



**Course Title: DESIGN OF STEEL STRUCTURES**

**Credit Units:03**

**Course Level: UG**

**Course Code: CEE306**

L	T	P/S	SW/F W	TOTAL CREDIT UNITS
03	-	-	-	03

**Course Objectives:** This course deals with design of various steel structures

**Pre-requisites:** Strength of Materials, Structural Analysis

**Course Contents/Syllabus:**

	Weightage (%)
<b>Module I</b> Steel - introduction to connections - analysis and design of riveted, bolted and welded joints for direct force and moment - struts and ties made of single and double angles. A design project involving the design and detailing of a typical connection is envisaged at this stage <b>Design of steel girders</b> Analysis and design of laterally restrained – unrestrained – simple and compound beams – open web girders – castellated beams–deflection criteria - check for shear.	25
<b>Module II</b> Design of compression members Axially and eccentrically loaded compression members - built up columns - lacings and battens - design of column bases. A project involving the design and detailing of a Mill bent is envisaged at this stage.	25
<b>Module III</b> <b>Roof truss</b> Introduction to steel roof systems – design of roof trusses – design of roofing elements and purlin – wind bracings. <i>A project involving the design and detailing of a roof truss is envisaged at this stage</i>	25
<b>Module IV</b> <b>Plastic Analysis</b> Plastic theory: introduction - plastic hinge concept - plastic modulus - shape factor - redistribution of moments - collapse mechanism - plastic analysis of beams and portal frames by equilibrium and mechanism methods	25

**Student Learning Outcomes:**

1. Ability to design steel structures

**Pedagogy for Course Delivery:**

1. Class room teaching supported with field based examples.
2. Use of presentation for enabling better understanding of the subject.
3. Assignments based on industrial application of the theory

**Assessment/ Examination Scheme:**

<b>Theory L/T (%)</b>	<b>Lab/Practical/Studio (%)</b>	<b>TOTAL</b>
<b>100</b>	<b>0</b>	<b>100</b>

**Theory Assessment (L&T):**

<b>Continuous Assessment/Internal Assessment</b>					<b>End Term Examination</b>
<b>Components (Drop down)</b>	<b>A</b>	<b>CT</b>	<b>S/V/Q</b>	<b>HA</b>	<b>EE</b>
<b>Weightage (%)</b>	5	10	8	7	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; A: Attendance

**Text & References:**

- Ramchandra, Design of Steel Structures Vol I and II, Standard book house , 1991
- P. Dayaratnam, Design of Steel Structures, (Wheeler),1998
- M. Raghupathi, Design of Steel Structures, Tata McGraw Hill, 1985
- Lin & Breslar, Design of Steel Structures, John Wiley & Sons, 1963
- BIS codes (IS 800, SP: 6 – Part 1 to 6).