

**St Thomas Institute for Science and Technology**  
**Department of Civil Engineering**  
**Course Outcome**

Program : B.Tech Civil Engineering  
Syllabus : 2019

<b>Semester</b>	S5
<b>Course Name</b>	STRUCTURALANALYSIS - I
<b>Course Code</b>	CET301
<b>Course Outcome</b>	
Sl No	Outcomes
CO1	Apply the principles of solid mechanics to analyze trusses.
CO2	Apply energy principles to analyze statically determinate structures.
CO3	Identify the problems with static indeterminacy and understand the basic concepts of tackling such problems by means of the method of consistent deformations.
CO4	Apply suitable methods of analysis for various types of structures including cables, suspensionbridges and arches
CO5	Analyse the effects of moving loads on structures using influence lines.
CO6	Apply specific methods such as slope deflection and moment distribution methods of structural analysis for typical structures with different characteristics.

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<b>Semester</b>	S5
<b>Course Name</b>	DESIGN OF CONCRETE STRUCTURES
<b>Course Code</b>	CET303
<b>Course Outcome</b>	
<b>Sl No</b>	<b>Outcomes</b>
CO1	Recall the fundamental concepts of limit state design and code provisions for design of concrete members under bending, shear, compression and torsion.
CO2	Analyse reinforced concrete sections to determine the ultimate capacity in bending, shear and compression.
CO3	Design and detail beams, slab, stairs and footings using IS code provisions.
CO4	Design and detail columns using IS code and SP 16 design charts.
CO5	Explain the criteria for earthquake resistant design of structures and ductile detailing of concrete structures subjected to seismic forces.

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<b>Semester</b>	S5
<b>Course Name</b>	GEOTECHNICAL ENGINEERING - II
<b>Course Code</b>	CET305

<b>Course Outcome</b>	
Sl No	Outcomes
CO1	Understand soil exploration methods
CO2	Explain the basic concepts, theories and methods of analysis in foundation engineering
CO3	Calculate bearing capacity, pile capacity, foundation settlement and earth pressure
CO4	Analyze shallow and deep foundations
CO5	Solve the field problems related to geotechnical engineering

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<b>Semester</b>	S5
<b>Course Name</b>	HYDROLOGY & WATER RESOURCES ENGINEERING
<b>Course Code</b>	CET307
<b>Course Outcome</b>	
Sl No	Outcomes
CO1	Describe and estimate the different components of hydrologic cycle by processing hydro-meteorological data
CO2	Determine the crop water requirements for the design of irrigation canals by recollecting the principles of irrigation engineering
CO3	Perform the estimation of streamflow and/or describe the river behavior and control structures
CO4	Describe and apply the principles of reservoir engineering to estimate the capacity of reservoirs and their useful life
CO5	Demonstrate the principles of groundwater engineering and apply them for computing the yield of aquifers and wells

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<b>Semester</b>	S5
<b>Course Name</b>	CONSTRUCTION TECHNOLOGY AND MANAGEMENT
<b>Course Code</b>	CET309
<b>Course Outcome</b>	
SI No	Outcomes
CO1	Describe the properties of materials used in construction
CO2	Explain the properties of concrete and its determination
CO3	Describe the various elements of building construction
CO4	Explain the technologies for construction
CO5	Describe the procedure for planning and executing public works
CO6	Apply scheduling techniques in project planning and control

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<b>Semester</b>	S5
<b>Course Name</b>	DISASTER MANAGEMENT
<b>Course Code</b>	MCN301
<b>Course Outcome</b>	
<b>Sl No</b>	<b>Outcomes</b>
CO1	Define and use various terminologies in use in disaster management parlance and organise each of these terms in relation to the disaster management cycle (Cognitive knowledge level: Understand).
CO2	Distinguish between different hazard types and vulnerability types and do vulnerability assessment (Cognitive knowledge level: Understand).
CO3	Identify the components and describe the process of risk assessment, and apply appropriate methodologies to assess risk (Cognitive knowledge level: Understand).
CO4	Explain the core elements and phases of Disaster Risk Management and develop possible measures to reduce disaster risks across sector and community (Cognitive knowledge level: Apply)
CO5	Identify factors that determine the nature of disaster response and discuss the various disaster response actions (Cognitive knowledge level: Understand).
CO6	Explain the various legislations and best practices for disaster management and risk reduction at national and international level (Cognitive knowledge level: Understand).

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<b>Semester</b>	S5
<b>Course Name</b>	MATERIAL TESTING LAB II
<b>Course Code</b>	CEL331

<b>Course Outcome</b>	
SI No	Outcomes
CO1	To describe the basic properties of various construction materials
CO2	Characterize the physical and mechanical properties of various construction materials.
CO3	Interpret the quality of various construction materials as per IS Codal provisions.

