

SARDAR RAJA COLLEGE OF ENGINEERING

ALANGULAM

DEPARTMENT OF CIVIL ENGINEERING

MICRO LESSON PLAN



SUBJECT NAME : DESIGN OF STEEL STRUCTURES

SUBJECT CODE : CE 2352

YEAR/SEM : III / VI

BRANCH : CIVIL ENGINEERING

STAFF NAME: Prof.R.MURUGESHWARI,

A.P, DEPT. OF CIVIL ENGG.

OBJECTIVE:

This course covers the design of structural steel members subjected to compressive, tensile and bending loads, as per current codal provisions (IS 800 - 2007) including connections. Design of structural systems such as roof trusses, gantry girders are included.

UNIT I INTRODUCTION 12

Properties of steel – Structural steel sections – Limit State Design Concepts – Loads on Structures – Metal joining methods using rivets, welding, bolting – Design of bolted, riveted and welded joints – Eccentric connections -Efficiency of joints – High Tension bolts.

UNIT II TENSION MEMBERS 8

Types of sections – Net area – Net effective sections for angles and Tee in tension – Design of connections in tension members – Use of lug angles –Design of tension splice – Concept of shear lag.

UNIT III COMPRESSION MEMBERS 16

Types of compression members – Theory of columns – Basis of current codal provision for compression member design – Slenderness ratio – Design of single section and compound section compression members – Design of lacing and battening type columns – Design of column bases – Gusseted base

UNIT IV BEAMS 12

Design of laterally supported and unsupported beams – Built up beams – Beams subjected to biaxial bending – Design of plate girders riveted and welded – Intermediate and bearing stiffeners – Web splices – Design of beam columns

UNIT V ROOF TRUSSES AND INDUSTRIAL STRUCTURES 12

Roof trusses – Roof and side coverings – Design loads, design of purlin and elements of truss; end bearing – Design of gantry girder

TUTORIAL: 15 TOTAL: 60 PERIODS

TEXT BOOKS

1. Dayaratnam, P., “Design of Steel Structures”, Second edition, S. Chand & Company, 2003.
2. Ramachandra, S. and Virendra Gehlot, “Design of Steel Structures – Vol. I &II”, Standard Publication, New Delhi, 2007

REFERENCES

1. “Teaching Resources for Structural Steel Design – Vol. I & II”, INSDAG, Kolkatta.
2. Gaylord, E.H., Gaylord, N.C., and Stallmeyer, J.E., “Design of Steel Structures” 3rd edition, McGraw-Hill Publications, 1992
3. Negi L.S.. Design of Steel Structures, Tata McGraw Hill Publishing Pvt Ltd, NewDelhi, 2007.
4. IS 800-2007 Indian Standard General Construction in Steel – code of practice (3rd Revision).

MICRO LESSON PLAN

No.of Hours	LECTURE TOPICS	READINGS
UNIT I INTRODUCTION		
1	Properties of steel	T1
2	Structural steel sections	T1
3	Limit State Design Concepts	T1
4	Loads on Structures	T1
5	Metal joining methods using rivets, welding, bolting	T1
6	Problems	T1
7	Problems	T1
8	Design of bolted, riveted and welded joints	T1
9	Eccentric connections	T1
10	Efficiency of joints	T1
11	High Tension bolts	T1
12	Problems	T1
UNIT II TENSION MEMBERS		
13	Types of sections , Net area	T1
14	Net effective sections for angles and Tee in tension	T1
15	Problems	T1
16	Design of connections in tension members	T1
17	Use of lug angles	T1
18	Problems	T1
19	Design of tension splice	T1
20	Concept of shear lag.	T1
UNIT III COMPRESSION MEMBERS		
21	Types of compression members	T1
22	Theory of columns	T1
23	Basis of current codal provision for compression member design	T1
24	Slenderness ratio	
25	Problems	T1
26	Problems	T1
27	Problems	T1
28	Design of single section compression member	T1
29	Design of compound section compression members	T1
30	Problems	T1
31	Problems	T1

32	Design of lacing and battening type columns	T1
33	Design of column bases	T1
34	Problems	T1
35	Gusseted base	T1
36	Problems	T1
UNIT IV BEAMS		
37	Introduction	T1
38	Design of laterally supported and unsupported beams	T1
39	Problems	T1
40	Problems	T1
41	Problems	T1
42	Built up beams	T1
43	Beams subjected to biaxial bending	T1
44	Problems	T1
45	Design of plate girders riveted and welded connection	T1
46	Intermediate and bearing stiffeners	T1
47	Problems	T1
48	Web splices – Design of beam columns	T1

UNIT V ROOF TRUSSES AND INDUSTRIAL STRUCTURES		
49	Introduction	R1
50	Roof trusses	R1
51	Problems	R1
52	Roof and side coverings	R1
53	Design loads	R1
54	Design of purlin and elements of truss	R1
55	Problems	R1
56	Problems	R1
57	Problems	R1
58	End bearing	R1
59	Design of gantry girder	R1
60	Problems	R1