TIME SCHEDULE

<table>
<thead>
<tr>
<th>Module</th>
<th>Topics</th>
<th>Period</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction to steel structures</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>bolted &amp; welded connections</td>
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<tr>
<td>2</td>
<td>Design of tension &amp; compression members</td>
<td>15</td>
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<tr>
<td>3</td>
<td>Design of beams</td>
<td>15</td>
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<tr>
<td></td>
<td>Plate girder</td>
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<tr>
<td>4</td>
<td>Design of truss</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Design of masonry wall</td>
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<tr>
<td>TOTAL</td>
<td></td>
<td>60</td>
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COURSE OUTCOME

<table>
<thead>
<tr>
<th>Sl.</th>
<th>Sub</th>
<th>Student will be able to</th>
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<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Know the concept of design of steel structures</td>
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<td></td>
<td>2</td>
<td>Design steel structures as per Is 800, IS 875 &amp; steel table</td>
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<td></td>
<td>3</td>
<td>Design masonry wall by structural analysis method using IS 1905-1987</td>
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SPECIFIC OUTCOME

Upon completion of the course the student should be able to:

MODULE - I

1.1.0 Understand Steel structures.

1.1.1 List the advantages and disadvantages of steel structures over RCC structures.
1.1.2 Explain the properties of structural steel.
1.1.3 Explain method of analysis & design philosophy.
1.1.4 List the method of connections of steel members.
1.1.5 Calculate the strength of members using Bolted and welded connection.
1.1.6 Design welded connection
MODULE - II

2.1.0 Analyse tension and compression members
- 2.1.1 Calculate Net Area of tension members
- 2.1.2 Calculate the strength of tension member
- 2.1.3 Design of tension members as per BIS and steel table (single and double angles, Channels, sections)
- 2.1.4 Explain the use of Lug angles
- 2.1.5 Calculate effective length and slenderness ratio of column for different end conditions
- 2.1.6 Design compression members- single and double angle strut-continuous and Discontinuous struts as per BIS and steel table
- 2.1.7 Design of columns-rolled steel sections with and without cover plate
- 2.1.8 Describe Lacings (single and double) and Battens

MODULE - III

3.1.0 Analyse steel beams as per BIS and steel tables
- 3.1.1 Know the plastic moment carrying capacity of section
- 3.1.2 Identify the classification of sections
- 3.1.3 Differentiate laterally supported and unsupported beams
- 3.1.4 Calculate Bending strength, Shearing strength, Bearing strength and deflection limit
- 3.1.5 Design of simply supported – laterally supported beams
- 3.1.6 Explain the different parts of a plate girder and the function of each part with neat sketch

MODULE - IV

4.1.0 Analyze roof truss
- 4.1.1 List the loads acting on a truss
- 4.1.2 Illustrate the different types & components and their functions of the truss elements
- 4.1.3 Calculate loads acting on a roof truss
- 4.1.4 Calculate wind pressure from given wind speed and coefficients
- 4.1.4 Design angle purlin

4.2.0 Analyze masonry wall
- 4.2.1 List design considerations of masonry wall
- 4.2.2 Calculate effective height, effective length and effective thickness of masonry wall
- 4.2.3 Design masonry wall by structural analysis method
CONTENT DETAILS

MODULE–I


MODULE–II

Design of Tension members: - General -Net sectional Area of Tension members- Effective sectional area of angles / T-sections connected by one leg/flange (welded Connections only) - Design of ties using Single/Double angles, T-Sections and channels –Lug angles.


MODULE – III

Design of Steel beams: - Plastic moment carrying capacity of section– Classification of cross section- Bending strength, shearing strength and deflection limit of laterally supported beam. (Symmetrical Cross sections only)- Fundamentals of Plate Girder- Parts and function.

MODULE- IV


REFERENCES

1. IS: 800-2007- code of practice for steel structures
2. Steel Tables
3. N Subramanian : Steel structures ; Oxford Press
4. K.S. Sai Ram : Design of Steel structures ; Pearson Publication
6. Sarwar Alam Raz : Structural Design in Steel ; New Age International Publishers