's method					
C502.3		Formulate the flexibility matrix for the indeterminate structures and interpret the results for the same using structure approach.					
C502.4		Formulate the stiffness matrix for the indeterminate structures and interpret the results for the same using structure approach.					

DEPARTMENT	CV	SEMESTER	5	COURSE CODE	15CV53	COURSE ID	C503
COURSE TITLE		**15CV53 Applied Geotechnical Engineering**					
COURSE OUTCOME NO							
C503.1		Define the terminologies adapted in foundation engineering.(Knowledge)					
C503.2		Explain the distribution of stress in subsoil under the energy of external loads due to foundation.(Understanding)					
C503.3		Application of the effect of soil particle interaction to predict the ground response under different Loading conditions.(Application)					
C503.4		Analyze the problems related to bearing capacity in soil to predict their performance and risks.(Analysis)					

DEPARTMENT	CV	SEMESTER	5	COURSE CODE	15CV54	COURSE ID	C504
COURSE TITLE		**15CV54 Computer Aided Building Planning and Drawing**					
COURSE OUTCOME NO							
C504.1		Identify the various building components in a professional set up.					
C504.2		Interpret the various RCC components as per design standards					
C504.3		Draw the components of a residential or public building as per the design requirements with software aid					

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DEPARTMENT	CV	SEMESTER	5	COURSE CODE	15CV551	COURSE ID	C551
COURSE TITLE		15CV551 Air pollution and Control					
COURSE OUTCOME NO							
C551.1		Identify the major sources of air pollution and understand their effects on health and environment.					
C551.2		Evaluate the dispersion of air pollutants in the atmosphere and to develop air quality models					
C551.3		Evaluate sampling techniques for atmospheric and stack pollutants.					
C551.4		Design control techniques for particulate and gaseous emissions.					

DEPARTMENT	CV	SEMESTER	5	COURSE CODE	15CV552	COURSE ID	C552
COURSE TITLE		15CV552 Railways, Harbours, tunneling and Airports					
COURSE OUTCOME NO							
C552.1		Understand the basics Railway, Airport, Tunnels and Harbours engineering.					
C552.2		Explain the layout and types Railway, Airport, Tunnels and Harbours engineering.					
C552.3		Solve problems involved in various parameters in Railways, Airport, Tunnels and Harbours engineering.					

DEPARTMENT	CV	SEMESTER	5	COURSE CODE	15CV561	COURSE ID	C561
COURSE TITLE		15CV561 Traffic Engineering					
COURSE OUTCOME NO							
C561.1		Describe the scope and importance ,management, and safety in traffic engineering					
C561.2		Interpret the traffic data and its use in planning					
C561.3		Determine the traffic parameters for its effectiveness					

DEPARTMENT	CV	SEMESTER	5	COURSE CODE	15CV563	COURSE ID	C563
COURSE TITLE		15CV563 Remote Sensing and GIS					
COURSE OUTCOME NO							
C563.1		Define terminologies in Remote sensing and GIS.					
C563.2		Describe basic concepts of remote sensing, satellite imagery to extract the required units, GIS data and data projection, concepts of data models.					
C563.3		Utilize the concepts of data models and concepts of Remote sensing and GIS in various fields.					

DEPARTMENT	CV	SEMESTER	5	COURSE CODE	15CVL57	COURSE ID	C507
COURSE TITLE		15CVL57 Geotechnical Engineering Laboratory					
COURSE OUTCOME NO							
C507.1		Identify the soils based on field investigations through geotechnical engineering practice.					
C507.2		Apply suitable laboratory procedure to study soil types.					
C507.3		Determine index and engineering properties of soil as per IS Codal procedures.					
C507.4		Analyze and interpret the soil design parameters by performing various laboratory tests.					

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DEPARTMENT	CV	SEMESTER	5	COURSE CODE	15CVL58	COURSE ID	C508
COURSE TITLE		15CVL58 Concrete and Highway Materials Laboratory					
COURSE OUTCOME NO							
C508.1		Ability to identify the type of test required for cement, aggregates, concrete and bitumen.					
C508.2		Ability to describe its physical and strength properties based on the experimental data.					
C508.3		Ability to interpret and summarize the results and draw the conclusion from them.					

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DEPARTMENT	CV	SEMESTER	6	COURSE CODE	15CV61	COURSE ID	C601
COURSE TITLE		**15CV61 Construction Management and Entrepreneurship**					
COURSE OUTCOME NO							
C601.1		Apply management principles to originate new business.					
C601.2		Apply management concepts to generate project plans and schedules.					
C601.3		Employ quality control and safety procedures during construction process.					
C601.4		Apply the concepts of engineering economics to compare the available alternatives and recommend the feasible solution.					
C601.5		Exercise human values and professional ethics as a professional/ an entrepreneur in an endeavour of his choice.					

