



Department of Civil Engineering

Course Outcomes (COs)

Table of Content

S.no.	Title	Page No.
1	Academic Year 2020-21 , 2021-22 , 2022-23, 2023-24	1-13
2	Academic Year 2019-20	14-26

Department of Civil Engineering

**Academic Year 2020-21, 2021-22, 2022-23,
2023-2024**

**Note: The CO of Civil department has been similar from 2020-21 to
2023-24.**

B.Tech CE 3rd Sem		
Course Code/Course Name	Course Outcomes	
Engineering Mathematics-III (BT-301))	BT 301.1	Ability to Understand and Evaluate Zeros of Algebraic and transcendental equations and Interpolate using operators for various real life scenarios.
	BT 301.2	Understand the theoretical principles techniques and the associated error measures and numerical differentiation and integrations.
	BT 301.3	Ability to compute the numerical solution of Simultaneous Linear Equations, Ordinary Diff. Equations and Partial Diff. Equations.
	BT 301.4	Analyze different types statistical situations in which different probability distributions can be applied.
	BT 301.5	Ability to Analyze and evaluate the solution of ODE and PDE by using Laplace and Fourier Transform.
CE 302(Construction material)	CE302.1	Explain the occurrence, characteristics, manufacturing, uses and testing of stone, bricks, mortar and concrete.
	CE302.2	Described the properties, uses and advantages of timber, glass and aluminum to use them in construction as per their suitability.
	CE302.3	Explain the characteristics of various material used in construction of roofs and floors.
	CE302.4	Explain the composition and properties of paints, enamel and varnishes and to apply them to protect the structures as and when required.
	CE302.5	Describe the characteristics and uses of miscellaneous construction material such as bitumen, tar, asphalt etc.
CE 303(Surveying)	CE303.1	Carry out area and volume measurement for the given land and explain various surveying instrument.
	CE303.2	To provide knowledge of basic Principles and application of Theodolite surveying.
	CE303.3	Able to apply the concept of Tacheometry for surveying in difficult and hilly areas to obtain the topographical map of area
	CE303.4	Formulate the setting out of curve by linear and angular methods.
	CE303.5	Remember the knowledge on Surveying to the new frontiers of science like Hydrographic surveying and photogrammetry survey
CE 304()	CE304.1	Student will be able to understand the various terminologies related to building elements and also sketch and design the various building elements. (L1 - L3)

[Signature]
Head
Department of Civil Engineering
Institute of Technology and Management

Department of Civil Engineering

	CE304.4	Students will be able to understand and apply the principles of architectural design in planning and drawing of buildings.
	CE304.5	Student will be able to understand and draw the perspective view and town planning.
CS 305(Strength of material)	CE305.1	Explain the concept of stress, strains, bending, temperature stresses, Mohr's circle of stresses.
	CE305.2	Enumerate various theories for direct and bending stresses in beams and torsion
	CE305.3	Analysis and Calculation of determinate and indeterminate structure, column, beams by the slope and deflections by various methods.
	CE305.4	Evaluate and employ theories of failures to analyze the stresses and strains in thick and thin cylinder as well as loads through various methods.
	CE305.5	Analyze the various stresses, strain, bending, torsion, buckling and deflection of trapezoidal, circular and rectangular section.
CE 306(Study of Historical & Ancient Civil Engineering Practices)	CE306.1	Understand to study the various aspect of civil engineering practices in ancient and historical structures.
	CE306.2	Apply knowledge of various building components and services to design and construction of buildings.
	CE306.3	Prepare constructional detailed representation drawing of a building.
	CE306.4	Analyze the planning laws and recommendations involved in planning, building drawings and architectural concepts of buildings.
	CE306.5	Design plans of different types of building components and to understand the drawing principles involved in the design.
BT 107(Internship)	BT107.1	Describe OOPs concepts
	BT107.2	Use functions and pointers in your C++ program
	BT107.3	Explain arrays and strings and create programs using them
	BT107.4	Describe and use constructors and destructors
	BT107.5	Understand tokens, expressions, and control structures


