


LESSON PLAN OF 5TH SEMESTER(2023-24) CIVIL ENGINEERING

Discipline :- CIVIL ENGG.	Semester:-5 TH	Name of the Teaching Faculty BIBHU RANJAN SAMAL
Subject:- STRUCTURAL DESIGN- II (Th- 2)	No of Days/per Week Class Allotted :-04	Semester From:- <u>01/08/2023</u> To:- <u>30/11/2023</u> No of Weeks:- 18
Week	Class Day	Theory/ Practical Topics
1 st	1 st	1.0 Introduction: Common steel structures, Advantages & disadvantages of steel structures. Types of steel, properties of structural steel.
	2 nd	Rolled steel sections, special considerations in steel design. Loads and load combinations.
	3 rd	Structural analysis and design philosophy. Brief review of Principles of Limit State design
	4 th	2.0 Structural Steel Fasteners and Connections Classification of bolts, advantages and disadvantages of bolted connections.
2 nd	1 st	Different terminology, spacing and edge distance of bolt holes.
	2 nd	Types of bolted connections.
	3 rd	Types of action of fasteners,
	4 th	assumptions and principles of design. Strength of plates in a joint,
3 rd	1 st	strength of bearing type bolts (shear capacity)
	2 nd	strength of bearing type bolts(bearing capacity)
	3 rd	reduction factors, and shear capacity of HSFG bolts.
	4 th	Analysis & design of Joints using bearing type bolts(except eccentric load and prying forces)
4 th	1 st	Analysis & design of Joints using HSFG bolts (except eccentric load and prying forces)
	2 nd	Problem
	3 rd	Efficiency of a joint .Welded Connections: Advantages and Disadvantages of welded connection
	4 th	Types of welded joints and specifications for welding.
5 th	1 st	Design stresses in welds
	2 nd	Strength of welded joints. Reduction of design stresses for long joints
	3 rd	3.0 Design of Steel tension Members
	4 th	Common shapes of tension members.
6 th	1 st	Design strength of tension members
	2 nd	yielding of gross cross section, rupture of critical section
	3 rd	the concept of block shear
	4 th	Maximum values of effective slenderness ratio
7 TH	1 st	Analysis of tension members
	2 nd	Design of tension members
	3 rd	4.0 Design of Steel Compression members
	4 th	Common shapes of compression members


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8 th	1 st	Bulking class of cross sections.
	2 nd	slenderness ratio
	3 rd	Design compressive stress
	4 th	strength of compression members.
9 th	1 st	Analysis of compression members
	2 nd	Problem
	3 rd	Design of compression members (axial load only). Analysis
	4 th	Problem
10 th	1 st	5.0 Design of Steel beams Common cross sections
	2 nd	their classification
	3 rd	Plastic moment capacity of sections,
	4 th	shear resistance.
11 th	1 st	Deflection limits, web buckling and web crippling.
	2 nd	Design of laterally supported beams against bending.
	3 rd	Design of laterally supported beams against shear.
	4 th	Types of built up sections
12 th	1 st	Design of simple built up sections using flange plates with I-sections
	2 nd	Design of simple built up sections using web plates with I-sections
	3 rd	6.0 Design of Tubular Steel structures
	4 th	Round tubular sections, permissible stresses
13 th	1 st	Tube columns
	2 nd	Problem
	3 rd	compression members, crinkling
	4 th	Tube tension members
14 th	1 st	Tubular roof trusses
	2 nd	Joints in tubular trusses
	3 rd	Design of tubular beams
	4 th	Problem
15 th	1 st	Design of purlins
	2 nd	Problem
	3 rd	8.0 Design of Masonry Structures Design consideration for masonry walls
	4 th	Problem Practice
16 th	1 st	Load bearing walls -Permissible stresses ,Slenderness ratio
	2 nd	Effective length, Effective height
	3 rd	Effective thickness, Eccentricity of loads, Grade of mortar
	4 th	Problem Practice
17 th	1 st	Non-Load bearing walls – Panel walls, Curtain walls, Partition walls.
	2 nd	Design consideration for masonry columns
	3 rd	Design consideration for piers and buttresses
	4 th	Problem practice on steel beam
18 th	1 st	Problem practice on compression member
	2 nd	Problem practice on Tension member
	3 rd	REVISION
	4 th	Previous Year Question Discussion