STABILITY OF STRUCTURES
(Elective – I)

Course Code: 13CE 2207 **L P C**
4 0 3

Course Outcomes:
At the end of the course the student will be able to
CO1 : Analyse the stability of discrete structures under linear and non-linear behaviour
CO2 : Examine the stability of columns with lateral bracings
CO3 : Summarise the concepts of stability of frames.
CO4 : Calculate the lateral torsion buckling for beams.
CO5 : Analyse the stability of plates under combined loads

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.

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