

Siruseri IT park, OMR, Chennai - 603103

Suggested Activity: Assignment - Structural Loads

Evaluation method : Paper Based							
UNIT II - CONNECTIONS IN STEEL STRUCTURES							
9	Type of Fasteners, Bolts Pins and welds and types of simple bolted and welded connections,	T1, T2	1	BB, PPT	L1	CO2	PO1
10	Relative advantages and Limitations	T1, T2	1	BB, PPT	L2	CO2	PO2, PO8
12	Modes of failure and the concept of Shear lag	T1, T2	1	BB, PPT	L3	CO2	PO1-PO2
13	Efficiency of joints, Axially loaded bolted connections for Plates and Angle Members using bearing type bolts	T1, T2	1	BB, PPT	L2	CO2	PO3, PO8
14	Prying forces and Hanger connection, Design of Slip critical connections with High strength Friction Grip bolts	T1, T2	2	BB, PPT	L3	CO2	PO1-PO3
15	Design of joints for combined shear and Tension, Eccentrically Loaded Bolted Bracket Connections	T1, T2	2	BB, PPT	L3	CO2	PO3, PO8
16	Welds-symbols, specifications and effective area of welds	T1, T2	2	BB, PPT	L3	CO2	PO3,
17	Fillet and but Welded connections	T1, T2	2	BB, PPT	L3	CO2	PO3, PO8
18	Axially Loaded connections for Plate and angle truss members and eccentrically Loaded bracket connections.	T1, T2	3	BB, PPT	L3	CO2	PO3, PO8
Suggested Activity: Case study on failures of connections							
Evaluation method: Group Discussions							
UNIT III - TENSION MEMBERS							
19	Tension Members, Types of Tension members and sections	T1, T2	1	BB, PPT	L1	CO3	PO1
20	Behaviour of Tension Members, modes of failure and slenderness ratio	T1, T2	1	BB, PPT	L1	CO3	PO2, PO8
21	Net area, Net effective sections for Plates ,Angles and Tee in tension	T1, T2	2	BB, PPT	L1	CO3	PO8
22	Design of single section and compound section compression members	T1, T2	2	BB, PPT	L2	CO3	PO1-PO3, PO8
23	Concepts of Shear Lag, Design of plate and angle tension members	T1, T2	3	NPTEL	L3	CO3	PO1-PO3
34	Design of built up tension Members and Connections in tension members	T1, T2	3	NPTEL	L3	CO3	PO1-PO3, PO8
25	Use of lug angles and design of tension splice	T1, T2	3	NPTEL	L3	CO3	PO1-PO3
Suggested Activity: Quiz							
Evaluation method : MCQ							
UNIT IV - COMPRESSION MEMBERS							
26	Types of compression members and sections–Behaviour and types of failures	T1, T2	1	BB, PPT	L1	CO4	PO1
27	Short and slender columns and Current code provisions for compression members	T1, T2	1	BB, PPT	L2	CO4	PO2, PO8
28	Beamd subjected to uniaxial and biaxial bending	T1, T2	1	BB, PPT	L3	CO4	PO1-PO3
29	Effective Length, Slenderness ratio and Column formula and column curves	T1, T2	2	BB, PPT	L3	CO4	PO1-PO3

30	Design of single section and compound Angles, Axially Loaded solid section Columns	T1, T2	2	BB, PPT	L3	CO4	PO1-PO3, PO8
31	Design of Built up Laced and Battened type columns	T1, T2	3	BB, PPT	L3	CO4	PO1-PO3, PO8
32	Design of column bases, Plate and Gusseted bases for Axially loaded columns	T1, T2	3	BB, PPT	L3	CO4	PO1-PO3, PO8
33	Splices for columns	T1, T2	2	BB, PPT	L3	CO4	PO1-PO3, PO8

Suggested Activity: Assignment - Design splice for columns

Evaluation method : Paper Based

UNIT V - DESIGN OF FLEXURAL MEMBERS

34	Types of steel Beam sections- Behaviour of Beams in flexure- Codal Provisions	T1, T2	1	BB, PPT	L1	CO5	PO1, PO8
35	Classification of cross sections- Flexural Strength and Lateral stability of Beams	T1, T2	2	BB, PPT	L2	CO5	PO1-PO3
36	Shear Strength-Web Buckling, Crippling and defection of Beams- Design of laterally supported Beams	T1, T2	3	BB, PPT	L2	CO5	PO1-PO3
37	Design of solid rolled section Beams and design of Plated beams with cover plates	T1, T2	3	BB, PPT	L3	CO5	PO1-PO3, PO8
38	Design Strength of Laterally unsupported Beams and design of laterally unsupported rolled section Beams	T1, T2	3	BB, PPT	L3	CO5	PO1-PO3, PO8
39	Purlin in Roof Trusses, Design of Channel and I section Purlins.	T1, T2	3	BB, PPT	L3	CO5	PO1-PO3, PO8

