

| Department: Civil Engineering | Semester : 5TH | Name of the Teaching faculty: NITYANANDA BEHERA | |
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| Subject :- Th 2 STRUCTURAL DESIGN- | No.of Days/ week class allotted : 04/week | Semester from date: 15/09/2022 to 22/12/2022 | No. of Weeks :15 |
| Week | Class Day | Topics | Remarks |
| 1 st Week: (15 th Sept- 17th Sept) | 2 nd | 1. Introduction: | |
| | | 1.1 Common steel structures, Advantages & disadvantages of steel structures. | |
| | | 1.2 Types of steel, properties of structural steel. | |
| | 3 rd | 1.3 Rolled steel sections, special considerations in steel design. | |
| 2 nd Week: (19 th Sept - 24 th Sept) | 1 st | 1.4 Loads and load combinations | |
| | 2 nd | 1.5 Structural analysis and design philosophy. | |
| | 3 rd | 2 Structural Steel Fasteners and Connections. | |
| | | 2.1 Bolted Connections | |
| | | 2.1.1 Classification of bolts, advantages and disadvantages of bolted connections. | |
| 3rd week:(26th Sept- 01 Oct) | 1st | 2.1.2 Different terminology, spacing and edge distance of bolt holes. | |
| | | 2.1.3 Types of bolted connections. | |
| | 2 nd | 2.1.4 Types of action of fasteners, assumptions and principles of design. | |
| | 3 rd | 2.1.5 Strength of plates in a joint, strength of bearing type bolts (shear capacity& bearing capacity), reduction factors, and shear capacity of HSFG bolts. | |
| 4th week | vacation | | |
| 5 th Week: (10 th Oct- 15 th Oct) | 1st | 2.1.5 Strength of plates in a joint, strength of bearing type bolts (shear capacity& bearing capacity), reduction factors, and shear capacity of HSFG bolts. | |
| | 2nd | 2.1.6 Analysis & design of Joints using bearing type and HSFG bolts (except eccentric load and prying forces) | |
| | 3rd | 2.1.7 Efficiency of a joint. | |
| 6 th Week: (17 th Oct- | 1st | 2.2 Welded Connections: | |
| | | 2.2.1 Advantages and Disadvantages of welded connection | |
| | | 2.2.2 Types of welded joints and specifications for welding | |

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| 22 nd Oct) | 2nd | 2.2.3 Design stresses in welds | |
| | 3rd | 2.2.4 Strength of welded joints. | |
| 7 th Week: (25 th Oct- | 2nd | 3 Design of Steel tension Members | |
| | 3rd | 3.1 Common shapes of tension members. | |
| 8 th Week: (31st oct- 5th Nov) | 1st | 3.2 Maximum values of effective slenderness ratio. | |
| | 2nd | 3.4 Analysis and Design of tension members.(Considering strength only and concept of block shear failure.) | |
| | 3rd | 3.4 Analysis and Design of tension members.(Considering strength only and concept of block shear failure.) | |
| 9 th Week: (7 th Nov -12 th Nov) | 1st | 3.4 Analysis and Design of tension members.(Considering strength only and concept of block shear failure.) | |
| | 2nd | 3.4 Analysis and Design of tension members.(Considering strength only and concept of block shear failure.) | |
| | 3rd | 3.4 Analysis and Design of tension members.(Considering strength only and concept of block shear failure.) | |
| 10 th Week: (14 th Nov -19 th Nov) | 1st | 4 Design of Steel Compression members. | |
| | | 4.1 Common shapes of compression members. | |
| | | 4.2 Buckling class of cross sections, slenderness ratio | |
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| 11 th Week: (21st Nov - 26 th Nov) | 3rd | 4.3 Design compressive stress and strength of compression members. | |
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| | 2nd | 4.3 Design compressive stress and strength of compression members. | |
| 12 th Week: (28 th Nov -3 rd Dec) | 3rd | 4.4 Analysis and Design of compression members (axial load only). | |
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| | 2nd | 5 Design of Steel beams: | |
| 13 th Week: (5 th Dec -10 th | 3rd | 5.1 Common cross sections and their classification. | |
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| | 2nd | 5.2 Deflection limits, web buckling and web crippling. | |
| | | 5.3 Design of laterally supported beams against bending and shear. | |

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| Dec) | 3rd | 5.3 Design of laterally supported beams against bending and shear. | |
| 14 th Week: (12 th Dec- 17th Dec) | 1st | 5.3 Design of laterally supported beams against bending and shear. | |
| | 2nd | 6 Design of Tubular Steel Structures: 6.1 Round Tubular Sections, Permissible Stresses | |
| | 3rd | 6.2 Tubular Compression & Tension Members | |
| 15 th Week: (19 th Dec- | 1st | 6.3 Joints in tubular Trussess | |
| EXTRA CLASSES | | 7 Design of Masonry Structures: | |
| | | 7.1 Design considerations for Masonry walls & Columns, Load Bearing & Non-Load Bearing walls, Permissible stresses, Slenderness Ratio, Effective Length, Height & Thickness. | |
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Nityananda Behera.

Signature of Faculty