Master of Technology (Civil Engineering - Structural Engineering)

Program Outcomes (POs)

- PO1 Graduates of the program will be able to demonstrate in-depth knowledge of Structural Engineering discipline and build capability to apply that knowledge to real problems.
- PO 2 Program graduates will gain knowledge and skill in integrating Structural engineering concepts across multiple disciplines.
- PO3 Graduates will have the ability to employ technical knowledge and leadership skills to Structural Engineering research and consultancy problems.
- PO4 Graduates of the Structural Engineering program will demonstrate the ability to carry out original and useful research in key areas of Structural Engineering.
- PO5 Program graduates will be able to identify and analyze the impact of Structural Engineering in development project and find a suitable solution from number of alternatives.
- PO6 Graduates of the program will develop skills to communicate technical values of Structural Engineering research with the public, learners, practitioners and other community members of concern.

Programme Specific Outcomes (PSO)

- ✓ PSO1: To impart knowledge to graduate students in behavior and design of Advanced RC structures, behavior and design of Advanced Steel structure, latest procedures in earthquake resistant design practices, Structural Dynamics.
- ✓ PSO2: To apply engineering tools, instrumentation and software for solving structural engineering problems.
- ✓ PSO3: To expose the graduate students to latest design codes, current national and international scenario on Structural Engineering.
- ✓ PSO4: To orient the graduate students to high value research related to Structural Engineering so that they get impetus to pursue research and lifelong learning

Course Outcomes (COs)

2019-21 Batch

Semester	Course Code	Course Name	Course Outcomes (COs)
1	18MTSE101	Structural Dynamics	**CO1**: Achieve knowledge of design and development of problem solving skills. **CO2**: Understand the principles of Structural Dynamics **CO3**: Design and develop analytical skills. **CO4**: Summarize the Solution techniques for dynamics of Multi-degree freedom systems **CO5**: Understand the concepts of damping in structures.
1	18MTSE102	Advanced Design of Concrete Structures	**CO1**: Achieve Knowledge of design and development of problem solving skills **CO2**: Understand the principles of Structural Design **CO3**: Design and develop analytical skills. **CO4**: Summarize the principles of Structural Design and detailing **CO5**: Understands the structural performance.
1	18MTSE103	Repair and Rehabilitation of Structures	**CO1**: Achieve Knowledge of design and development of problem solving skills. **CO2**: Understand the cause of deterioration of concrete structures. **CO3**: Design and develop analytical skills. **CO4**: Summarize the principles of repair and rehabilitation of structures **CO5**: Understands the concept of Serviceability and Durability
1	18MTSE102L	Structural Engineering Lab-I	**CO1**: Achieve Knowledge of design and development of experimenting skills. **CO2**: Understand the principles of design of experiments **CO2**: Design and develop analytical skills. **CO4**: Summarize the testing methods and equipments
1	18MTSE131	Civil Engineering Smart Materials	**CO1**: Achieve Knowledge of design and development of problem solving skills. **CO2**: Understand the principles of Composite materials **CO3**: Design and develop analytical skills. **CO4**: Summerize the smart materials and structures **CO5**: Understand the concepts of control systems.
Semester	**Course Code**	**Course Name**	**Course Outcomes (COs)**

1	**18MTSE132**	**Advanced Strength of Materials**	**CO1**: Discuss the concepts of curved beams as well as beams on elastic foundations. **CO2**: Calculate the stresses and strains curved beam members **CO3**: Calculate the stresses and strains of beams on elastic foundation
1	**18MTSE133**	**Stability Analysis of Structures**	**CO1**: Achieve Knowledge of design and development of problem solving skills. **CO2**: Understand the principles of strength and stability **CO3**: Design and develop analytical skills. **CO4**: Appraise the Stability analysis by finite element approach. **CO5**: Understand the concepts of Lateral buckling of beams
1	**18MTSE141**	**Theory of Elasticity**	**CO1**: Achieve Knowledge of design and development of problem solving skills. **CO2**: Understand the principles of stress-strain behaviour of continuum **CO3**: Design and develop analytical skills. **CO4**: Describe the continuum in 2 and 3-dimensions **CO5**: Understand the concepts of elasticity and plasticity
1	**18MTSE142**	**Urban Design & Landscape Design**	**CO1**: To expand the student's knowledge on landscape within urban areas and open spaces in Urban context. **CO2**: Types, characteristics and elements of urban open spaces. **CO3**: Understanding of issues related to and design of Urban Landscape design.
1	**18MTSE143**	**Structural Safety and Reliability**	**CO1**: Discuss the method for safety evaluation and risk assessment of civil structures **CO2**: Define loadings and structural safety will be given in a probabilistic framework **CO3**: Analyze Risk assessment of civil structures in earthquake regions **CO4**: Describe safety aspects in structural and civil engineering, and will be able to judge whether it is necessary to account for uncertainties in engineering problems
Semester	**Course Code**	**Course Name**	**Course Outcomes (COs)**