Head
 Department of Civil Engineering
 Institute of Technology and Management

Department of Civil Engineering

B.Tech CE 4 th Sem		
Course Code/CourseName	Course Outcomes	
ES 401(Energy & Environmental Engineering)	ES 401.1	Identify and compare different energy resources and systems to analyze energy requirement issues.
	ES 401.2	To apply the concept of ecosystem and assess the synergy between the components and functions of an ecosystem
	ES 401.3	To demonstrate the critical analyzing ability towards the biodiversity, its conservation and need for sustainable development.
	ES 401.4	To interpret and summarized the concept of environmental pollution to recognize the need of environmental protection as a lifelong learning.
	ES 401.5	To understand, classify and apply professional, social and environmental ethical principles.
CE 402(Construction Technology)	CE402.1	Explain the features and construction of various foundation and footing.
	CE402.2	Describe the feature's function and construction of form work temporary structure
	CE402.3	Describe the various terminology and process selection to masonry and wall.
	CE402.4	Explain the types and construction of floor and roofs.
	CE402.5	Explain the planning and construction of earthquake resistance building.
CE 403(Structural Analysis-I)	CE403.1	Describe and Apply principles of virtual work and Strain Energy theorems.
	CE403.2	Describe and evaluate the static and kinematic indeterminacy of structure by different methods
	CE403.3	Analyze to simulate beams and frames by slope deflection and column method.
	CE403.4	Examine and discuss the various components of arches and suspension cables considering various parameters.
	CE403.5	Analyze and design to understand the application of loads, rolling load acting on determinate structures and there hinged arches
CE 404(Transportation Engg-I)	CE404.1	Define the various Engineering concept involved in Railway, Bridge & Tunnel Engineering.
	CE404.2	Understand the various Engineering concept involved in Railway, Bridge & Tunnel Engineering.
	CE404.3	Implement the various Engineering concepts which are involved in Transportation engineering into Railway, Bridge and Tunnel Engineering.
	CE404.4	Examine the suitability of various Materials, methods, Equipment & site etc. for the Railway, Bridge & Tunnel Construction
	CE404.5	Select an appropriate Site/Route, Material, Method or Equipment for Laying of Railway Track, Bridge or a Tunnel.

[Signature]
Head
Department of Civil Engineering
Institute of Technology and Management - Wilson

Department of Civil Engineering

CE 405(Engineering Geology & Remote Sensing)	CE405.1	Student will be able to understand physical geology
	CE405.2	Student will be able to understand Mineralogy and crystallography
	CE405.3	Student will be able to understand Petrology
	CE405.4	Students will be able to Understand Structural geology
	CE405.5	Student will be able to Understand applied geology and remote sensing
CE 406(Software Lab)	CE406.1	To learn software like AutoCAD, Inventor/ Pro E/ Uni-graphics and to produce basic concepts to make 2D drafting.
	CE406.2	To apply basic concept to drawing, edit, dimension, hatching etc. to develop 2D & 3D Modelling.
	CE406.3	To make 3D modelling, Assembling, modification & manipulation along with detailing.

[Signature]
Head
Department of Civil Engineering
Institute of Technology and Management Gurgaon

Department of Civil Engineering

B.Tech CE 5th Sem

Course Code/Course Name	Course Outcomes	
CE 501 (Fluid Mechanics I)	CE501.1	To describe & apply fluid properties, stability of submerged and floating bodies and to calculate pressure and hydrostatic forces.
	CE501.2	To analyze types of fluid flow using various parameters
	CE501.3	To apply the principles of mass balance, energy and momentum principle to fluid flow and to measure flow velocity and discharge using various equipments
	CE501.4	To understand and analyze the Laminar flow through pipe
	CE501.5	To apply the various dimensional techniques to derive the expressions and analyze the models and prototypes
CE 502 (Transportation Engg II)	CE502.1	Plan and Calculate the Cross-section elements of Roads.
	CE502.2	Design the flexible and Rigid Pavements.
	CE502.3	To Understand Low Cost roads, Drainage requirements and various aspects of Transportation planning
	CE502.4	To understand the concepts of Airport Planning, Layout, Runway and Taxiway Components.
	CE502.5	To understand the concepts of Airport Lighting, Obstruction & Traffic Control.
CE 503 (Quantity surveying & Costing)	CE503.1	Understand the importance and preparation of an Estimate and detailed estimate of projects.
	CE503.2	Determine of rate analysis for various trades.

f. Garg
Head
Department of Civil Engineering
Institute of Technology and Management Gurgaon

Department of Civil Engineering

	CE503.3	Understand to evaluate for preparation of detailed estimates for estimating culverts and building services
	CE503.4	Analyze cost of works for various contingencies and preparation of DPR
	CE503.5	Evaluation and analysis of valuation of building, scrap values etc.
CE 504 (Urban and town planning)	CE504.1	Student will be able to describe the urban planning process and surveys, urbanization and to apply them for the planning of urban areas.
	CE504.2	Student will be able to describe the functions of various planning agencies, terms & techniques related to urban planning.
	CE504.3	Student will be able to describe the Bye laws and acts, terms related to urban planning and to apply them for planning of urban areas.
	CE 504.4	Students will be able to describe the public transportation system, arbitration, terms related to urban planning and to apply them for planning of urban areas.
	CE 504.5	Student will be able to describe and apply the concepts of different types of development plans, planning agencies for the planning of urban areas.

