

DEPARTMENT OF CIVIL ENGINEERING

code of subject	Name of Course	CO No.	Course Outcome
BTBS301	Mathematics – III	1	Understanding the Laplace transform and its applications in solving differential equations and evaluating integrals.
		2	Understanding the inverse Laplace transform and its applications in solving linear differential equations and simultaneous linear differential equations with constant coefficients.
		3	Ability to apply the properties of Fourier transforms to solve differential equations and evaluate integrals.
		4	Ability to apply the method of separation of variables to solve partial differential equations and find solutions of one-dimensional heat flow equation, and two-dimensional heat flow equation.
		5	Understanding the concepts of functions of complex variables and their applications in solving problems related to mapping, harmonic functions, and residues.
		6	Ability to apply the Cauchy-Riemann equations, Cauchy's integral theorem, Cauchy's integral formula, and residue theorem to solve problems related to complex variables.
BTCVES302	Mechanics of Solids	1	Compute stresses and strains acting on body.
		2	Calculate shear force and bending moments for structural elements.
		3	Compute bending stresses, shear stresses for various sections and its combined effect using analytical and graphical method
		4	Compute load carrying capacity of columns
BTCVC303	Building Construction & Drawing	1	Understand types of masonry structures.
		2	Understand various ingredients and properties of concrete
		3	Students will be able to understand the types of arches and lintels
		4	Students will be able to understand the means of lateral communication
		5	Students will know about different flooring and roof coverings
BTCVC304	Hydraulics -I	1	Calibrate the various flow measuring devices.
		2	Determine the properties of fluid and pressure and their measurement.
		3	Understand fundamentals of pipe flow, losses in pipe and analysis of pipe network.
		4	Visualize fluid flow phenomena observed in Civil Engineering systems.

BTCVC305	Surveying	1	Perform measurements in linear/angular methods.
		2	Students are able to find out bearings
		3	Perform plane table surveying in general terrain.
		4	Know the basics of leveling survey in elevation
		5	Know the basics of theodolite and survey in elevation and angular measurements.
		6	Students are able to prepared layout of structure
BTHM306	Soft Skill Development	1	Acquire interpersonal communication skills
		2	Develop the ability to work independently.
		3	Develop the qualities like self-discipline, self-criticism and self -management
		4	Apply time management and discipline in personal and professional life.
		5	Adopt self-motivation and inspire others.
BTCVC401	Building Planning and Drawing	1	Plan buildings considering various principles of planning
		2	Plan buildings considering various building bye laws of governing body.
		3	Can suggest different low cost housing materials for traditional construction
		4	Implement various plumbing systems, electrification and fire resistance in building
		5	Suggest different ventilation system as per selection criteria
		6	Understand various techniques for good acoustics
BTCVC402	Environmental Engineering	1	Apply the water treatment concept and methods.
		2	Prepare basic process designs of water and wastewater treatment plants.
		3	Apply the wastewater treatment concept and methods.
		4	Apply the solid waste management concepts.
BTCVC403	Structural Mechanics - I	1	Compute slope and deflection in structural elements
		2	Identify statically determinate and indeterminate structures
		3	Analyze structural elements like beams, frames and trusses

BTCVC404	Water Resources Engineering	1	Understand need of Irrigation in India and water requirement as per farming practice in India.
		2	Understand various irrigation structures and schemes.
		3	Develop basis for design of irrigation schemes
BTCVC405	Hydraulics - II	1	Students will be able to design open channel sections in a most economical way
		2	Students will be able to know about the non-uniform flows in open channel and the characteristics of hydraulic jump.
		3	Students will be able to understand application of momentum principle of impact of jets on plane
		4	Students will be able to learn about turbines working principle.
BTCVC406	Engineering Geology	1	Recognize the different land forms which are formed by various geological agents
		2	Identify the origin, texture and structure of various rocks and physical properties of mineral.
		3	Emphasize distinct geological structures which have influence on the civil engineering structure.
		4	Understand how the various geological conditions affect the design parameters of structures.
BTCVC501	Design of Steel Structures	1	Identify and compute the design loads and the stresses developed in the steel member.
		2	Analyze and design axially loaded members
		3	Analyze and design flexural members
		4	Calculate load on gantry girder and industrial roof truss
		5	Design built-up column and bases
BTCVC502	Geotechnical Engineering	1	Students will be able to understand different soil properties and behavior
		2	Students will be able to understand stresses in soil and permeability and seepage aspects
		3	Students will be able to develop ability to take up soil design of various foundations
		4	Students will be able to determine degree of consolidation.
BTCVC503	Structural Mechanics –II	1	Students will be able to find the forces in each and every member of truss and horizontal or vertical displacement of a joint by the analysis of determinate and indeterminate trusses by strain energy method with and without considering the effect of settle
		2	Students will be able to analyse the different types of moving loads i.e., single concentrated load, several concentrated loads and uniformly distributed load with the help of Influence line diagram (ILD)
		3	Students will be able to analyse the different types of suspension bridges (i.e., bridges with three hinged and two hinged stiffening girders) and arches (i.e., circular, parabolic and geometric arches)
		4	Students will be able to analyse the indeterminate structures by direct flexibility method