DEPARTMENT	CV	SEMESTER	6	COURSE CODE	15CV62	COURSE ID	C602
COURSE TITLE		**15CV62 Design of Steel Structural Elements**					
COURSE OUTCOME NO							
C602.1		1. To describe the importance of type of connections in structural members, codal provisions, and plastic behaviour of structural steel.					
C602.2		2. To classify type of bolts, length and size of weld and cross section of members required for serviceable & economical steel structures.					
C602.3		3. To interpret the procedural concept in computing the necessary data required to analyse & design of steel structure.					
C602.4		4. To design structural elements required for trusses, beams, columns and foundations.					

DEPARTMENT	CV	SEMESTER	6	COURSE CODE	15CV63	COURSE ID	C603
COURSE TITLE		**15CV63 Highway Engineering**					
COURSE OUTCOME NO							
C603.1		Gain knowledge of different modes of transportation systems, history, development of highways and the organizations associated with research and development of the same in INDIA.					
C603.2		Understand Highway planning and development considering the essential criteria's (engineering and financial aspects, regulations and policies, socio economic impact).					
C603.3		Get insight to different aspects of geometric elements and train them to design geometric elements of a highway network					
C603.4		Understand pavement and its components, pavement construction activities and its requirements.					
C603.5		Gain the skills of evaluating the highway economics by B/C, NPV, IRR methods and also introduce the students to highway financing concepts.					

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DEPARTMENT	CV	SEMESTER	6	COURSE CODE	15CV64	COURSE ID	C604
COURSE TITLE		**15CV64 Water Supply and Treatment Engineering**					
COURSE OUTCOME NO							
C604.1		Estimate average and peak water demand for a community.					
C604.2		Evaluate available sources of water, quantitatively and qualitatively and make appropriate choice for a community.					
C604.3		Evaluate water quality and environmental significance of various parameters and plan suitable treatment system.					
C604.4		Design a comprehensive water treatment and distribution system to purify and distribute water to the required quality standards.					

DEPARTMENT	CV	SEMESTER	6	COURSE CODE	15CV651	COURSE ID	C651
COURSE TITLE		**15CV651 Solid Waste Management**					
COURSE OUTCOME NO							
C651.1		Analyse existing solid waste management system and to identify their drawbacks.					
C651.2		Evaluate different elements of solid waste management system.					
C651.3		Suggest suitable scientific methods for solid waste management elements.					
C651.4		Design suitable processing system and evaluate disposal sites.					

DEPARTMENT	CV	SEMESTER	6	COURSE CODE	15CV61	COURSE ID	C601
COURSE TITLE							
COURSE OUTCOME NO							
C601.1							

DEPARTMENT	CV	SEMESTER	6	COURSE CODE	15CV661	COURSE ID	C661
COURSE TITLE		**15CV661 Water Resource Management**					
COURSE OUTCOME NO							
C661.1		List the terminologies in Water Resources Management					
C661.2		Understand the Global Water Resources, & its management, also interpretation of IWRM.					
C661.3		Interprete the various aspects of water governance & Various techniques of water harvesting.					
C661.4		Determine yield from a catchment & dimensions of various water harvesting structures					

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DEPARTMENT	CV	SEMESTER	6	COURSE CODE	15CV662	COURSE ID	C662
COURSE TITLE		15CV662 Environmental Protection and Management					
COURSE OUTCOME NO							
C662.1							

DEPARTMENT	CV	SEMESTER	6	COURSE CODE	15CV67	COURSE ID	C607
COURSE TITLE		15CVL67 Software Application Lab					
COURSE OUTCOME NO							
C607.1		Analyze and interpret the given data suitably for the given project using Staad Pro.					
C607.2		Develop plan and schedule building project using MSP.					
C607.3		Design the component of the structure using MS Excel.					

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DEPARTMENT	CV	SEMESTER	7	COURSE CODE	15CV71	COURSE ID	C701
COURSE TITLE		15CV71 Municipal and Industrial Waste Water Engineering					
COURSE OUTCOME NO							
C701.1		1. Select the appropriate sewer appurtenances and materials in sewer network.					
C701.2		2. Design the sewers network and understand the self purification process in flowing water.					
C701.3		3.Deisgn the varies physic- chemical treatment units					
C701.4		4. Design the various biological treatment units					
C701.5		5. Design various AOPs and low cost treatment units.					

DEPARTMENT	CV	SEMESTER	7	COURSE CODE	15CV72	COURSE ID	C702
COURSE TITLE		15CV72 Design of RCC and Steel Structures					
COURSE OUTCOME NO							
C702.1		Classify RC elements subjected to flexure and shear by codal provisions.					
C702.2		Interpret different structural element and its working behaviour and apply the same in the design.					

DEPARTMENT	CV	SEMESTER	7	COURSE CODE	15CV73	COURSE ID	C703
COURSE TITLE		15CV73 Hydrology and Irrigation Engineering					
COURSE OUTCOME NO							
C703.1		Define all the terminologies in Hydrology & Irrigation engineering					
C703.2		Describe the process of precipitation, hydrological abstractions & water requirement of crops.					
C703.3		Calculate the hydrological losses, canal dimensions & reservoir parameters.					
C703.4		Interpret the precipitation, hydrograph data & reservoir data.					