f. G. G.
Head
Department of Civil Engineering
Institute of Technology and Management Greater

Department of Civil Engineering

CE 505(Quantity surveying & Costing lab)	CE 505.1	Apply the knowledge to prepare the detail estimates of building for the service of plumbing, internal installation and road work.
	CE 505.2	Prepare the rate analysis for different items of construction and DPR of civil engineering project.
CE 506(Material Testing Lab)	CE 506.1	Student will be able to understand about procedure of lab test of concrete, cement and aggregate
	CE 506.2	Student will be able to understand perform lab test on cement, concrete and aggregate
	CE 506.3	Student will be able to evaluate the result of test performed in laboratory on cement, concrete and aggregate
BT 407(Evaluation of Internship-II)	BT407 .1	Basic modeling in STAAD pro
	BT407 .2	Analysis of various elements like beam, column, truss, frame
	BT407 .3	CO 3: Interpretation the data from STAAD
CE 508(Field visit,case study and seminar)	CE508.1	Upgrade the knowledge of latest technologies developments, tools and project development aspects.
	CE508.2	Test their skills in the areas of consultancy.
	CE508.3	Put across their work by publishing papers.

J. Gera
Head
Department of Civil Engineering
Institute of Technology and Management Gurgaon

Department of Civil Engineering

B.Tech CE 6 th Sem		
Course Code/Course Name	Course Outcomes	
CE 601(Structural Design and Drawing (RCC-I))	CE 601.1	Explain methods of design of R.C.C. Structures such as Limit State Method and Working stress method and calculate the various types of loads on R.C.C. Structures.
	CE 601.2	Classify various kinds of beams and design them as per IS code provisions.
	CE 601.3	Explain different types of slabs and design them as per IS code provisions.
	CE 601.4	Design of various columns and footings.
	CE 601.5	Explain various types of stairs and design them as per codal provisions.
CE 602(Environmental Engineering I)	CE602.1	Understand the importance of water treatment with the operations and processes involved.
	CE602.2	Analyze water quality and suggest treatment methods to increase the quality of it.
	CE602.3	Solve the water demand of a city by using population forecasting methods.
	CE602.4	Students will be able to design simple water treatment units.
	CE602.5	Students can able to design of complete sewerage system.
CE 603(Water resources engineering)	CE 603.1	Explain the fundamental of Irrigation water requirement and Soil-Water-Crop relationship
	CE 603.2	Define Ground Water and Well irrigation.
	CE 603.3	Analysis of various terminology related to hydrology.
	CE 603.4	Design and analysis of Canals and Structures.
	CE 603.5	Explain the Types of floods and their estimation.
CE 604(Fluid Mechanics II)	CE 604.1	Describe turbulent flow and apply various theories associated to boundary layer and design pipe network
	CE 604.2	Apply the basic equations of open channel to evaluate the flow conditions and determine the economic sections
	CE 604.3	Describe & Analyze the various water profiles in open channel flow
	CE 604.4	Apply the principles related to drag and lift for various conditions

[Signature]
Head
Department of Civil Engineering
Institute of Technology and Management

Department of Civil Engineering

	CE 604.5	Describe various terminologies related to fluid machines and power plant & Evaluate the efficiencies of various fluid machines
CE 605(Advance surveying lab)	CE 605.1	Apply the knowledge of various surveying instruments in different operations in civil engineering work.
	CE 605.2	Use modern instruments and analyze the same to appropriate engineering problems.
CE 606(Non Destructive Testing Lab)	CE 606.1	Student will have theoretical understanding about non destructive testing methods.
	CE 606.2	Student will be able to Perform UPV and Rebound Hammer Test.
CE 607(Internship-III)	CE 607.1	Students are able to do concrete mix design for required strength of concrete with different approach.
	CE607.2	The students are able to understand the use of different surveying instruments and their use
	CE 607.3	Students are able to understand the property , use , advantage and disadvantage of different material used in construction
CE 608(MinorProject II)	CE 608.1	The students will be able to understand and apply the knowledge of management functions like planning, scheduling, executing and controlling to construction projects.
	CE 608.2	The students will be able to understand and exercise the time- cost relationship in practices.
	CE 608.3	The students will be able to implement the safety aspects during the execution of civil engineering project.

f. G. G.
Head
Department of Civil Engineering
Institute of Technology and Management

