



LESSON PLAN: Th2. STRUCTURAL DESIGN-II FOR THE SESSION 2024-25(WINTER-2024) BATCH-2022-25 GOVT.
POLYTECHNIC KANDHAMAL, PHULBANI

Discipline: Civil Engineering	Semester: 5th	Name of the Teaching Faculty : Ashish Nayak, Lecturer in Civil Engineering
Subject: Th2. STRUCTURAL DESIGN-II	No. of days/ per week class allotted: 4	Semester From Date : 01/07/2024 to Date: 18/11/2024 No. of Weeks: 15
Week	Class Day	Theory/ Practical Topics
		1 Introduction:
1st	1st	1.0 Introduction : 1.1 Common steel structures, Advantages & disadvantages of steel structures
	2nd	1.2 Types of steel, properties of structural steel
	3rd	1.3 Rolled steel sections, special considerations in steel design
	4th	1.4 Loads and load combinations. 1.5 Structural analysis and design philosophy.
2nd	1st	1.6 Brief review of Principles of Limit State design
		2 Structural Steel Fasteners and Connections.
	2nd	2.1 Bolted Connections 2.1.1 Classification of bolts, advantages and disadvantages of bolted connections
	3rd	2.1.2 Different terminology, spacing and edge distance of bolt holes
	4th	2.1.3 Types of bolted connections. 2.1.4 Types of action of fasteners, assumptions and principles of design
3rd	1st	2.1.5 Strength of plates in a joint, strength of bearing type bolts (shear capacity & bearing capacity), reduction factors, and shear capacity of HSFG bolts
	2nd	2.1.6 Analysis & design of joints using bearing type and HSFG bolts (except eccentric load and prying forces)
	3rd	2.1.7 Efficiency of a joint. 2.2 Welded Connections:
	4th	2.2.1 Advantages and Disadvantages of welded connection
4th	1st	2.2.2 Types of welded joints and specifications for welding
	2nd	2.2.3 Design stresses in welds
		3 Design of Steel tension Members
	3rd	3.1 Common shapes of tension members
	4th	3.1 Common shapes of tension members
5th	1st	3.2 Maximum values of effective slenderness ratio.
	2nd	3.2 Maximum values of effective slenderness ratio.
	3rd	3.2 Maximum values of effective slenderness ratio.
	4th	3.2 Maximum values of effective slenderness ratio. 3.4 Analysis and Design of tension members.(Considering strength only and concept of block shear failure.)
6th	1st	3.4 Analysis and Design of tension members.(Considering strength only and concept of block shear failure.)
	2nd	

	3rd	3.4 Analysis and Design of tension members. (Considering strength only and concept of block shear failure.)
	4th	3.4 Analysis and Design of tension members. (Considering strength only and concept of block shear failure.)
4 Design of Steel Compression members		
7th	1st	4.1 Common shapes of compression members.
	2nd	4.1 Common shapes of compression members.
	3rd	4.2 Buckling class of cross sections, slenderness ratio
	4th	4.2 Buckling class of cross sections, slenderness ratio
8th	1st	4.3 Design compressive stress and strength of compression members.
	2nd	4.3 Design compressive stress and strength of compression members.
	3rd	4.3 Design compressive stress and strength of compression members.
	4th	4.4 Analysis and Design of compression members (axial load only).
9th	1st	4.4 Analysis and Design of compression members (axial load only).
	2nd	4.4 Analysis and Design of compression members (axial load only).
5 Design of Steel beams:		
	3rd	5.1 Common cross sections and their classification
	4th	5.1 Common cross sections and their classification
		5.2 Deflection limits, web buckling and web crippling.
10th	1st	5.2 Deflection limits, web buckling and web crippling.
	2nd	5.2 Deflection limits, web buckling and web crippling.
	3rd	5.2 Deflection limits, web buckling and web crippling.
	4th	5.3 Design of laterally supported beams against bending and shear.
11th	1st	5.3 Design of laterally supported beams against bending and shear.
	2nd	5.3 Design of laterally supported beams against bending and shear.
	3rd	5.3 Design of laterally supported beams against bending and shear.
6 Design of Tubular Steel Structures:		
	4th	6.1 Round Tubular Sections, Permissible Stresses
12th	1st	6.1 Round Tubular Sections, Permissible Stresses
	2nd	6.2 Tubular Compression & Tension Members
	3rd	6.2 Tubular Compression & Tension Members
	4th	6.3 Joints in Tubular trusses
13th	1st	6.3 Joints in Tubular trusses
	2nd	9.3 Cofferdams

		7 Design of Masonry Structures:
3rd		7.1 Design considerations for Masonry walls & Columns
4th		7.1 Design considerations for Masonry walls & Columns
14th	1st	7.1 Design considerations for Masonry walls & Columns
	2nd	Permissible stresses, Slenderness Ratio,
	3rd	Permissible stresses, Slenderness Ratio,
	4th	Permissible stresses, Slenderness Ratio,
15th	1st	Effective Length, Height & Thickness
	2nd	Effective Length, Height & Thickness
	3rd	Effective Length, Height & Thickness
	4th	Effective Length, Height & Thickness

Abhishek Nayak
Lect in CIVIL.

Lect. in Civil Engg.
Govt. Polytechnic Kandhamal

Abhishek Nayak
30/06/2023

H.O.D
Dept. of Civil Engg.
Govt. Polytechnic
Kandhamal