DESIGN OF STEEL STRUCTURES

B.Tech. III Year II Sem. **L T/P/D C**
Course Code: **CE601PC** **4 1/0/0 4**

Pre-Requisites: Structural Analysis I & II

Course Objectives: The objective of the course is to make the student conversant with the design principles of steel structural elements as per IS Codal provisions

Course Outcomes: At the end of the course, the student will be able to
Design tension and compression members Design beams and beam columns
Design bolt and weld connections
Design built up members and Column base Design of plate girders and Roof Trusses

UNIT – I
Materials – types of structural steel – mechanical properties of steel – Concepts of plasticity – yield strength. Loads – and combinations local buckling behavior of steel. Concept of limit State Design – Limit States – Design Strengths- deflection limits – serviceability – stability check. Bolted connections – Riveted connections – IS – 800 – 2007 - specifications – Design strength – efficiency of joint – prying action. Welded connections – Types of welded joints – specifications - design requirements.

UNIT – II
Design of tension members – Design strength – Design procedure splice - lug angle.
Design of compress in members – Buckling class – slenderness ratio / strength design – laced – battened columns – splice – column base – slab base.

UNIT – III
Plastic Theory, Plastic hinge, Theorems of plastic Analysis Classifications of beams as per I.S 800-2007.
Design of Beams – Plastic moment – Bending and shear strength / buckling – Built up sections – laterally / supported beams - Design of eccentric connections – Framed – stiffened / seat connection.

UNIT – IV
Design of p ate girders – elements – economical depth – design of main section – connections between web and flange – design of stiffness bearing – intermediate stiffeners – Design of Websp ica & Flange splica.

UNIT – V
Design of roof trusses – Types of roof trusses, loads on trusses – purlin design – truss design, Design of joints and end bearings.

TEXT BOOKS:
1. Design of steel structures – N. Subramanian, Oxford University Press – 2009.
2. Limit State Design of steel structures, S.K. Duggal, Tata McGraw-Hill, 2010.

REFERENCES:

1. Fundamental of Structural Steel Design by M L Gambhir MC Graw Hill Education Pvt Ltd 2013
2. Design of Steel Structures Edwin H. Gaylord, Jr. Charles N. Gaylord and James Stallmeyer Tata McGraw-Hill Education pvt. Ltd.
3. Design of steel structures, S.S. Bhavikatti, IK International Publication House, New Delhi, 2010.
4. Structural Design and Drawing by N. Krishna Raju, Universities Press.
5. Design of Steel structures by K.S. Sai Ram, Person Education.