



Koneru Lakshmaiah Education Foundation

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

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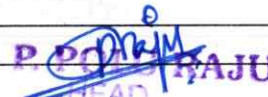
Department of Civil Engineering
Program: M. Tech – Structural Engineering
Academic Year: 2022-2023

| Course Code | Course Name | Description of Course Outcome |
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| 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 |
| | | Able to analyse the Durability Issues of Concrete and the Service Life of Concrete. |
| 22CE5104 | Structural Dynamics | 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) |
| | | Solve Earthquake Response of Linear Systems (SDOF) |
| 22CE5205 | Theory of Plates and Shells | 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 retrofiting 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 |
| | | The course also includes solved examples of various types of steel connections |
| 22CE52D3 | Soil Structure Interaction | 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 |


Academic Professor I/C

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