		5	Students will be able to analyse the indeterminate structures by direct stiffness method
		6	Students will be able to analyse the indeterminate structures by Finite Element Method
BTCVC504	Concrete Technology	1	The students shall be able to understand the various types and properties of ingredients of concrete.
		2	On successful completion of the course work, the students shall be able to understand effect of admixtures on the behavior of the fresh and hardened concrete.
		3	The students shall be able to understand different tests on fresh and harden concrete.
		4	The students shall be able to formulate concrete design mix for various grades of concrete.
BTHM505	Project Management	1	On completion of the course, the students will be able to: Understand various steps in project Management, different types of charts.
		2	Construct network by using CPM and PERT method.
		3	Determine the optimum duration of project with the help of various time estimates.
		4	Know the concept of engineering economics, economic comparisons, and linear break even analysis problems.
		5	Understand the concept of total quality Management including Juran and Deming's philosophy.
BTCVPE506	Material, Testing and Evaluation	1	To develop skill to construct strong and durable structures by applying knowledge of material science.
		2	To make the students aware of quality assurance and control in their real life as a professional.
		3	To propose suitable material in adverse conditions
BTCVES507	Software applications in Civil Engineering	1	Understand & analyse civil engineering software
		2	Use applications of various softwares in specialized works of civil engineering
		3	Design of various component of building.
		4	Learning and practice of software for civil engineering.
BTCVC601	Design of RC Structures	1	Illustrate the various design philosophies used for design of reinforced concrete.
		2	Analyze and design the reinforced concrete beams
		3	Analyze and design the reinforced concrete slabs
		4	Analyze and design the reinforced concrete column
		5	Analyze and design the reinforced concrete footing and staircase
BTCVC602	Foundation Engineering	1	Students will able to predict soil behavior under the application of loads and come up with appropriate solutions to foundation design queries.
		2	Students will able to analyze the stability of slope by theoretical and graphical methods.
		3	Students will able to analyze the results of in-situ tests and transform measurements and associated uncertainties into relevant design parameters.
		4	Students will able to synthesize the concepts of allowable stress design, appropriate factors of safety, margin of safety, and reliability.

BTCVC603	Transportation Engineering	1	Comprehend various types of transportation systems and their history of the development.
		2	Comprehend to various types of pavements.
		3	Design the pavements by considering various aspects associated with traffic safety measures.
		4	The students shall be able to learn geometric design of pavement.
BTCVPE604	Water Power Engineering	1	Identify potential energy sources and adapt as per the requirement
		2	Inculcate basics of electricity generation and power plants
		3	Propose suitable energy source for running a project optimistically.
BTCVOE605	Applications of Remote Sensing and Geographic Information Systems	1	Acquire knowledge demonstrating of earth resources management using remote sensing
		2	Gain skills in storing, managing digital data for planning and development.
		3	Acquire skills in advance software's deals with remote sensing data for utilization
BTHM606	Indian Constitution	1	Describe historical background of the constitution making and its importance for building a democratic India
		2	Explain the functioning of three wings of the government i.e., executive, legislative and judiciary.
		3	Explain the value of the fundamental rights and duties for becoming good citizen of India.
		4	Analyze the decentralization of power between central, state and local self-government.
BTCVC701	Design of Concrete Structures - II	1	Able to identify the behavior, analyze and design of the beam sections subjected to torsion
		2	Able to analyze and design of axially and eccentrically loaded column and construct the interaction diagram for them.
		3	Understand various concepts, systems and losses in pre-stressing
		4	Able to analyze and design the rectangular and symmetrical I-section pre-stressed beam/girders.
BTCVC702	Infrastructure Engineering	1	Students will be able to know about the basics and design of various components of railway engineering.
		2	Students will be able to understand the types and functions of tracks, junctions, and railway stations.
		3	Students will be able to know about the aircraft characteristics, planning, and components of an airport.
		4	Students will be able to understand the types and components of docks and harbors.

BTCVC703	Water Resources Engineering	1	Understand need of Irrigation in India and water requirement as per farming practice in India.
		2	Understand various irrigation structures and schemes.
		3	Develop basis for design of irrigation schemes
BTCVC704	Professional Practices	1	Understand the importance of preparing the types of estimates under different conditions for various structures.
		2	Know about the rate analysis and bill preparations and to study about the specification writing.
		3	Know the various types of contract, accounts in PWD, methods for initiating the works in PWD and tendering.
		4	Understand the valuation of land and buildings, various methods and factors affecting valuation.
BTCVE705A	Construction Techniques	1	Understand the planning of new project with site accessibility and services required.
		2	Comprehend the various civil construction equipment's.
		3	Familiar with layout of RMC plant, production, capacity and operation process.
		4	Recognize various aspect of road construction, construction of diaphragm walls, railway track construction etc
BTCVOE706E	Town and Urban Planning	1	To discuss town and Urban planning with essential attributes
		2	To provide information of various aspects involved town and Urban planning
		3	To make students familiar with various standards, acts, laws and guidelines
		4	To provide information of Town aesthetics, Landscape Architecture, Suitability of Tree.

BTCVSS801D	Maintenance and Repair of Concrete Structures	1	To state the effect of corrosion
		2	To understand the attacks on concrete
		3	Test the structures to predict its stability
		4	Apply the relevant methods of repair for the structures.
		5	To understand the required treatment for concrete
BTCESS802A	Energy Efficiency Acoustics and Day lighting in Building	1	To understand the concepts functional design of building for thermal aspects and energy efficiency
		2	To develop performing fenestration design for natural ventilation and day lighting
		3	To understand the design of space for external and internal noise control
		4	To understand and analyze Day lighting, Lighting principles and fundamentals