PARALA MAHARAJA ENGINEERING COLLEGE, BERHAMPUR

LESSON PLAN

Semester: 5th **Session: Odd**
Subject: (PCI5I102)–Design of steel structure (3-0-1)
Branch/Course- Civil Engineering/ B.Tech **Name of Faculty:**

Lecture No.	Module	Topic to be covered	Remarks/Sign of Faculty Member
1	I	Introduction, advantages/disadvantages of steel, structural steel, rolled steel section,	
2	I	Various types of loads , design philosophy, limit state design method, limit states of strength and serviceability, probabilistic basis for design	
3	I	Riveted connections : Classification of rivets, disadvantages of riveted connection, terminology for riveted connection	
4	I	Types and patterns of riveted joints,	
5	I	Modes of failure of a riveted joint, strength and efficiency of riveted joint	
6	I	Design of riveted joints	
7	I	Design of riveted joints	
8	I	Bolted connections: Introduction, classification of bolts, types of bolted joints and efficiency of joint	
9	I	Advantages and disadvantages of bolted joint, failure of bolted joints, specifications for bolted joints	
10	I	Design of strength of bolt: shear strength of bolt	
11	I	Bearing strength of bolt, tensile strength of bolt and plate	
12	I	Welding connection: introduction, welding process, advantages and disadvantages of welding, classification of welding, specifications of butt weld	
13	I	Design strength of butt weld, specifications on design of fillet weld, intermittent fillet weld	
14	I	Design of fillet weld	
15	I	Design of slot weld	
16	I& II	Modes of failure in welding connection, welded vs bolted vs riveted connection, tension members: introduction, gussets, types of tension members	

17	II	Net sectional area for the plate with chain bolting, net sectional area for the plate with staggered bolting, net sectional area for angles and tees	
18	II	Modes of failure of tension members, design strength of tension members	
19	II	Design of tension members subjected to axial load	
20	II	Compression members: introduction, types of compression members, effective length, slenderness ratio.	
21	II	Modes of failure of compression members, design strength of compression members	
22	II	Design strength of axially loaded compression members	
23	II	Design of axially loaded compression members	
24	II	Design of built up columns	
25	II	Design of built up columns	
26	II	Design of built up columns	
27	II	Design of built up columns	
28	II	Design of column bases, and foundation bolts	
29	III	Types of c/s of beam, lateral stability of beams, lateral torsional buckling, web buckling, web crippling, deflection	
30	III	Design for laterally supported beam	
31	III	Design for laterally unsupported beam	
32	IV	Design of plate girder	
33	IV	Design of plate girder	
34	IV	Design of plate girder	
35	IV	Design of eccentric type bolted connection- load lying on the plane	
36	IV	Design of eccentric type bolted connection- load perpendicular to the plane, Roof trusses (Basic fundamentals and design procedure)	

Signature of faculty Counter Signature of HOD

Course Outcome	Descriptions (Students will be able to)
CO1	Explain advantages of structural steel and the properties of various sections manufactured in rolled steel plant.
CO2	Demonstrate behavior of structural steel under various types of loads and design philosophy.
CO3	Design various steel members and their connections using bolts and/or welds like beam and beam column connections.
CO4	Design of tension and compression members and the members subjected to moments.
CO5	Analyze lateral stability of beams.
CO6	Design various components of plate girders and roof trusses.