



ACHARYA INSTITUTE OF TECHNOLOGY

Department of Civil Engineering

Bengaluru-560107

COURSE OUTCOMES

DEPARTM ENT	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.					

DEPARTM ENT	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					

DEPARTM ENT	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.					

DEPARTM ENT	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					

DEPARTM ENT	CV	SEMESTER	3	COURSE CODE	17CV36	COURSE ID	C306
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COURSE TITLE	17CV36 Building Materials and Construction
COURSE OUTCOME NO	
C306.1	CO1- Select Suitable materials for buildings and adopt suitable construction 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.						

DEPARTMENT	CV	SEMESTER	4	COURSE CODE	17CV42	COURSE ID	C402
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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.

DEPART MENT	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.						

DEPART MENT	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.						

DEPART MENT	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						

DEPART MENT	CV	SEMESTER	4	COURSE CODE	17CV46	COURSE ID	C406
COURSE TITLE	17CV46 Advanced Surveying						



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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.						

DEPARTMENT	CV	SEMESTER	5	COURSE CODE	15CV51	COURSE ID	C501
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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.

DEPART MENT	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.						

DEPART MENT	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)						

DEPART MENT	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						

DEPART MENT	CV	SEMESTER	5	COURSE CODE	15CV551	COURSE ID	C551
COURSE TITLE	15CV551 Air pollution and Control						



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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.					

DEPARTMENT	CV	SEMESTER	5	COURSE CODE	15CVL58	COURSE ID	C508
COURSE TITLE		15CVL58 Concrete and Highway Materials Laboratory					



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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.

DEPAR TMENT	CV	SEMESTER	6	COURSE CODE	15CV61	COURSE ID	C601
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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.						

DEPARTMENT	CV	SEMESTER	6	COURSE CODE	15CV64	COURSE ID	C604
COURSE TITLE	15CV64 Water Supply and Treatment Engineering						
COURSE OUTCOME NO							



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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					

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



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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.					

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.					



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C701.2	2. Design the sewers network and understand the self purification process in flowing water.
C701.3	3. Design the various physico-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 code 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						

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						



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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

DEPARTM ENT	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.						

DEPARTM ENT	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.						

DEPARTM ENT	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						

DEPARTM ENT	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.						



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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.

DEPARTME NT	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						

DEPARTME NT	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.						

DEPARTME NT	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.						