LESSON PLAN OF 5TH SEMESTER(2022-23) CIVIL ENGINEERING

Discipline :- CIVIL	Semester:-5TH	Name of the Teaching Faculty BIBHU RANJAN SAMAL		
Subject:- STRUCTURAL DESIGN– II	No of Days/per Week Class Allotted :-04	Semester From:- **15/09/2022** To:- **22/12/2022** No of Weeks:- 15		
Week	**Class Day**	**Theory/ Practical 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	**2.0 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	**3.0 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	**4.0 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.		

7TH	2nd	Analysis of compression members	
	3rd	Design of compression members (axial load only). Analysis	
	4th	**5.0 Design of Steel beams** Common cross sections	
8th	1st	their classification	
	2nd	Plastic moment capacity of sections, moment capacity and shear resistance.	
	3rd	Deflection limits, web buckling and web crippling.	
	4th	Design of laterally supported beams against bending and shear.	
9th	1st	Types of built up sections	
	2nd	design of simple built up sections using flange plates with I-sections or web plates.	
	3rd	**6.0 Design of Tubular Steel structures**	
	4th	Tube columns and compression members, crinkling Round tubular sections, permissible stresses	
10th	1st	Tube tension members and tubular roof trusses.	
	2nd	Joints in tubular trusses Design of tubular beams and purlins	
	3rd	**7.0 Design of Timber Structures** Types of timber	
	4th	Types of grading of timber	
11th	1st	Types of defects,	
	2nd	Types of permissible stresses	
	3rd	Design of axially loaded timber columns solid, box	
	4th	built up section except spaced columns	
12th	1st	Design of simple timber structural elements in flexure Solid sections & flitched beams	
	2nd	Problem practice	
	3rd	form factor and moment of resistance of built-up sections	
	4th	Problem practice	
13th	1st	check for shear, bearing and deflection	
	2nd	Problem practice	
	3rd	**8.0 Design of Masonry Structures** Design consideration for masonry walls	
	4th	Problem practice	
14th	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. Design consideration for masonry columns, piers and buttresses	
	4th	Problem practice on steel beam	
15th	1st	Problem practice on compression memeber	
	2nd	Problem practice on Tension memeber	
	3rd	REVISION	
	4th	Previous Year Question Discussion	