DEPARTMENT	CV	SEMESTER	7	COURSE CODE	15CV741	COURSE ID	C741
COURSE TITLE		15CV741 Design of Bridges					
COURSE OUTCOME NO							
C741.1		Knowledge on bridges					
C741.2		Classify the bridges					
C741.3		Solve the problem on bridges					

DEPARTMENT	CV	SEMESTER	7	COURSE CODE	15CV742	COURSE ID	C742
COURSE TITLE		15CV742 Ground Water & Hydraulics					
COURSE OUTCOME NO							
C742.1		Define all the terminologies in GROUNDWATER AND HYDRAULICS					
C742.2		Describe the process of well hydraulics, groundwater exploration and recharge techniques.					
C742.3		Calculate the aquifer parameters under steady and unsteady flow condition.					
C742.4		Interpret the types of groundwater exploration					

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DEPARTMENT	CV	SEMESTER	7	COURSE CODE	15CV751	COURSE ID	C751
COURSE TITLE		15CV751 Urban Transportation and Planning					
COURSE OUTCOME NO							
C751.1		Recall basic concepts and methods of UTP in India					
C751.2		Summarize methods of designing, conducting and administering surveys to provide the data required for transportation planning					
C751.3		Examine and apply travel demand modelling, Mode choice modelling and traffic assessment modelling					
C751.4		Formulate the need of land use modelling and illustrate land use models for UTP					

DEPARTMENT	CV	SEMESTER	7	COURSE CODE	15CV752	COURSE ID	C752
COURSE TITLE		15CV752 Prefabricated Structures					
COURSE OUTCOME NO							
C752.1		Define and Identify the various components of prefabricated structure.					
C752.2		Explain various principles associated with the construction of prefabricated structure.					
C752.3		Solve problems on the efficiency of materials used and the member joint designs.					

DEPARTMENT	CV	SEMESTER	7	COURSE CODE	15CVL76	COURSE ID	C706
COURSE TITLE		15CVL76 Environmental Engineering Laboratory					
COURSE OUTCOME NO							
C706.1		Acquire capability to conduct experiments and estimate the concentration of different parameters.					
C706.2		2. Compare the result with standards and discuss based on the purpose of analysis.					
C706.3		3. Determine type of treatment, degree of treatment for water and waste water.					
C706.4		4. Identify the parameter to be analyzed for the student project work in environmental stream.					

DEPARTMENT	CV	SEMESTER	7	COURSE CODE	15CVL77	COURSE ID	C707
COURSE TITLE		15CVL77 Computer Aided Detailing of Structures					
COURSE OUTCOME NO							
C707.1		Outline different sectional view of RC and steel elements.					
C707.2		Develop detailed working drawings of RC structural elements					
C707.3		Develop detailed working drawings of steel structural elements					

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DEPARTMENT	CV	SEMESTER	8	COURSE CODE	15CV81	COURSE ID	C801
COURSE TITLE		15CV81 Quantity Surveying and Contracts Management					
COURSE OUTCOME NO							
C801.1		Understand the importance of cost estimation and quantity estimation in any type of construction work.					
C801.2		Estimate the quantities of work, develop the bill of quantities and arrive at the Cost of civil engineering Project					
C801.3		Understand and apply the concept of Valuation for Properties					
C801.4		Understand, Apply and Create the Tender and Contract document.					

DEPARTMENT	CV	SEMESTER	8	COURSE CODE	15CV82	COURSE ID	C802
COURSE TITLE		15CV82 Design of Pre Stressed Concrete Elements					
COURSE OUTCOME NO							
C802.1		CO1- Understand basic principles of pre-stressing and various prestressing systems					
C802.2		CO2- Compute stresses, losses and deflection in a PSC beam					
C802.3		CO3- Analyze the Strength and Serviceability parameters of different PSC structural elements					
C802.4		CO4- Design of various PSC structural Components as per relevant standards					

DEPARTMENT	CV	SEMESTER	8	COURSE CODE	15CV832	COURSE ID	C832
COURSE TITLE		15CV832 Hydraulic Structures					
COURSE OUTCOME NO							
C832.1		Define terminologies in hydraulic structures.					
C832.2		Describe various aspects of gravity dams, causes of failures of earthen dams, cross drainage works and its types.					
C832.3		Compare regulation works with falls and outlets.					
C832.4		Compute the stresses in gravity dams, dimensions of ogee spillway and dimensions of aprons.					
C832.5		Analyze the gravity dams and seepage through earthen dams.					
C832.6		Design gravity dams, energy dissipating devices and aqueduct.					

DEPARTMENT	CV	SEMESTER	8	COURSE CODE	15CV833	COURSE ID	C833
COURSE TITLE		15CV833 Pavement Design					
COURSE OUTCOME NO							
C833.1		Identify and categorize the factors affecting the design and performance of pavements.					
C833.2		Explain the basic concepts used to analyse flexible and rigid pavements					
C833.3		Explain different design methods for flexible and rigid pavement design.					