ACADEMIC LESSION PLAN FOR WINTER SEMESTER 2022 .

Deptt.ofCivilEngg. , Govt. Polytechnic ,Balasore.

Name of the Faculty : Ankita Swain

STRUCTURAL &STEEL DESIGN-II

*Course Code :*TH-2
Theory :4P/W
Total Period s : 60P/Sem
Examination : 3 Hours
Sem :5th Civil

Class Test : 20 Marks
End Semester Exam : 80marks
TOTAL MARKS :100 Marks

WEEK	PERIOD	TOPIC TO BE COVERED AS PER LESSON PLAN
1st	1st	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	BoltedConnectionsClassification of bolts, advantages and disadvantages of bolted connections. Different terminology, spacing and edge distance of bolt holes.Types of bolted connections.
2nd	1st	Types of action of fasteners, assumptions and principles of design.
	2nd	Strength of plates in a joint, strength of bearing type bolts (shear capacity& bearing capacity), reduction factors, and shear capacity of HSFG bolts.

	3rd	Analysis & design of Joints using bearing type and HSFG bolts (except eccentric load and prying forces)
	4th	Efficiency of a joint. Welded Connection Advantages and Disadvantages of welded connection. Types of welded joints and specifications for welding. Design stresses in welds
3rd	1st	Strength of welded joints. Reduction of design stresses for long joints.
	2nd	Common shapes of tension members.
	3rd	Common shapes of tension members. Design strength of tension members, yielding of gross cross section, rupture of critical section and the concept of block shear.
	4th	Design strength of tension members, yielding of gross cross section, rupture of critical section and the concept of block
4th	1st	Maximum values of effective slenderness ratio.
	2nd	Maximum values of effective slenderness ratio.
	3rd	Analysis and Design of tension members.
	4th	Analysis and Design of tension members. Common shapes of compression members.
5th	1st	Common shapes of compression members.
	2nd	Bulking class of cross sections and slenderness ratio.
	3rd	Bulking class of cross sections and slenderness ratio.
	4th	Design compressive stress and strength of compression members.
6th	1st	Design compressive stress and strength of compression members.
	2nd	Analysis and Design of compression members (axial load only).
	3rd	Analysis and Design of compression members (axial load only).

	4th	Analysis and Design of compression members (axial load only). Types of column bases and their suitability
7th	1st	Types of column bases and their suitability.
	2nd	Types of column bases and their suitability.
	3rd	Design of slab base (subjected to axial loading) with concrete footing.
	4th	Design of slab base (subjected to axial loading) with concrete footing. Design of gusseted base (subjected to axial loading) with concrete footing.
8th	1st	Design of gusseted base (subjected to axial loading) with concrete footing.
	2nd	Design of gusseted base (subjected to axial loading) with concrete footing.
	3rd	Common cross sections and their classification..
	4th	Plastic moment capacity of sections, moment capacity and shear resistance Plastic moment capacity of sections, moment capacity and shear resistance
9th	1st	Deflection limits, web buckling and web crippling Types of built up sections and design of simple built up sections using flange plates with I-sections or web plates
	2nd	Design of laterally supported beams against bending and shear..
	3rd	Types of built up sections and design of simple built up sections using flange plates with I-sections or web plates
	4th	Types of built up sections and design of simple built up sections using flange plates with I-sections or web plates
10th	1st	Round tubular sections, permissible stresses.

	2nd	Tube columns and compression members, crinkling.
	3rd	Tube tension members and tubular roof trusses.
	4th	Joints in tubular trusses Design of tubular beams and purlins.
11th	1st	Design of tubular beams and purlins.
	2nd	Types of timber,
	3rd	Types of grading of timber,
	4th	Types of defects, Types of permissible stresses.
12th	1st	Design of axially loaded timber columns (solid, box &built up section except spaced columns).
	2nd	Design of axially loaded timber columns (solid, box &built up section except spaced columns).
	3rd	Design of simple timber structural elements in flexure flitched beams, form factor Solid sections
	4th	Design of simple timber structural elements in flexure flitched beams, form factor Solid sections
13th	1st	Design of simple timber structural elements in flexure moment of resistance of built-up sections
	2nd	Design of simple timber structural elements in flexure check for shear,
	3rd	Design of simple timber structural elements in flexure bearing and deflection.
	4th	Design consideration for masonry walls Load bearing walls -Permissible stresses,
14th	1st	Slenderness ratio, Effective length,
	2nd	Effective height,

	3rd	Effective thickness,
	4th	Eccentricity of loads, Grade of mortar. Non-Load bearing walls – Panel walls,
15th	1st	Curtain walls,
	2nd	Partition walls.
	3rd	Design consideration for masonry columns, piers and buttresses.
	4th	Design considerations for masonry wall footings. Design considerations for masonry wall