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<b>Semester</b>	S5
<b>Course Name</b>	GEOTECHNICAL ENGINEERING LAB

<b>Course Code</b>	CEL333
<b>Course Outcome</b>	
SI No	Outcomes
CO1	Identify and classify soil based on standard geotechnical experimental methods.
CO2	Perform and analyze permeability tests.
CO3	Interpret engineering behavior of soils based on test results
CO4	Perform laboratory compaction, CBR and in-place density test for fill quality control in the field.
CO5	Evaluate the strength of soil by performing various tests viz. direct shear test, unconfined
CO6	Evaluate settlement characteristics of soil



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<b>Semester</b>	S6
<b>Course Name</b>	STRUCTURAL ANALYSIS - II
<b>Course Code</b>	CET 302
<b>Course Outcome</b>	
Sl No	Outcomes
CO1	Understand the principles of plastic theory and its applications in structural analysis.
CO2	Examine the type of structure and decide on the method of analysis.
CO3	Apply approximate methods of analysis for framed structures to ascertain stress resultants approximately but quickly.
CO4	Apply the force method to analyse framed structures.
CO5	Apply the displacement methods to analyse framed structures.
CO6	Remember basic dynamics, understand the basic principles of structural dynamics and apply the same to simple structures.

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<b>Semester</b>	S6
<b>Course Name</b>	ENVIRONMENTAL ENGINEERING
<b>Course Code</b>	CET 304
<b>Course Outcome</b>	
SI No	Outcomes
CO1	To appreciate the role of environmental engineering in improving the quality of environment
CO2	To plan for collection and conveyance of water and waste water.
CO3	To enhance natural water purification processes in an engineered environment
CO4	To decide on appropriate technology for water and waste water treatment
CO5	To enhance natural water purification processes in an engineered environment

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<b>Semester</b>	S6
<b>Course Name</b>	DESIGN OF HYDRAULIC STRUCTURES
<b>Course Code</b>	CET 306

<b>Course Outcome</b>	
Sl No	Outcomes
CO1	Elucidate the causes of failure, principles of design of different components of hydraulic structures.
CO2	Describe the features of canal structures and perform the design of alluvial canals.
CO3	Perform the hydraulic design of minor irrigation structures such as cross drainage works, canal falls, cross regulator.
CO4	Prepare the scaled drawings of different minor irrigation structures
CO5	Describe the design principles and features of dams and perform the stability analysis of gravity dams.

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<b>Semester</b>	S6
<b>Course Name</b>	ENVIRONMENTAL IMPACT ASSESSMENT
<b>Course Code</b>	CET 362
<b>Course Outcome</b>	
Sl No	Outcomes
CO1	To appreciate the need for minimizing the environmental impacts of developmental activities.
CO2	To understand environmental legislation & clearance procedure in the country
CO3	To apply various methodologies for assessing the environmental impacts of any developmental activity.
CO4	To prepare an environmental impact assessment report
CO5	To conduct an environmental audit.

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<b>Semester</b>	S6
<b>Course Name</b>	INDUSTRIAL ECONOMICS AND FOREIGN TRADE
<b>Course Code</b>	HUT 300
<b>Course Outcome</b>	
SI No	Outcomes
CO1	Explain the problem of scarcity of resources and consumer behaviour, and to evaluate the impact of government policies on the general economic welfare. (Cognitive knowledge level: Understand)
CO2	Take appropriate decisions regarding volume of output and to evaluate the social cost of production. (Cognitive knowledge level: Apply)
CO3	Determine the functional requirement of a firm under various competitive conditions (Cognitive knowledge level: Analyse)
CO4	Examine the overall performance of the economy, and the regulation of economic fluctuations and its impact on various sections in the society. (Cognitive knowledge level: Analyse)
CO5	Determine the impact of changes in global economic policies on the business opportunities of a firm. (Cognitive knowledge level: Analyse)

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<b>Semester</b>	S6
<b>Course Name</b>	COMPREHENSIVE COURSE WORK
<b>Course Code</b>	CET 308
<b>Course Outcome</b>	
<b>Sl No</b>	<b>Outcomes</b>
CO1	Learn to prepare for a competitive examination.
CO2	Comprehend the questions in Civil Engineering field and answer them with confidence
CO3	Communicate effectively with faculty in scholarly environments
CO4	Analyze the comprehensive knowledge gained in basic courses in the field of Civil Engineering

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<b>Semester</b>	S6
<b>Course Name</b>	TRANSPORTATION ENGINEERING LAB
<b>Course Code</b>	CEL 332
<b>Course Outcome</b>	
SI No	Outcomes
CO1	Analyse the suitability of soil as a pavement subgrade material
CO2	Assess the suitability of aggregates as a pavement construction material
CO3	Characterize bitumen based on its properties so as to recommend it as a pavement construction material.
CO4	Design bituminous mixes for pavement layers
CO5	Assess functional adequacy of pavements based on roughness of pavement surface.

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<b>Semester</b>	S6
<b>Course Name</b>	CIVIL ENGINEERING SOFTWARE LAB
<b>Course Code</b>	CEL 334
<b>Course Outcome</b>	
Sl No	Outcomes
CO1	To undertake analysis and design of multi-storeyed framed structure, schedule a given set of project activities using a software.
CO2	To prepare design details of different structural components, implementation plan for a project.
CO3	To prepare a technical document on engineering activities like surveying, structural design and project planning.