Department of Civil Engineering

B.Tech CE 7 th Sem		
Course Code/CourseName	Course Outcomes	
CE 701(Geotechnical Engg)	CE701.1	Explain different properties of soil, types of soils and its classification and to apply them for various purposes of soil.
	CE701.2	Determine the permeability, calculate yield of an aquifer and seepage through soil.
	CE701.3	Estimate soil stresses, compaction and prepare flow net diagram.
	CE701.4	Examine the stabilization of soil, consolidation & settlement using analytical methods.
	CE701.5	Determine the stress distribution & shear strength parameters of soil by various methods.
CE 702(Structural Design and Drawing (RCC-II))	CE702.1	Explain and design the concept of multistory buildings with sway and non sway parameters, introduction of shear walls and bracing elements
	CE702.2	Enumerate various concept for the construction and design of retaining walls, cantilever retaining walls, heel and toe slabs
	CE702.3	Apply various theories for designing of over head water tank and its various parts.
	CE702.4	Design and evaluate RCC bunkers and silo as storing material.
	CE702.5	Analyze the various concepts of LSM and WSM for the design of T beam and slab bridges as per IRC loading concept
CE 703(Building Services)	CE703.1	Explain the importance of building services as per NBC as well as water distribution system.
	CE703.2	Design and provision for lift and escalators in high rise buildings.
	CE703.3	Purpose the fire safety requirement for multi storey building
	CE703.4	Explain the Relevant system of acoustics ,ventilation and thermal insulation.
	CE703.5	Evaluate the potential of rain water harvesting and solar system for building

f. G. G.
Head
Department of Civil Engineering
Institute of Technology and Management, GATEWAY

Department of Civil Engineering

CE 704(Prestressed Concrete Structures Lab)	CE704.1	Student will be able to understand about basic aspects of prestressed concrete fundamentals, including pre and post-tensioning processes.
	CE704.2	Student will be able to understand Analyse prestressed concrete deck slab and beam/ girders.
	CE704.3	Student will be able to understand Design of prestressed concrete deck slab and beam/ girders.
CE 705(IoT Lab)	CE705.1	Able to understand the application areas of IOT
	CE705.2	Able to realize the revolution of Internet in Mobile Device, Cloud & Sensor Networks
	CE705.3	Able to understand building blocks of Internet of Things and characteristics.
CE 706(Major Project-I)	CE706.1	Identify key area in civil engineering and finalize problem statement
	CE706.2	Review the literature to search for technical information from various resources on selected problem.
	CE706.3	Formulate the appropriate solution methodology.
	CE706.4	Apply the principles, tools and techniques to solve the problem
	CE706.5	Prepare a report and presentation of project


Head
 Department of Civil Engineering
 Institute of Technology and Management Gurgaon

Department of Civil Engineering

B.Tech CE 8 th Sem		
Course Code/CourseName	Course Outcomes	
CE 801(Design of Steel Structures)	CE801.1	Explain the fundamental of steel structures and analysis the bolted and welded connections.
	CE801.2	Design and analysis of steel tension and compression members.
	CE801.3	Analyze the various members of steel under combined forces
	CE801.4	Design and analysis of column bases.
	CE801.5	Classify and design the structural steel components of industrial building.
CE 802(Foundation Engineering)	CE802.1	Student will be able to understand the Selection of Foundation and Sub-soil Exploration Methods.
	CE802.2	Student will be able to understand the Shallow Foundation and Analyze Its Bearing Capacity.
	CE802.3	Student will be able to understand Pile Foundations and Analyze the Load Carrying Capacity of Foundation
	CE802.4	Students will be able to Understand Foundations on Problematic Soil and Geo-Synthetics
	CE802.5	Student will be able to Understand about Lateral Earth Pressure, Retaining Wall and Its Stability
CE 803(Integrated Water Management)	CE803.1	To study the paradigm shift in water management with global and national perspectives of water crisis. It also aims to understand the concepts of 'blue water', 'green water' and 'virtual water' and their roles in water management.
	CE803.2	To study the sustainable water resources management and to plan and develop framework for future.
	CE803.3	To study the modern principles of water management and planning.
	CE803.4	To develop surface and subsurface water systems along with water balance equation.
	CE803.5	To study the conventional and non-conventional techniques for water security.

f. Gage
Head
Department of Civil Engineering
Institute of Technology and Management Gurgaon

Department of Computer Science and Engineering

CE 804(Earthquake Resistant Structures Lab)	CE804.1	Student will be able to understand the Engineering Seismology
	CE804.2	Student will be able to understand the response spectrum
	CE804.3	Student will be able to understand Aseismic Structural Modelling
CS 805(Major Project-II)	CE805.1	Explain the latest trends and technology in the selected field of interest
	CE805.2	Apply the acquired knowledge to practical situations
	CE805.3	Develop self-interest to explore the selected technical field of interest in future.
	CE805.4	Develop better interpersonal communication skills and increase self-confidence.
	CE805.5	Develop documentation and presenting abilities

f. Goga
Department of Civil Engineering
Department of Mechanical Engineering
Institute of Technology and Management
Institute of Technology and Management

