

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

Program : B.Tech Civil Engineering  
Syllabus : 2019

<b>Semester</b>	S3
<b>Course Name</b>	PARTIAL DIFFERENTIAL EQUATION AND COMPLEX ANALYSIS
<b>Course Code</b>	MAT201
<b>Course Outcome</b>	
SI No	Outcomes
CO1	Understand the concept and the solution of partial differential equation.
CO2	Analyze and solve one dimensional wave equation and heat equation.
CO3	Understand complex functions, its continuity differentiability with the use of Cauchy Riemann equations.
CO4	Evaluate complex integrals using Cauchy's integral theorem and Cauchy's integral formula, understand the series expansion of analytic function
CO5	Understand the series expansion of complex function about a singularity and Apply residue theorem to compute several kinds of real integrals.

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<b>Semester</b>	S3
<b>Course Name</b>	MECHANICS OF SOLIDS
<b>Course Code</b>	CET201
<b>Course Outcome</b>	
SI No	Outcomes
CO1	Recall the fundamental terms and theorems associated with mechanics of linear elastic deformable bodies.
CO2	Explain the behavior and response of various structural elements under various loading conditions.
CO3	Apply the principles of solid mechanics to calculate internal stresses/strains, stress resultants and strain energies in structural elements subjected to axial/transverse loads and bending/twisting moments.
CO4	Choose appropriate principles or formula to find the elastic constants of materials making use of the information available.
CO5	Perform stress transformations, identify principal planes/ stresses and maximum shear stress at a point in a structural member.
CO6	Analyze the given structural member to calculate the safe load or proportion the cross section to carry the load safely.

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<b>Semester</b>	S3
<b>Course Name</b>	CET203
<b>Course Code</b>	FLUID MECHANICS AND HYDRAULICS
<b>Course Outcome</b>	
<b>Sl No</b>	<b>Outcomes</b>
CO1	Recall the relevant principles of hydrostatics and hydraulics of pipes and open channels
CO2	Identify or describe the type, characteristics or properties of fluid flow
CO3	Estimate the fluid pressure, perform the stability check of bodies under hydrostatic condition
CO4	Compute discharge through pipes or estimate the forces on pipe bends by applying hydraulic principles of continuity, energy and/or momentum
CO5	Analyze or compute the flow through open channels, perform the design of prismatic channels

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<b>Semester</b>	S3
<b>Course Name</b>	SURVEYING AND GEOMATICS
<b>Course Code</b>	CET205
<b>Course Outcome</b>	
Sl No	Outcomes
CO1	Apply surveying techniques and principles of leveling for the preparation of contour maps, computation of area-volume and sketching mass diagram
CO2	Apply the principles of surveying for triangulation
CO3	Apply different methods of traverse surveying and traverse balancing
CO4	Identify the possible errors in surveying and apply the corrections in field measurements
CO5	Apply the basic knowledge of setting out of different types of curves
CO6	Employ surveying techniques using advanced surveying equipments

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<b>Semester</b>	S3
<b>Course Name</b>	PROFESSIONAL ETHICS
<b>Course Code</b>	HUT200
<b>Course Outcome</b>	
Sl No	Outcomes
CO1	Understand the core values that shape the ethical behaviour of a professional.
CO2	Adopt a good character and follow an ethical life
CO3	Explain the role and responsibility in technological development by keeping personal ethics and legal ethics.
CO4	Solve moral and ethical problems through exploration and assessment by established experiments.
CO5	Apply the knowledge of human values and social values to contemporary ethical values and global issues.

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<b>Semester</b>	S3
<b>Course Name</b>	SUSTAINABLE ENGINEERING
<b>Course Code</b>	MCN201
<b>Course Outcome</b>	
<b>Sl No</b>	<b>Outcomes</b>
CO1	Understand the relevance and the concept of sustainability and the global initiatives in this direction
CO2	Explain the different types of environmental pollution problems and their sustainable solutions
CO3	Discuss the environmental regulations and standards
CO4	Outline the concepts related to conventional and non-conventional energy
CO5	Demonstrate the broad perspective of sustainable practices by utilizing engineering knowledge and principles

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<b>Semester</b>	S3
<b>Course Name</b>	CIVIL ENGINEERING PLANNING AND DRAFTING LAB
<b>Course Code</b>	CEL201
<b>Course Outcome</b>	
<b>Sl No</b>	<b>Outcomes</b>
CO1	Illustrate ability to organize civil engineering drawings systematically and professionally
CO2	Prepare building drawings as per the specified guidelines.
CO3	Assess a complete building drawing to include all necessary information
CO4	Create a digital form of the building plan using any drafting software

