# STABILITY OF STRUCTURES
## (Elective – I)

Course Code: 13CE 2207

| L | P | C |
|---|---|---|
| 4 | 0 | 3 |

**Course Educational Objectives:**

1. To impart the knowledge on linear and nonlinear behavior of structures
2. To familiarize the student with stability of plates under combined loads

**Course Outcomes**:

1. The students will be able to analyze structures with linear and nonlinear behavior.
2. To impart the students, with the knowledge of Stability of continuous systems.
3. To impart the students, with the knowledge of Combined axial-flexural-torsion buckling.

**UNIT – I**

**Criteria for design of structures:**, Classical concept of stability strength, and stiffness;
Stability of discrete systems: linear and nonlinear behavior.

**UNIT – II**

**Stability of continuous systems:** stability of columns axial–flexural buckling, lateral bracing of columns.

**UNIT – III**

**Stability of frames:** member buckling versus global buckling, slenderness ratio of frame members;

**UNIT – IV** (10 Lectures)

**Stability of beams:** lateral-torsion buckling

**UNIT – V** (12 Lectures)

**Stability of plates:** axial-flexural buckling, shear flexural buckling, buckling under combined loads.

## TEXT BOOKS

1. Timoshenko, S.P. and Gere,J.M., *"Theory of elastic stability",* 2nd Edition, McGraw Hill, London, 1961

2. Chajes,A., *"Principles of elastic stability",* 1st Edition, Prentice Hall, NJ, 1998

## REFERENCES

1. Simitses,G.J., *"An introduction to the elastic stability of structures",* 2nd Edition, Prentice Hall, NJ, 2001.

2. Bazant, Z.P. and Cedolin, L., *"Stability of structures",* 1st Edition, Oxford University Press, Oxford, 2004.

3. Brush, B.O., and Almoroth,B.O.*," Buckling of Bars, Plates and Shells",* 3rd Edition, McGraw Hill, NY, 2006.

4. Galambos,T.V., *"Guide to stability design criteria for metal Structures",* 2nd Edition,Wiley, NY, 2000.

5. Iyengar, N G R, *"Structural stability of columns and plates",* 1st Edition, Affiliated East- West Press, New Delhi, 2000.

********