Department of Civil Engineering

Academic Year 2019-2020

B.Tech CE 3rd Sem		
Course Code/Course Name	Course Outcomes	
Engineering Mathematics-III (BT-301)	BT 301.1	Ability to Understand and Evaluate Zeros of Algebraic and transcendental equations and Interpolate using operators for various real life scenarios.
	BT 301.2	Understand the theoretical principles techniques and the associated error measures and numerical differentiation and integrations.
	BT 301.3	Ability to compute the numerical solution of Simultaneous Linear Equations, Ordinary Diff. Equations and Partial Diff. Equations.
	BT 301.4	Analyze different types statistical situations in which different probability distributions can be applied.
	BT 301.5	Ability to Analyze and evaluate the solution of ODE and PDE by using Laplace and Fourier Transform.
CE 302(Construction material)	CE302.1	Explain the occurrence, characteristics, manufacturing, uses and testing of stone, bricks, mortar and concrete.
	CE302.2	Describe the properties, uses and advantages of timber, glass and aluminum to use them in construction as per their suitability.
	CE302.3	Explain the characteristics of various material used in construction of roofs and floors.
	CE302.4	Explain the composition and properties of paints, enamel and varnishes and to apply them to protect the structures as and when required.
	CE302.5	Describe the characteristics and uses of miscellaneous construction material such as bitumen, tar, asphalt etc.
CE 303(Surveying)	CE303.1	Carry out area and volume measurement for the given land and explain various surveying instrument.
	CE303.2	To provide knowledge of basic Principles and application of Theodolite surveying.
	CE303.3	Able to apply the concept of Tacheometry for surveying in difficult and hilly areas to obtain the topographical map of area
	CE303.4	Formulate the setting out of curve by linear and angular methods.
	CE303.5	Remember the knowledge on Surveying to the new frontiers of science like Hydrographic surveying and photogrammetry survey
CE 304(Building Planning and Architecture)	CE304.1	Student will be able to understand the various terminologies related to building elements and also sketch and design the various building elements. (L1 - L3)
	CE304.2	Student will be able to understand and apply the planning and drawing of buildings with the help of building bye laws and national building codes.
	CE304.3	Student will be able to understand and apply the building services and its drawing.

[Signature]
Head,
Department of Civil Engineering
Institute of Technology and Management Gwalior

Department of Civil Engineering.

	CE304.4	Students will be able to understand and apply the principles of architectural design in planning and drawing of buildings.
	CE304.5	Student will be able to understand and draw the perspective view and town planning.
CS 305(Strength of material)	CE305.1	Explain the concept of stress, strains, bending, temperature stresses, Mohr's circle of stresses.
	CE305.2	Enumerate various theories for direct and bending stresses in beams and torsion
	CE305.3	Analysis and Calculation of determinate and indeterminate structure, column, beams by the slope and deflections by various methods.
	CE305.4	Evaluate and employ theories of failures to analyze the stresses and strains in thick and thin cylinder as well as loads through various methods.
	CE305.5	Analyze the various stresses, strain, bending, torsion, buckling and deflection of trapezoidal, circular and rectangular section.
CE 306(Study of Historical & Ancient Civil Engineering Practices)	CE306.1	Understand to study the various aspect of civil engineering practices in ancient and historical structures.
	CE306.2	Apply knowledge of various building components and services to design and construction of buildings.
	CE306.3	Prepare constructional detailed representation drawing of a building.
	CE306.4	Analyze the planning laws and recommendations involved in planning, building drawings and architectural concepts of buildings.
	CE306.5	Design plans of different types of building components and to understand the drawing principles involved in the design.
BT 107(Internship)	BT107.1	Describe OOPs concepts
	BT107.2	Use functions and pointers in your C++ program
	BT107.3	Explain arrays and strings and create programs using them
	BT107.4	Describe and use constructors and destructors
	BT107.5	Understand tokens, expressions, and control structures

f. Ganga
Henry
Department of Civil Engineering
Institute of Technology and Management Gurgaon

