PADMASHREE KRUTARTHA ACHARYA INSTITUTE OF ENGINEERING & TECHNOLOGY, BARGARH

LESSON PLAN

Session-2023-2024

Discipline: CIVIL ENGINEERING Engg. Semester: 5th

Subject: STRUCTURAL DESIGN-II

Name of the Teaching Faculty: ARUN KUMAR BHOI

Subject: STRUCTURAL DESIGN-II No. of Days/per week class allotted 4

Semester From Date : 01-08-2023 To Date : 30-11-2023 No. of Weeks : 15

Week	Class Day	Theory /Practical Topics
1st	1st	Structural steel and sections Types of steel structure
	2nd	Properties of steel structure, advantages and disadvantages
	3rd	Rolled steel sections, I-sections, channel sections, Angle sections, Tee sections
	4th	Loads, types of loads, Load combinations
2nd	1st	Structural analysis and design philosophy, principles of limit state design
	2nd	Bolted connections, classification, advantages and disadvantages of bolted connection
	3rd	Different terms, pitch, edge distance, gauge distance, staggered pitch of bolts, lap joint, butt joint
	4th	Specification for bolted joint, assumptions and principles of design
3rd	1st	Numerical practice
	2nd	Failure of a bearing type bolted joint, Efficiency of a joint
	3rd	Strength of a plate in a joint, Shearing strength, bearing strength of bolt.
	4th	welded connections, types of welded connections

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Week	Class Day	Theory /Practical Topics
4th	1st	Advantages and disadvantages of welded connections
	2nd	Design stress in welding, Numerical practice
	3rd	Strength of welded joints
	4th	Common shapes of tension members
5th	1st	Types of failure of tension members
	2nd	Design strength of tension membere, concept of shear Lag
	3rd	Maximum values of effective slenderness ratio
	4th	Design of tension member subjected to axial load
6th	1st	Block shear failure
	2nd	Strength of angle section in rupture
	3rd	Numerical practice
	4th	Analysis and design of single angle and double angle section

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Week	Class Day	Theory /Practical Topics
7th	1st	Tension members and their bolted and welded connections with gusset plate
	2nd	Common shapes of compression member
	3rd	Buckling of columns, slenderness ratio
	4th	Design compressive stress and strength of compression member
8th	1st	Design compressive stress for columns
	2nd	Design compressive stress for angle struts
	3rd	Analysis and design of compression member
	4th	Numerical practice, continuous members
9th	1st	Assignments
	2nd	Steps for design of a compression member
	3rd	Limitations to choose a steel section for connections
	4th	Common cross-sections of steel beams

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Week	Class Day	Theory /Practical Topics
10th	1st	Basic concept of plastic theory
	2nd	Design Limits
	3rd	Web crippling and web buckling
	4th	Design of laterally supported beams
11th	1st	Built up beams
	2nd	Numerical practice
	3rd	Analysis and design of single angle section
	4th	Assignments, problem practice
12th	1st	Steel structure like trusses, columns and girders
	2nd	Rounded tubular sections
	3rd	permissible stresses
	4th	Tubular compression member

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Week	Class Day	Theory /Practical Topics
13th	1st	Tubular tension member
	2nd	Joints in tubular trusses
	3rd	Numerical practices
	4th	Design considerations for masonary walls
14th	1st	Design for columns
	2nd	Load bearing and non Load bearing walls
	3rd	permissible stresses
	4th	Slenderness ratio
15th	1st	Numerical practice
	2nd	Numerical practice
	3rd	Effective length, height and thickness
	4th	Revision, doubt clearing class

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