2	**18MTSE201**	**Advanced Concrete Technology**	**CO1**:: Identify Quality Control tests on concrete making materials **CO2**: Understand the behaviour of fresh and hardened concrete **CO2**: Design concrete mixes as per IS and ACI codes **CO4**: Design form work
2	**18MTSE202**	**Finite Element Method**	**CO1**: Achieve Knowledge of design and development of problem solving skills. **CO2**: Understand the principles of stress-strain behavior of continuum, **CO3**: Design and develop analytical skills. **CO4**: Describe the state of stress in a continuum, **CO5**: Understand the concepts of elasticity and plasticity.
2	**18MTSE203**	**Earthquake Analysis and Design of Structures**	**CO1**: Achieve knowledge of design and development of problem solving skills. **CO2**: Understand the principles of engineering seismology **CO3**: Design and develop analytical skills. **CO4**: Summarize the seismic evaluation and retrofitting of structures. **CO5**: Understand the concepts of earthquake resistance of reinforced concrete buildings.
2	**18MTSE201L**	**Structural Engineering Lab-II**	**CO1**: Achieve Knowledge of design and development of programming skills. **CO2**: Understand the principles of structural analysis and design **CO3**: Design and develop analytical skills. **CO4**: Summarize the performance of structures for static and dynamic forces.
2	**18MTSE231**	**Design concepts of Sub structures**	**CO1**: Achieve Knowledge of design and development of problem solving skills. **CO2**: Understand the principles of subsoil exploration **CO3**: Design and develop analytical skills. **CO4**: Identify and evaluate the soil shear strength parameters.
Semester	**Course Code**	**Course Name**	**Course Outcomes (COs)**

2	**18MTSE232**	**Design of Tall Buildings**	**CO1**: Achieve Knowledge of design and development of problem solving skills. **CO2**: Understand the principles of Structural Analysis **CO3**: Design and develop analytical skills **CO4**: Summarize the Solution techniques **CO5**: Understand the concepts of structural behavior.
2	**18MTSE233**	**Design of Offshore Structures**	**CO1**: Determine the forces due to ocean waves and analyze and design offshore structures like platform, helipads, jackets, towers etc., **CO2**: Develop problem solving skills
2	**18MTSE241**	**Design of Plates and Shells**	**CO1**: Analyse the plates using Navier's and Levy's method. **CO2**: Analyse the circular, rectangular and square plates by finite difference method. **CO3**: Design the curved shells and roofs. **CO4**: Design the various folded plate structures.
2	**18MTSE242**	**Wind Resistant Design of Structures**	**CO1**: To perform static and dynamic analysis for wind loading **CO2**: To design a structure for wind induced loadings.
2	**18MTSE243**	**Design of Industrial steel Structures**	**CO1**: Analyse and design of advanced steel structural elements **CO2**: Evaluate the steel structures using the moments resulted due to the load applies **CO3**: Creating economical and stable steel structure using IS codal provisions
3	**18MTSE311**	**Soil Dynamics**	**CO1**: To develop a mechanism to design the foundations for resisting vibrations and achieve static equilibrium conditions of structures **CO2**: To understand the classical geotechnical failures due to liquefaction and mitigate the same. **CO3**: Design of foundations in large structures like power plants, other industrial buildings etc., for analyzing the vibrating waves which can be isolated and measures for achieving safety of
3	**18MTSE312**	**Pre-stressed and Composite Structures**	**CO1**: Analyse , Design and detail PSC elements **CO2**: Analyse and design End block anchorages **CO3**: Analyse the shear and Flexure of PSC elements **CO4**: Understand the behavior of the composite structures
Semester	**Course Code**	**Course Name**	**Course Outcomes (COs)**

3	**18MTSE313**	**Design of Masonry Structures**	**CO1**: Achieve Knowledge of design and development of problem solving skills. **CO2**: Understand the principles of design and construction of masonry structures **CO3**: Design and develop analytical skills. **CO4**: Summarize the masonry Characteristics. **CO5:** Evaluate the strength and stability of the masonry structures.