|  |  |  |
| --- | --- | --- |
| **Course Code** | **Course Name** | **L-T-P - Credits** |
| **CE256** | **STRUCTURAL ANALYSIS LAB** | **0-0-3: 3** |
| Prerequisite: Corequisite: | | |
| **Course Objective:**   1. To provide practical knowledge in verification of various principles in the structural analysis domain. | | |
| **Course Outcomes:**   1. To use the concept of structural analysis and able to solve different critical analytical problems in civil engineering field. 2. To analyse statically determinate trusses, beams, and frames and obtain internal loading 3. To obtain the influence lines for statically determinate and indeterminate structures 4. To Determine deflections of beams and frames using classical methods 5. To familiar with professional and ethical issues and the importance of lifelong learning in structural engineering | | |
| **Syllabus (List of Experiments)** | | |

1. Experimentation and verification of the basic theory of bending moments and shear forces in a beam.
2. To study of beam deflection under different loads and fixing conditions.
3. To study of torque and deflection in different materials with circular section.
4. To study the unsymmetrical bending and shear center of different asymmetric sections.
5. To study of the strains, stresses, forces and deflections in various pin-jointed frameworks.
6. To study the characteristics of a three-pinned, two pinned and fixed arch under various load conditions.
7. To study buckling of slender columns and finding relationships between length, end-fixing conditions and buckling load.
8. To study the behavior of various indeterminate beams.
9. To study the plastic bending of beams and portal frames.
10. To study deflections and reactions, bending moments and sway of rectangular portals.
11. To study the characteristics of a simple suspension bridge.

**Supplementary Readings:**

1. Hibbeler R.C., “Structural Analysis”, Pearson, 9th Edition, 2017
2. Reddy C.S., “Basic Structural Analysis”, Tata McGraw Hill, 3rd Edition, 2011
3. B C Punmia, “Theory of Structures” Laxmi Publication house, 16th Edition, 2017
4. S Ramamrutham, “Theory of Structures”, Dhanpat Rai Publications, 9th Edition, 2014