

SE504: Advanced Design of Steel Structures

Teaching Scheme			Credits	Marks Distribution				Total Marks
L	T	P		Theory Marks		Practical Marks		
				ESE	CE	ESE	CE	
3	2	0	5	70	30	30	20	150

Course content:

Sr. No.	Topics	Teaching Hrs.
1	<p><u>Introduction:</u></p> <p>Design requirements and design process, brittle fracture under impact load, Dead loads, imposed loads, wind loads, earthquake load, earth or ground water load, indirect forces and combination of loads.</p>	03
2	<p><u>Multi storey building:</u></p> <p>2.1 Introduction, loading, Analysis for gravity loads, computer analysis of rigid frame using software.</p> <p>2.2 Design of Built up beams, built up column, beam- column, connections beam to beam & beam to column.</p>	07
3	<p><u>Cold form steel:</u></p> <p>Introduction, advantages of cold formed sections, load buckling, beam, axially compressed column, combined bending & compression, Tension members, Design on the basis of testing, empirical method & examples.</p>	08
4	<p><u>Torsion:</u></p> <p>Introduction to torsional loadings in practises, behaviour of the members due to torsional, shear centre, Approximate design procedure, torsional buckling and torsional deformation.</p>	05
5	Design of industrial shed.	08
6	<p><u>Plastic Design:</u></p> <p>Plastic design of continuous beams, Rigid jointed portal frames.</p>	08

Introduction, factor affecting to fatigue, difference approaches to fatigue analysis, fatigue loading, stress method, fatigue assessment for variable stress ranges and its combined effect, and fatigue analysis of buildings.

Total Hrs. 44

Reference Books:

1. N. Subramanian, "*Design of Steel Structures*", Oxford Publication.
2. Horne, M.R. and Morris L.J., "*Plastic Design of Low -rise frames*", Granada Publishing.
3. S. K. Duggal, "*Design of Steel Structure*", Tata Mc Graw Hill.
4. Kuzamanovic B.O. and Willems N., "*Steel Design for Structural Engineers*", Prentice Hall.
5. Wie - Wen Yu. "*Cold-formed Steel Structures*", McGraw Hill Book Company, 1973.
6. William McGuire, "*Steel Structures*", Prentice Hall, Inc., Englewood Cliffs, N.J.1986.
7. Guidelines to design cold form section by Tata Steel.
8. Shah and Gore, "*Design of Steel Structure*" - Structures Publishers, Pune
9. IS: 800, - "*Code of practice for General Construction in steel*".
10. IS: 875 - (Part I to V) - "*Code of practice for structural safety of building loading standards*".
11. IS: 226 - "*Structural steel*" (Standard Quality).
12. SP: 6(1) - "*Structural steel section*".
13. SP: 6(6) - "*Application of plastic theory in design of steel structures*".
14. IS 801: "*Code of Practice for Use of Cold Formed Light Gauge Steel Structural Members in General Building Construction*".