Department of Civil Engineering

B.Tech CE 4 th Sem		
Course Code/CourseName	Course Outcomes	
ES 401(Energy & Environmental Engineering)	ES 401.1	Identify and compare different energy resources and systems to analyze energy requirement issues.
	ES 401.2	To apply the concept of ecosystem and assess the synergy between the components and functions of an ecosystem
	ES 401.3	To demonstrate the critical analyzing ability towards the biodiversity, its conservation and need for sustainable development.
	ES 401.4	To interpret and summarized the concept of environmental pollution to recognize the need of environmental protection as a lifelong learning.
	ES 401.5	To understand, classify and apply professional, social and environmental ethical principles.
CE 402(Construction Technology)	CE402.1	Explain the features and construction of various foundation and footing.
	CE402.2	Describe the feature's function and construction of form work temporary structure
	CE402.3	Describe the various terminology and process selection to masonry and wall.
	CE402.4	Explain the types and construction of floor and roofs.
	CE402.5	Explain the planning and construction of earthquake resistance building.
CE 403(Structural Analysis-I)	CE403.1	Describe and Apply principles of virtual work and Strain Energy theorems.
	CE403.2	Describe and evaluate the static and kinematic indeterminacy of structure by different methods
	CE403.3	Analyze to simulate beams and frames by slope deflection and column method.
	CE403.4	Examine and discuss the various components of arches and suspension cables considering various parameters.
	CE403.5	Analyze and design to understand the application of loads, rolling load acting on determinate structures and there hinged arches
CE 404(Transportation Engg-I)	CE404.1	Define the various Engineering concept involved in Railway, Bridge & Tunnel Engineering.
	CE404.2	Understand the various Engineering concept involved in Railway, Bridge & Tunnel Engineering.
	CE404.3	Implement the various Engineering concepts which are involved in Transportation engineering into Railway, Bridge and Tunnel Engineering.
	CE404.4	Examine the suitability of various Materials, methods, Equipment & site etc. for the Railway, Bridge & Tunnel Construction
	CE404.5	Select an appropriate Site/Route, Material, Method or Equipment for Laying of Railway Track, Bridge or a Tunnel.

f. G. G.
Head
Department of Civil Engineering
Institute of Technology and Management Gurgaon

Department of Civil Engineering

CE 405(Engineering Geology & Remote Sensing)	CE405.1	Student will be able to understand physical geology
	CE405.2	Student will be able to understand Mineralogy and crystallography
	CE405.3	Student will be able to understand Petrology
	CE405.4	Students will be able to Understand Structural geology
	CE405.5	Student will be able to Understand applied geology and remote sensing
CE 406(Software Lab)	CE406.1	To learn software like AutoCAD, Inventor/ Pro E/ Uni-graphics and to produce basic concepts to make 2D drafting.
	CE406.2	To apply basic concept to drawing, edit, dimension, hatching etc. to develop 2D & 3D Modelling.
	CE406.3	To make 3D modelling, Assembling, modification & manipulation along with detailing.

f. Garg
Head
Department of Civil Engineering
Institute of Technology and Management, Gurgaon

Department of Civil Engineering

B.Tech CE 5 th Sem		
Course Code/CourseName	Course Outcomes	
CE 501(Fuid Mechanics I)	CE501.1	To describe & apply fluid properties, stability of submerged and floating bodies and to calculate pressure and hydrostatic forces.
	CE501.2	To analyze types of fluid flow using various parameters
	CE501.3	To apply the principles of mass balance, energy and momentum principle to fluid flow and to measure flow velocity and discharge using various equipments
	CE501.4	To understand and analyze the Laminar flow through pipe
	CE501.5	To apply the various dimensional techniques to derive the expressions and analyze the models and prototypes
CE 502(Transportation Engg II)	CE502.1	Plan and Calculate the Cross-section elements of Roads.
	CE502.2	Design the flexible and Rigid Pavements.
	CE502.3	To Understand Low Cost roads, Drainage requirements and various aspects of Transportation planning
	CE502.4	To understand the concepts of Airport Planning, Layout, Runway and Taxiway Components.
	CE502.5	To understand the concepts of Airport Lighting, Obstruction & Traffic Control.
CE 503(Quantity surveying & Costing)	CE503.1	Understand the importance and preparation of an Estimate and detailed estimate of projects.
	CE503.2	Determine of rate analysis for various trades.

[Signature]
Head
Department of Civil Engineering
Institute of Technology and Management

Department of Civil Engineering

	CE503.3	Understand to evaluate for preparation of detailed estimates for estimating culverts and building services
	CE503.4	Analyze cost of works for various contingencies and preparation of DPR
	CE503.5	Evaluation and analysis of valuation of building, scrap values etc.
CE 504(Urban and town planning)	CE504.1	Student will be able to describe the urban planning process and surveys, urbanization and to apply them for the planning of urban areas.
	CE504.2	Student will be able to describe the functions of various planning agencies, terms & techniques related to urban planning.
	CE504.3	Student will be able to describe the Bye laws and acts, terms related to urban planning and to apply them for planning of urban areas.
	CE 504.4	Students will be able to describe the public transportation system, arbitration, terms related to urban planning and to apply them for planning of urban areas.
	CE 504.5	Student will be able to describe and apply the concepts of different types of development plans, planning agencies for the planning of urban areas.

