LESSON PLAN FOR STRUCTURAL DESIGN -II

Discipline Civil Engg.	**Semester**: 6th	**Name of teaching faculty**: RAJ KRISHNA NANDA
Subject: STRUCTURAL DESIGN -II	Nos of days per week class allotted: 5	Semester from date:9.12.19 to date:31.03.20
Week	**Class day**	**Theory topics**
DEC 2ND Week	1ST	Common steel structures, Advantages & disadvantages of steel structure
	2ND	Types of steel, properties of structural steel.
	3RD	Rolled steel sections, special considerations in steel design
	4th	Loads and load combinations.
	5th	Structural analysis and design philosophy.
DEC 3rd Week	1ST	Brief review of Principles of Limit State design.
	2ND	**Structural Steel Fasteners and Connections.** 2.1 Bolted Connections.
	3RD	Classification of bolts
	4TH	advantages and disadvantages of bolted connections.
	5TH	Different terminology
January 1st week	1ST	spacing and edge distance of bolt holes
	2ND	Types of bolted connections.
January 2nd week	1ST	Types of action of fasteners
	2ND	Types of action of fasteners, assumptions and principles of design
	3RD	Strength of plates in a joint,
	4TH	strength of bearing type bolts (shear capacity& bearing capacity),
	5TH	reduction factors, and shear capacity of HSFG bolts
January 3rd week	1ST	Analysis & design of Joints using bearing type and HSFG bolts
	2ND	Efficiency of a joint.
	3RD	Welded Connections:
	4TH	Advantages and Disadvantages of welded connection.
	5TH	Types of welded joints
January 4th week	1ST	specifications for welding. Design stresses in welds.

	2ND	Strength of welded joints
	3RD	Reduction of design stresses for long joints.
January 5th week	1ST	**Design of Steel tension Members** Common shapes of tension members. 3.2 Design strength of tension members,
	2ND	yielding of gross cross section, rupture of critical section and the concept of block shear.
	3RD	Maximum values of effective slenderness ratio
February 2nd week	1ST	Analysis and Design of tension members.
	2ND	**Design of Steel Compression members.** 4.1 Common shapes of compression members.
	3RD	**Design of Steel Compression members.** 4.1 Common shapes of compression members.
	4TH	Design compressive stress and strength of compression members.
	5TH	4.4 Analysis and Design of compression members (axial load only).
February 3rd week	1ST	**Steel Column bases and foundations:** 5.1 Types of column bases and their suitability.
	2ND	Design of slab base (subjected to axial loading) with concrete footing.
	3RD	Design of gusseted base (subjected to axial loading) with concrete footing.
	4TH	**Design of Steel beams:** 6.1 Common cross sections and their classification
February 4th week	1ST	Plastic moment capacity of sections, moment capacity and shear resistance.
	2ND	Deflection limits, web buckling and web crippling.
	3RD	Design of laterally supported beams against bending and shear
	4th	Types of built up sections and design of simple built up sections using flange plates with I-sections or web plates.
	5th	Types of built up sections and design of simple built up sections using flange plates with I-sections or web plates.
February 5th week	1ST	**Design of Tubular Steel structures** 7.1 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
	5TH	Design of tubular beams and purlins.
March 1st week	1ST	**Design of Timber Structures:** 8.1 Types of timber,

	2ND	grading of timber, defects, permissible stresses.
	3RD	Design of axially loaded timber columns
	4TH	Design of simple timber structural elements in flexure
March 2nd week	1ST	**Design of Masonry Structures:** 9.1 Design consideration for masonry walls (a) Load bearing walls -Permissible stresses,
	2ND	Slenderness ratio, Effective length,
	3RD	Effective height, Effective thickness, Eccentricity of loads, Grade of mortar.
March 3rd week	1ST	non-Load bearing walls – Panel walls
	2ND	Curtain walls,
	3RD	Partition walls.
	4TH	Design consideration for masonry column
	5TH	Design consideration for piers and buttresses.
March 4th week	1ST	Design considerations for masonry wall footings
	2ND	Revision
	3RD	Revision
	4TH	Doubt clearing
	5TH	Question discussion