

CE551: STRUCTURALENGINEERING LAB-1 (0-0-2:1)

Tentative list of experiments

1. Compute the flexibility and stiffness matrix for continuous beams, and pinned/rigid-jointed structures
2. Analysis of structures by direct and generalized flexibility method
3. Analysis of structures by direct and generalized stiffness method
4. Write general computer programs for the analysis of
 - Plane pin-jointed structures
 - Continuous beams
 - Plane right-jointed frames

Also, validate the results using any standard Structural Analysis software.

5. Write general computer programs for the analysis of
 - Space pin-jointed structures
 - Space right-jointed frames

Also, validate the results using any standard Structural Analysis software.

6. Analyze pin-jointed frame using stiffness method if there is a rise of temperature in all members
7. Analyze rigid-jointed frame using stiffness method by both ignoring and considering the axial deformation.

Text Books and References

- 1) Weaver, W. and Gere, J. M., "*Matrix Analysis of Framed Structures*", Springer, 2nd edition 2004.
- 2) Ghali, A., Neville, A. M., and Brown, T. G., "*Structural Analysis – A Unified Classical and Matrix Approach*", CRC Press, 6th edition 2009.
- 3) Kassimali, A., *Matrix Analysis of Structures*, Cengage Learning, 2nd edition 2011.
- 4) Menon, D., *Advanced Structural Analysis*, Alpha Science International, 2009.