Suggested Activity: Quiz

Evaluation method: MCQ

Content Beyond the Syllabus Planned

1	Prying Forces
2	Bolted Beam Connection

Text Books

1	Subramanian.N, "Design of Steel Structures", Oxford University Press, New Delhi, 2013.
2	Gambhir. M.L., "Fundamentals of Structural Steel Design", McGraw Hill Education India Pvt. Ltd., 2013
3	Duggal. S.K, "Limit State Design of Steel Structures", Tata McGraw Hill Publishing Company, 2005

Reference Books

1	Narayanan.R.et.al. "Teaching Resource on Structural Steel Design", INSDAG, Ministry of Steel Publications, 2002
2	Sai Ram. K.S. "Design of Steel Structures " Dorling Kindersley (India) Pvt. Ltd., New Delhi, 2nd Edition, 2015, www.pearsoned.co.in/kssairam
3	Shiyekar. M.R., "Limit State Design in Structural Steel", Prentice Hall of India Pvt. Ltd, Learning Pvt. Ltd., 2nd Edition, 2013
4	Bhavikatti.S.S, "Design of Steel Structures" By Limit State Method as per IS:800– 2007, IK International Publishing House Pvt. Ltd., 2009
5	Shah.V.L. and Veena Gore, "Limit State Design of Steel Structures", IS 800–2007, Structures Publications, 2009.
6	SP 6(1) Hand book on structural Steel Sections
8	IS800 :2007, General Construction In Steel - Code of Practice, (Third Revision), Bureau of Indian Standards, New Delhi, 2007

Website / URL References

1	https://nptel.ac.in/courses/105/105/105105162/
2	http://www.steel-insdag.org/teachingmaterial/chapter27.pdf

Blooms Level

Level 1 (L1) : Remembering	Lower Order	Fixed Hour	Level 4 (L4) : Analysing	Higher Order	Projects / Mini Projects
Level 2 (L2) : Understanding			Level 5 (L5) : Evaluating		

Level 3 (L3) : Applying					Thinking	Exams	Level 6 (L6) : Creating						Thinking	
Mapping syllabus with Bloom's Taxonomy LOT and HOT														
Unit No	Unit Name				L1	L2	L3	L4	L5	L6	LOT	HOT	Total	
Unit 1	INTRODUCTION AND ALLOWABLE STRESS DESIGN				4	1	3				8	0	8	
Unit 2	CONNECTIONS IN STEEL STRUCTURES				1	2	6				9	0	9	
Unit 3	TENSION MEMBERS				3	1	3				7	0	7	
Unit 4	COMPRESSION MEMBERS				1	1	6				8	0	8	
Unit 5	DESIGN OF FLEXURAL MEMBERS				1	2	3				6	0	6	
Total					10	7	21				38	0	38	
Total Percentage					26.3158	18.4211	55.2632				100	0	100	
CO PO Mapping														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2	3					2					2	2
CO2	3	3	3					2					2	2
CO3	3	2	2					2					2	2
CO4	3	3	3					2					2	2
CO5	3	3	3					2					2	2
Avg	2.8	2.6	2.8					2					2	2
Justification for CO-PO mapping														
CO1	PO1 : Knowledge in properties of steel, PO2 : formulate structural steel sections, PO3 : Design structural elements using working stress method, PO8 : Ethics in designing structural elements, PSO1 : Designing structural members for sustainable solution, PSO2 : Design cost effective structural components													
CO2	PO1 : Knowledge in bolt and weld connections, PO2 : Problem analysis of connections, PO3 : Design connections, PO8 : Ethics in designing connections for sustainable development, PSO1 : Designing connections for sustainability, PSO2 : Design cost effective connection solutions in structures													
CO3	PO1 : Knowledge in theory of tension members, PO2 : Analysing in tension member, PO3 : Designing tension member, PO8 : Ethics in designing sustainable members, PSO1 : Designing structural members for sustainable solution , PSO2 : Design cost effective structural components													
CO4	PO1 : Knowledge in compression members, PO2 : Problem analysis in columns, PO3 : Designing beams, plate girders, flange and web splice, PO8 : Ethics in designing slenderness ratio for sustainable member, PSO1 : Designing structural members for sustainable solution , PSO2 : Design cost effective structural components													
CO5	PO1 : Knowledge in flexural members, PO2 : Problem analysis in roof, side coverings and built up beams , PO3 : Designing flexural members, PO8 : Ethics in designing and flexural members, PSO1 : Designing structural members for sustainable solution , PSO2 : Design cost effective structural components													
3		High level			2		Moderate level			1		Low level		
Name & Sign of Faculty Incharge :														
Name & Sign of Subject Expert :														
Head of the Department :														