[Signature]
Head
Department of Civil Engineering
Institute of Technology and Management

Department of Civil Engineering

CE 505(Quantity surveying & Costing lab)	CE 505.1	Apply the knowledge to prepare the detail estimates of building for the service of plumbing, internal installation and road work.
	CE 505.2	Prepare the rate analysis for different items of construction and DPR of civil engineering project.
CE 506(Material Testing Lab)	CE 506.1	Student will be able to understand about procedure of lab test of concrete, cement and aggregate
	CE 506.2	Student will be able to understand perform lab test on cement, concrete and aggregate
	CE 506.3	Student will be able to evaluate the result of test performed in laboratory on cement, concrete and aggregate
BT 407(Evaluation of Internship- II)	BT407 .1	Basic modeling in STAAD pro
	BT407 .2	Analysis of various elements like beam, column, truss, frame
	BT407 .3	CO 3: Interpretation the data from STAAD
CE 508(Field visit,case study and seminar)	CE508.1	Upgrade the knowledge of latest technologies developments, tools and project development aspects.
	CE508.2	Test their skills in the areas of consultancy.
	CE508.3	Put across their work by publishing papers.

f Garg
Head
Department of Civil Engineering
Institute of Technology and Management Gurgaon

Department of Civil Engineering

B.Tech CE 6 th Sem		
Course Code/Course Name	Course Outcomes	
CE 601(Structural Design and Drawing (RCC-I))	CE 601.1	Explain methods of design of R.C.C. Structures such as Limit State Method and Working stress method and calculate the various types of loads on R.C.C. Structures.
	CE 601.2	Classify various kinds of beams and design them as per IS code provisions.
	CE 601.3	Explain different types of slabs and design them as per IS code provisions.
	CE 601.4	Design of various columns and footings.
	CE 601.5	Explain various types of stairs and design them as per codal provisions.
CE 602(Environmental Engineering I)	CE602.1	Understand the importance of water treatment with the operations and processes involved.
	CE602.2	Analyze water quality and suggest treatment methods to increase the quality of it.
	CE602.3	Solve the water demand of a city by using population forecasting methods.
	CE602.4	Students will be able to design simple water treatment units.
	CE602.5	Students can able to design of complete sewerage system.
CE 603(Water resources engineering)	CE 603.1	Explain the fundamental of Irrigation water requirement and Soil-Water-Crop relationship.
	CE 603.2	Define Ground Water and Well irrigation.
	CE 603.3	Analysis of various terminology related to hydrology.
	CE 603.4	Design and analysis of Canals and Structures.
	CE 603.5	Explain the Types of floods and their estimation.
CE 604(Fluid Mechanics II)	CE 604.1	Describe turbulent flow and apply various theories associated to boundary layer and design pipe network.
	CE 604.2	Apply the basic equations of open channel to evaluate the flow conditions and determine the economic sections.
	CE 604.3	Describe & Analyze the various water profiles in open channel flow.
	CE 604.4	Apply the principles related to drag and lift for various conditions.

f Gage
Head
Department of CMI Engineering
Institute of Technology and Management Studies

Department of Civil Engineering

	CE 604.5	Describe various terminologies related to fluid machines and power plant & amp; Evaluate the efficiencies of various fluid machines
CE 605(Advance surveying lab)	CE 605.1	Apply the knowledge of various surveying instruments in different operations in civil engineering work.
	CE 605.2	Use modern instruments and analyze the same to appropriate engineering problems.
CE 606(Non Destructive Testing Lab)	CE 606.1	Student will have theoretical understanding about non destructive testing methods.
	CE 606.2	Student will be able to Perform UPV and Rebound Hammer Test.
CE 607(Internship-III)	CE 607.1	Students are able to do concrete mix design for required strength of concrete with different approach.
	CE607.2	The students are able to understand the use of different surveying instruments and their use
	CE 607.3	Students are able to understand the property , use , advantage and disadvantage of diffent material used in construction
CE 608(MinorProject II)	CE 608.1	The students will be able to understand and apply the knowledge of management functions like planning, scheduling, executing and controlling to construction projects.
	CE 608.2	The students will be able to understand and exercise the time- cost relationship in practices.
	CE 608.3	The students will be able to implement the safety aspects during the execution of civil engineering project.

