M.TECH STRUCTURAL ENGINEERING

SEMESTER 1

07 CE 6301 Theory of Elasticity	
CO1	Identify the languauge of both engineers and mathematicians-Index notation and Cartesian tensor analysis
CO2	Execute the stress state, strain state and stress and strain analysis for different force systems
CO3	Characterise materials with elastic constitutive relations
CO4	Apply principles of continuum mechanics to analyse a structure or component
07 CE 6303 Advanced Design of Concrete Structures	
CO1	Identify the deformation of members and compute the diflection
CO2	Apply the relevent codal provisions on crack width and select appropriate section and design the shear wall
CO3	Apply the strut and tie model for deep beam,corbals and column joints
CO4	Select the suitable raft foundation
CO5	Choose the appropriate piles including pile cap and design the well foundation
CO6	Apply the inelastic behavior of concrete beams and its dutile detailing
07 CE 6305 Structural Dynamics	
CO1	Identify the essential characteristics of a dynamic problem
CO2	Solve the response of a SDOF system subjected to harmonic loads
CO3	Identify the behaviour of the structures to periodic and pulse loads
CO4	Compute the response to general dynamic loads
CO5	Apply the knowledge acquired into earthquake resistant design of structures
CO6	Choose appropriate numerical methods for determining the behaviour of structure to dynamic loads
07 CE 6313 Advanced Foundation Engineering	
CO1	Describe and compute bearing capacity of foundations using different methods
CO2	Compute differential settlement of foundations using various methods
CO3	Describe pile foundations caissons and well foundations
CO4	Understand the behaviour of soil and foundations under dynamic loading
CO5	To understand the foundations for steel towers and chimneys
CO6	
07 GN 6001 Research Methodology	
CO1	To Discuss research methodology concepts, research problems, research designs, thesis preparations, publications and research methods
CO2	To Analyse and evaluate research works and to formulate a research problem to pursue research
CO3	To Prepare a thesis or a technical paperand a present or publish them
CO4	To Apply the various research methods followed in engineering research for formulation and design of own research problems and to utilize them in their research project.
CO5	
CO6	
07 CE 6307 Computational Lab	
CO1	To work with different computational softwares
CO2	Solve different computational problems
CO3	Preparation of technical document using LaTeX

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SEMESTER 2	
07 CE 6302 FINITE ELEMENT ANALYSIS	
CO 1	Understand the basics of FEM and the basic equations of elasticity
CO 2	Understand the direct stiffness method, coordinate transformation. Formulate the load vector. Formulation of matrix solution by Gauss elimination method
CO 3	Understand the approximation method and finite difference method for field problem analysis. Understand the importance of shape functions in FEM
CO 4	Summarize the FE procedure. Analyze frames
CO 5	Understand the analysis of triangular elements and isoparametric elements. Understand the principles of formulation of axisymmetric elements
CO 6	Understand the basic plate bending theories and shell theories. Introduction to FE software.
07 CE 6304 Earthquake Resistant Design of Structures	
CO1	To define and describe engineering seismology
CO2	To discuss about response spectra and explain its applications
CO3	To describe about MDOF system and its Design
CO4	To design the torsional response of MDOF system
CO5	To design Multi storied building as Earth quake resistant structure
CO6	
07 CE 6306 Advanced Design of Steel Structures	
CO1	Understand the behaviour of steel in inelastic range
CO2	Design different types of connections for steel structures
CO3	Design cold formed or light gauge steel structural members
CO4	Analyse and design structural members in industrial buildings
CO5	Design tubular structures
CO6	Design aluminium structures
07 CE 6318 Marine Structures	
CO1	To understsnt the basics of wave hydroduynamics.
CO2	To understand the forces coming on marine structures and their effect on it.
CO3	To apply the knowledge for design of marine structures
CO4	To understant different types of offshore and onshore structures
07 CE 6324 Design of Prestressed Concrete Structures	
CO1	Understand the concepts of prestressed concrete systems and able to compute the losses in prestressed concrete beams.
CO2	Analyse the ultimate flexure and compute the deflection as per the relevant design code (IS 1343).
CO3	Design the post tensioned and pretensioned simply suppoted beam
CO4	Design the post tensioned and pretensioned slab and tension members and apply it in prestressed circular water tanks.
CO5	Analyze and design of statically indeterminate structures. And understand the design criteria of prestressed members
CO6	Analysis and Design of composite beams
07 CE 6308 Seminar I	
CO1	Assess the debating and self-learning capacity of students and enable them to compare and discriminate between ideas
CO2	Illustrate the ideas to the audience
CO3	Compose technical report
CO4	
CO5	
CO6	
07 CE 6312 Mini Project	
CO1	Develop the ability of the student in transforming the theoretical knowledge studied so far into a practical problem in structural engineering.
CO2	Analyse the structure and do design or rehabilitation by hand computations
CO3	Select appropriate softwares used in the field of structural engineering for analysis, design and drafting.
CO4	Compose a report with relevant structural drawings
07 CE 6314 Structural Engineering Lab	
CO1	Familiarize with the different sophisticated instrumentations used in the laboratory and field for measuring/monitoring stress, strain, deflection etc. in structures.
CO2	Gain knowledge of new construction materials, their testing and construction practices
CO3	Understand the behaviour of structural materials and structural members.

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SEMESTER 3	
07 CE 7307 Forensic Engineering and Rehabilitation of Structures	
CO1	Apply ethical principles of an engineer and Identify the causes of failures of structural members
CO2	Apply and choose the suitable NDT for detection of failures
CO3	Understand the impact of the different structures w.r.t. corrosive , marine and chemical environment
CO4	Use codal provisions on durability and strengthening of buildings
CO5	Choose and apply the appropriate modern techniques of retrofitting
CO6	Select and apply the suitable polymers as rehabilitation materials
07 CE 7315 Advanced Concrete Technology	
CO1	To understand the materials for concrete making , its chemical and physical process of hydration
CO2	To understand the properties of fresh models and rheological models
CO3	To get a basic understanding in the use of addition of mineral and chemical admixtures
CO4	To practice the proportioning of concrete mixes and design procedures
CO5	To interpret the durability aspects of concrete
CO6	To understand the different special concrete and its uses in different area
07 CE 7301 Seminar II	
CO1	Assess the debating and self-learning capacity of students and enable them to compare and discriminate between ideas
CO2	Illustrate the ideas to the audience
CO3	Compose technical report
CO4	
CO5	
CO6	
07 CE 7303 Main Project Phase I	
CO1	To develop the work practice in students to apply theoretical and practical tools/techniques to solve real life problems related to industry and current research.
CO2	to identify problems and also to develop methods for solving such problems which needs the specialised knowledge of theoretical and practical aspects from various areas of structural egineering
CO3	Plan and work out an action plan for completion of a structural engineering problem
CO4	Prepare documents and make presentations.
CO5	
CO6	
SEMESTER 4	
07 CE 7302 Main Project Phase II	
CO1	To improve professional competancy and research aptitude in various areas of Structural engineering
CO2	To develop the work practice in students to apply theoretical and practical tools/techniques to solve real life problems related to industry and current research.
CO3	To identify problems and also to develop methods for solving such problems which needs the specialised knowledge of theoretical and practical aspects from various areas of structural egineering
CO4	Plan and work out an action plan for completion of a structural engineering problem
CO5	Prepare documents and make presentations.

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