GOVERNMENT POLYTECHNIC JAJPUR
A/ P: Ragadi, Block: Korei, Dist.: Jajpur, Odisha- 755019
Website: https://www.gpjajpur.org E-mail: principalgpjajpur@yahoo.co.in Contact: 9437155107

DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN

Discipline: Civil Engg.	**Semester: 5th**	**Name of the Teaching faculty:RAJASHREE NAYAK**
Subject: Structural Design-II Th-2	**No of Days/Week class alloted: 4**	**Semester from Date:01.07.2024 To Date:08.11.2024** **No of weeks: 15**
Week	**Class Day**	**Topics**
1st	1st	1.0 Introduction: Common steel structures, Advantages & disadvantages of steel structures. Types of steel, properties of structural steel.
	2nd	Rolled steel sections, special considerations in steel design. Loads and load combinations.
	3rd	Structural analysis and design philosophy. Brief review of Principles of Limit State design
	4th	Structural Steel Fasteners and Connections Classification of bolts, advantages and disadvantages of bolted connections.
2nd	1st	Different terminology, spacing and edge distance of bolt holes. Types of bolted connections.
	2nd	Types of action of fasteners, assumptions and principles of design.Strength of plates in a joint, strength of bearing type bolts (shear capacity& bearing capacity)
	3rd	reduction factors, and shear capacity of HSFG bolts. Analysis & design of Joints using bearing type and HSFG bolts (except eccentric load and prying forces)
	4th	Efficiency of a joint .Welded Connections: Advantages and Disadvantages of welded connection
3rd	1st	Types of welded joints and specifications for welding.
	2nd	Design stresses in welds
	3rd	Strength of welded joints. Reduction of design stresses for long joints
	4th	03.Design of Steel tension Members
4th	1st	Common shapes of tension members.
	2nd	Design strength of tension members
	3rd	yielding of gross cross section, rupture of critical section
	4th	the concept of block shear
5th	1st	Maximum values of effective slenderness ratio

	2nd	Analysis of tension members
	3rd	Design of tension members
	4th	04.Design of Steel Compression members
6th	1st	Common shapes of compression members
	2nd	Bulking class of cross sections.
	3rd	slenderness ratio
	4th	Design compressive stress
7th	1st	strength of compression members.
	2nd	Analysis of compression members
	3rd	Design of compression members (axial load only). Analysis
	4th	5.0Steel Column bases and foundations
8th	1st	Types of column bases ,their suitability
	2nd	Design of slab base Design of slab base (subjected to axial loading) with concrete footing
	3rd	Design of gusseted base
	4th	Design of gusseted base subjected to axial loading Design of gusseted base with concrete footing
9th	1st	6.0Design of Steel beams Common cross sections
	2nd	their classification
	3rd	Plastic moment capacity of sections, moment capacity and shear resistance.
	4th	Deflection limits, web buckling and web crippling.
10th	1st	Design of laterally supported beams against bending and shear.
	2nd	Types of built up sections
	3rd	design of simple built up sections using flange plates with I-sections or web plates.
	4th	.7.0 Design of Tubular Steel structures
11th	1st	Tube columns and compression members, crinkling Round tubular sections, permissible stresses
	2nd	Tube tension members and tubular roof trusses.
	3rd	Joints in tubular trusses Design of tubular beams and purlins
	4th	8.0Design of Timber Structures Types of timber
12th	1st	Types of grading of timber
	2nd	Types of defects,
	3rd	Types of permissible stresses.
	4th	Design of axially loaded timber columns solid, box
13th	1st	built up section except spaced columns
	2nd	Design of simple timber structural elements in flexure Solid sections & flitched beams
	3rd	form factor and moment of resistance of built-up sections
	4th	check for shear, bearing and deflection

14th	1st	9.0Design of Masonry Structures Design consideration for masonry walls
	2nd	Design of Masonry Structures
	3rd	Design consideration for masonry walls
	4th	Load bearing walls -Permissible stresses Slenderness ratio, Effective length, Effective height
15th	1st	Load bearing walls -Permissible stresses Slenderness ratio, Effective length, Effective height
	2nd	Effective thickness, Eccentricity of loads, Grade of mortar
	3rd	Non-Load bearing walls – Panel walls, Curtain walls, Partition walls.
	4th	Design consideration for masonry columns, piers and buttresses
16th	1st	REVISION

LearningResources:

Sl No.	Author Name	Name of the Book
1	B.N.Duggal	Design of Steel Structures
2	Samal & Panigrahi	Elements of Steel ,Timber & Masonry Design
3	Samal & Panigrahi	Steel Tables

Rajashree Nayak
FACULTY SIGNATURE