[Signature]
Head
Department of Civil Engineering
Institute of Technology and Management

Department of Civil Engineering

B.Tech CE 7 th Sem		
Course Code/CourseName	Course Outcomes	
CE 7001(Geotechnical Engg)	CE7001.1	Explain different properties of soil, types of soils and its classification and to apply them for various purposes of soil.
	CE7001.2	Determine the permeability, calculate yield of an aquifer and seepage through soil.
	CE7001.3	Estimate soil stresses, compaction and prepare flow net diagram.
	CE7001.4	Examine the stabilization of soil, consolidation & settlement using analytical methods.
	CE7001.5	Determine the stress distribution & shear strength parameters of soil by various methods.
CE 7002(Structural Design and Drawing (RCC-II))	CE7002.1	Explain and design the concept of multistory buildings with sway and non sway parameters, introduction of shear walls and bracing elements
	CE7002.2	Enumerate various concept for the construction and design of retaining walls, cantilever retaining walls, heel and toe slabs
	CE7002.3	Apply various theories for designing of over head water tank and its various parts.
	CE7002.4	Design and evaluate RCC bunkers and silo as storing material.
	CE7002.5	Analyze the various concepts of LSM and WSM for the design of T beam and slab bridges as per IRC loading concept
CE 7003(Building Services)	CE7003.1	Explain the importance of building services as per NBC as well as water distribution system.
	CE7003.2	Design and provision for lift and escalators in high rise buildings.
	CE7003.3	Purpose the fire safety requirement for multi storey building
	CE7003.4	Explain the Relevant system of acoustics, ventilation and thermal insulation.
	CE7003.5	Evaluate the potential of rain water harvesting and solar system for building


H. G. Garg
 Department of Civil Engineering
 Institute of Technology and Management Gwalior

Department of Civil Engineering

CE 7004(Prestressed Concrete Structures Lab)	CE7004.1	Student will be able to understand about basic aspects of prestressed concrete fundamentals, including pre and post-tensioning processes.
	CE7004.2	Student will be able to understand Analyse prestressed concrete deck slab and beam/ girders.
	CE7004.3	Student will be able to understand Design of prestressed concrete deck slab and beam/ girders.
CE 7005(IoT Lab)	CE7005.1	Able to understand the application areas of IOT
	CE7005.2	Able to realize the revolution of Internet in Mobile Device, Cloud & Sensor Networks

	CE7005.3	Able to understand building blocks of Internet of Things and characteristics.
CE 7006(Major Project-I)	CE7006.1	Identify key area in civil engineering and finalize problem statement
	CE7006.2	Review the literature to search for technical information from various resources on selected problem.
	CE7006.3	Formulate the appropriate solution methodology.
	CE7006.4	Apply the principles, tools and techniques to solve the problem
	CE7006.5	Prepare a report and presentation of project

f. Ganga
HOD
Department of Civil Engineering
Institute of Technology and Management Sector

Department of Civil Engineering

B.Tech CE 8 th Sem		
Course Code/CourseName	Course Outcomes	
CE 8001(Design of Steel Structures)	CE8001.1	Explain the fundamental of steel structures and analysis the bolted and welded connections.
	CE8001.2	Design and analysis of steel tension and compression members.
	CE8001.3	Analyze the various members of steel under combined forces
	CE8001.4	Design and analysis of column bases.
	CE8001.5	Classify and design the structural steel components of industrial building.
CE 8002(Foundation Engineering)	CE8002.1	Student will be able to understand the Selection of Foundation and Sub-soil Exploration Methods.
	CE8002.2	Student will be able to understand the Shallow Foundation and Analyze Its Bearing Capacity.
	CE8002.3	Student will be able to understand Pile Foundations and Analyze the Load Carrying Capacity of Foundation
	CE8002.4	Students will be able to Understand Foundations on Problematic Soil and Geo-Synthetics
	CE8002.5	Student will be able to Understand about Lateral Earth Pressure, Retaining Wall and Its Stability
CE 8003(Integrated Water Management)	CE8003.1	To study the paradigm shift in water management with global and national perspectives of water crisis. It also aims to understand the concepts of 'blue water', 'green water' and 'virtual water' and their roles in water management.
	CE8003.2	To study the sustainable water resources management and to plan and develop framework for future.
	CE8003.3	To study the modern principles of water management and planning.
	CE8003.4	To develop surface and subsurface water systems along with water balance equation.
	CE8003.5	To study the conventional and non-conventional techniques for water security.


 H. Gupta
 Department of Civil Engineering
 and Management
 Institute of Technology & Management

Department of Computer Science and Engineering

CE 8004(Earthquake Resistant Structures Lab)	CE8004.1	Student will be able to understand the Engineering Seismology
	CE8004.2	Student will be able to understand the response spectrum
	CE8004.3	Student will be able to understand Aseismic Structural Modelling
CS 8005(Major Project-II)	CE 8005.1	Explain the latest trends and technology in the selected field of interest
	CE8005.2	Apply the acquired knowledge to practical situations
	CE8005.3	Develop self-interest to explore the selected technical field of interest in future.
	CE8005.4	Develop better interpersonal communication skills and increase self-confidence.
	CE8005.5	Develop documentation and presenting abilities

J. Gage
Department of Civil Engineering
Institute of Technology and Management
Pondicherry