

**Objective:** To make the students to understand the principles of analysis of structures of static and moving loads by various methods.

**UNIT – I**

**Energy Theorems :** Introduction-Strain energy in linear elastic system, expression of strain energy due to axial load, bending moment and shear forces – Castigliano's first theorem- Deflections of simple beams and pin jointed trusses.

**UNIT – II**

**Analysis Of Indeterminate Structures :** Indeterminate Structural Analysis – Determination of static and kinematic indeterminacies – Solution of trusses with upto two degrees of internal and external indeterminacies – Castigliano's theorem..

**UNIT – III**

**Fixed Beams & Continuous Beams :** Introduction to statically indeterminate beams with uniformly distributed load, central point load, eccentric point load, number of point loads, uniformly varying load, couple and combination of loads – Shear force and Bending moment diagrams – Deflection of fixed beams effect of sinking of support, effect of rotation of a support.

**UNIT – IV**

**Slope-Deflection:** Introduction, derivation of slope deflection equation, application to continuous beams with and without settlement of supports- Analysis of single bay, single storey, portal frame including side sway .

**UNIT – V**

**Moment Distribution Method** Introduction to moment distribution method- application to continuous beams with and without settlement of supports. Analysis of single storey portal frames – including Sway

**Text Books :**

- (1) Analysis of Structures – Vol-I&II by V.N.Vazirani & M.M.Ratwani, Khanna Publications, New Delhi.
- (2) Structural Analysis by S S Bhavikatti – Vikas Publishing House.
- (3) Analysis of Structures by T.S. Thandavamoorthy, Oxford University Press, New Delhi.



**References :**

- (1) Structural analysis – Hibbler – Pearson education
- (2) Introduction to structural analysis by B.D.Nautiyal, New Age international publishers, New Delhi.
- (3) Structural Analysis – D.S.Prakasa rao - Univeristy press.
- (4) Introduction To Structural Analysis-Nautial- New Age Pubilishers
- (5) Strength of Materials and Mechanics of Structures by B.C.Punmia, Khanna Publications, NewDelhi.
- (6) Structural analysis Vol.I and II by Dr. R.Vaidyanathan and Dr.P Perumal – Laxmi publications.
- (7) Basic Structural Analysis by C.S.Reddy., Tata McGraw Hill Publishers.

