



Koneru Lakshmaiah Education Foundation

(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)

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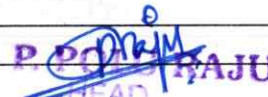
Department of Civil Engineering Program: M. Tech – Structural Engineering Academic Year: 2022-2024

Course Code	Course Name	Description of Course Outcome
22CE5101	Advanced Mechanics of Solids	Interpret the theory of elasticity including strain/displacement and Hooke's law relationships in two dimensional planes
		Able to analyse the two-dimensional problems in polar coordinates
		Able to analyse the Three-dimensional problems in polar coordinates
		Able to analyse the Plasticity deformations of stress and strain.
22CE5102	Advanced Prestressed Concrete Design	Understand the concepts of prestressed concrete and analyze the prestressed concrete beams.
		Analyze losses in prestressed concrete and deflection of the prestressed concrete members
		Design reinforcement for Ultimate shear, torsion and bending of prestressed concrete members.
		Design end blocks as per IS 1343 recommendations.
22CE5103	Advanced Concrete Technology	Design of prestressed members, composite sections, continuous prestressed beams
		Able to analyse the Characteristics of the Concrete Making Materials
		Able to design Concrete Mixes as per the Different Codal Provisions
		Able to design Concrete Mixes for Special Concretes
22CE5104	Structural Dynamics	Able to analyse the Durability Issues of Concrete and the Service Life of Concrete.
		Able to Design the Concrete Mix for various structures and able to cast and test the structural elements
		Solve response of free and forced vibrations
		Solve response to Arbitrary, Step and Pulse Excitations (SDOF)
22CE5205	Theory of Plates and Shells	Solve Earthquake Response of Linear Systems (SDOF)
		Build Generalized Single Degree of Freedom Systems
		Derive the pure bending and curvature of plates
		Derive the differential equation for laterally loaded rectangular plates
		Derive the deformation of shells without bending
		Understand the general theory of Cylindrical shells
		Derive the pure bending and curvature of plates
		Understand the Basic Finite Element Concepts

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22CE5206	Finite Element Analysis	Analysis of Trusses, Beam Bending, Structural Frames and Column buckling using Finite Element Methods
		Analysis of Higher order elements for one dimensional problems and Isometric quadrilateral elements and triangular elements
		Analyse the applications based on general two-dimensional boundary value problem
		Demonstrate the ANSYS software to develop the models using Finite element method
22CE5207	Bridge Engineering	Introduction to different types of bridges and codal provisions for designing the bridge components.
		Analysis and Design of slab Culvert.
		Analysis and Design of T-Beam, sub-structure components and bearings
22CE5208	Earthquake Resistant Design of Structures	Understanding the designing of cable supported bridges.
		Understand the system of base isolation in structures for resistance towards earthquakes and general detailing requirements of ductile structure.
		Analyze a structure for earthquake forces onto the structure under static and dynamic behavior.
		Design the structure for earthquake forces on 2 –storey building
22CE51A1	Pre-Engineered structures	Introduction to PES
		Design Of Industrial Buildings And Shell Roofs
		Design Of Pre-Engineered Structures Applications & Pratical Orientation
22CE51A2	Design of offshore structures	Analysis of Wave theories
		Analysis Forces of offshore structures
		Design of offshore structure & Analysis of offshore structures Design of offshore structures
22CE51B1	Design and detailing of RC Structures	Design of RC members
		Analysis, design and detailing of flat slab, grid slab
		Design and detailing of Elevated water tanks, cantilever and counterfort retaining walls Earthquake resistant design, Ductile detailing
22CE51B2	Repair and Rehabilitation of structures	Understand the concept of Deterioration of structures with aging, Need for rehabilitation
		Understand the damage level of structures affected due to seismic loads, Damage assessment and evaluation models
		Understand procedure of rehabilitation methods like Grouting; Detailing; Imbalance of structural stability
		Understand the retrofitting methodology and procedure
22CE52C1	Fracture Mechanics	Understanding the basic concepts of Fracture and Linear Elastic Fracture Mechanics (LEFM)
		Understanding the concept of Crack Tip Plasticity
		Understanding the concept Elastic Plastic Fracture Mechanics (EPFM)
		Understanding the concept of Fatigue Crack Growth and practical problems of fracture mechanics
		Understanding the design criteria of Tall structures


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22CE52C2	Design of Tall Structures	Understanding the Loadings On Tall Structures
		Understanding the behaviour of Rigid-Frame Structures and Shear Wall Structures
		Understanding the behaviour of Tubular Structures
22CE52D1	Green Buildings	Understand the concept of Green Building Materials and Equipment in India
		Understand Benefits Experienced in Green Buildings, Launch of Green Building Rating Systems, Residential Sector; Opportunities of Green Building
		Understand HVAC System design, Chiller selection, pump selection, Selection of cooling towers, Selection of air handling units
22CE52D2	Stability of Structures	Understand about Air Conditioning, Material conservation, Indoor Environment Quality and Occupational Health
		Introduction to buckling of columns
		Analysis of lateral buckling of beams
22CE52A3	Hydration, Porosity, & Strength Of Cementitious Material	Analysis of lateral buckling of plates and shells
		Understanding the Mathematical treatment of stability problems
		Cement and concrete is the backbone of infrastructure development, , and it is important that engineers have a clear understanding of issues involved not only with cement hydration and strength development but also porosity, permeability and durability
22CE52B3	Structural Reliability	Partial safety factor based approach of basic design variables
		Checking safety and economy at some selected locations on the failure boundaries (i.e. limit states) considering uncertainties.
		Exact assessment of safety based on detailed probabilistic analysis of the structural systems as a whole
22CE52C3	Design Of Connections In Steel Structures	Understanding the Mathematical treatment of stability problems
		The course "Design of Connections in Steel Structures" helps students understand the fundamental mechanism of how different types of connections behave
		Analysis and design process accounts for the same
22CE52D3	Soil Structure Interaction	The course also includes solved examples of various types of steel connections
		Simple connection, ordinary moment connections, ductile moment connections, connections in members subjected to axial forces, gusset plate design, etc.
		The course will focus on the different soil-structure interaction models for shallow foundation under various loading conditions and subgrade characteristics.
		Piles under uplift and lateral loading conditions will also be discussed.
		Beams and plates on elastic foundation problems & different foundation models and their solution
		Finite Difference Method (FDM) will be discussed. The application of foundation models in real life problems will also be discussed

[Signature]
Academic Professor I/C

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