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<b>Semester</b>	S3
<b>Course Name</b>	SURVEY LAB
<b>Course Code</b>	CEL203
<b>Course Outcome</b>	
Sl No	Outcomes
CO1	Use conventional surveying tools such as chain/tape and compass for plotting and area determination.
CO2	Apply leveling principles in field
CO3	Solve triangulation problems using theodolite
CO4	Employ total station for field surveying
CO5	Demonstrate the use of distomat and handheld GPS



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<b>Semester</b>	S4
<b>Course Name</b>	PROBABILITY, STATISTICS AND NUMERICAL METHODS
<b>Course Code</b>	MAT202
<b>Course Outcome</b>	
SI No	Outcomes
CO1	Understand the concept, properties and important models of discrete variables and using them analyze suitable random phenomena.
CO2	Understand the concept, properties, and important models of continuous random variables and using them analyze suitable random phenomena.
CO3	Perform statistical inferences concerning characteristics of a population based on attributes of samples drawn from the population.
CO4	Compute roots of equation, evaluate definite integrals and perform interpolation on given numerical data using standard numerical techniques.
CO5	Apply standard numerical techniques for solving systems of equations, fitting curves on given numerical data and solving ordinary differential equations.

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<b>Semester</b>	S4
<b>Course Name</b>	ENGINEERING GEOLOGY
<b>Course Code</b>	CET202
<b>Course Outcome</b>	
<b>Sl No</b>	<b>Outcomes</b>
CO1	Recall the fundamental concepts of surface processes, subsurface process, minerals, rocks, groundwater and geological factors in civil engineering constructions.
CO2	Identify and describe the surface processes, subsurface process, earth materials, groundwater and geological factors in civil engineering constructions.
CO3	Apply the basic concepts of surface and subsurface processes, minerals, rocks, groundwater and geological characteristics in civil engineering constructions.
CO4	Analyze and classify geological processes, earth materials and groundwater.
CO5	Evaluation of geological factors in civil engineering constructions.

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<b>Semester</b>	S4
<b>Course Name</b>	CET204
<b>Course Code</b>	GEOTECHNOCAL ENGINEERING - I
<b>Course Outcome</b>	
SI No	Outcomes
CO1	Explain the fundamental concepts of basic and engineering properties of soil
CO2	Describe the laboratory testing methods for determining soil parameters
CO3	Solve the basic properties of soil by applying functional relationships
CO4	Calculate the engineering properties of soil by applying the laboratory test results and the fundamental concepts of soil mechanics
CO5	Analyze the soil properties to identify and classify the soil

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<b>Semester</b>	S4
<b>Course Name</b>	TRANSPORTATION ENGINEERING
<b>Course Code</b>	CET206
<b>Course Outcome</b>	
<b>Sl No</b>	<b>Outcomes</b>
CO1	Apply the basic principles of Highway planning and design highway geometric elements
CO2	Apply standard code specifications in judging the quality of highway materials; designing of flexible pavements
CO3	Explain phenomena in road traffic by collection, analysis and interpretation of traffic data through surveys; creative design of traffic control facilities
CO4	Understand about railway systems, tunnel, harbour and docks
CO5	Express basics of airport engineering and design airport elements

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<b>Semester</b>	S4
<b>Course Name</b>	DESIGN & ENGINEERING
<b>Course Code</b>	EST200
<b>Course Outcome</b>	
Sl No	Outcomes
CO1	Explain the different concepts and principles involved in design engineering.
CO2	Apply design thinking while learning and practicing engineering.
CO3	Develop innovative, reliable, sustainable and economically viable designs incorporating knowledge in engineering.

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<b>Semester</b>	S4
<b>Course Name</b>	CONSTITUTION OF INDIA
<b>Course Code</b>	MCN202
<b>Course Outcome</b>	
SI No	Outcomes
CO1	Explain the background of the present constitution of India and features.
CO2	Utilize the fundamental rights and duties
CO3	Understand the working of the union executive, parliament and judiciary.
CO4	Understand the working of the state executive, legislature and judiciary.
CO5	Utilize the special provisions and statutory institutions.

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<b>Semester</b>	S4
<b>Course Name</b>	MATERIAL TESTING LAB– I
<b>Course Code</b>	CEL202
<b>Course Outcome</b>	
Sl No	Outcomes
CO1	The understand the behavior of engineering materials under various forms and stages of loading.
CO2	Characterize the elastic properties of various materials.
CO3	Evaluate the strength and stiffness properties of engineering materials under various loading conditions.

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<b>Semester</b>	S4
<b>Course Name</b>	FLUID MECHANICS LAB
<b>Course Code</b>	CEL204
<b>Course Outcome</b>	
Sl No	Outcomes
CO1	Apply fundamental knowledge of Fluid Mechanics to corresponding experiments
CO2	Apply theoretical concepts in Fluid Mechanics to respective experiments
CO3	Analyse experimental data and interpret the results
CO4	Document the experimentation in prescribed manner