

3SE83: BASIC CONCEPTS OF STRUCTURAL BEHAVIOUR
CREDITS – 4 (LTP: 3,0,1)

Course Objectives:

1. To impart the basic concepts of behaviour of different structures.
2. Introduction to Structural Analysis and Design criteria of structural elements.

Teaching and Assessment Scheme:

| Teaching Scheme (Hours per Week) | | | Credits | Assessment Scheme | | | | Total Marks |
|-------------------------------------|---|---|---------|-------------------|-----|-----------------|-----|----------------|
| L | T | P | | Theory Marks | | Practical Marks | | |
| | | | ESE | CE | ESE | CE | 150 | |
| 3 | 0 | 2 | 4 | 60 | 40 | 20 | | 30 |

Course Contents:

| Unit No. | Topics | Teaching Hours |
|--------------|---|-------------------|
| 1 | Structures and Overview: Classification, Basic issues in analysis and design of structures. Types and selection of suitable structural system. | 12 |
| 2 | Principles of Mechanics: Internal forces and moments. Mechanical properties of building materials. | 10 |
| 3 | Analysis and Design criteria: Introduction to Structural Analysis and Design criteria of structural Elements like truss, Cable, arch, Beam, Column and Shell. | 15 |
| 4 | Plate and Grid structures: Introduction to plate and grid structures | 08 |
| Total | | 45 |

List of References:

1. Daniel L.Schodek, "Structures", Prentice Hall
2. S. B. Junnarkar and H. J. Shah, "Applied Mechanics", Charotar Publishing House Pvt. Ltd.
3. S. B. Junnarkar and H. J. Shah, "Mechanics of Structure Vol. I", Charotar Publishing House Pvt. Ltd.
4. Popov E.V., "Engineering Mechanics of Solids" Prentice Hall of India, New Delhi.
5. Hibbler R. C., "Structural Analysis" Pearson Education.
6. Patil H.S., Patil Y.D. and Patel Jignesh, "Structural Analysis-I", Synergy Knowledgeware.
7. Charles E. Reynolds, James C. Steedman (Author), Anthony J. Threlfall, "Reinforced Concrete Designer's Handbook"; CRC press-Taylor and Francis.

Course Outcomes (COs):

At the end of this course students will be able to ...

1. Understand different structural systems and their behaviour.
2. Compute internal forces and moments induced in structural systems due to different types of loading and apply the knowledge of building materials to structural engineering problems.
3. Analyze different structural systems and apply design concepts to them.
4. Understand plate and grid structures and their behaviour.