SEMESTER – V

THEORY SUBJECTS

Sl. No.	Sub. Code	Theory	Contact Hours			Credit
			L	T	P/S	
1.	22AS513	Design of Steel Structures	**3**	**0**	**0**	**3**

Course Objective	To understand complex structural concepts and behaviour; to introduce the concepts of designing steel structure and its components; selection criteria for suitable steel roof truss for different spans of industrial buildings and large span structures. To demonstrate an understanding of concepts through simple calculations and models.
Anticipated Learning Outcomes:	To enable students to analyse and design simple steel structural components.to select suitable steel roof truss for different spans of industrial buildings and large span structures.
Module 1 Introduction	Introduction to Steel structures: Steel structural shapes, Introduction to IS 800; Rivets, welded connection, Steel structural members, tension, compression and bending Members. Design of riveted and welded connections like beam end connections (Limit Stress method).
Module 2 Structural elements	Design of structural elements; Truss members under tension, a laterally restrained beam using rolled steel sections. Design of structural element under compression in a truss, a column using rolled steel sections, effective length buckling load. *(Practical case study of a steel section)*
Module 3 Foundation	Concept of type of foundation; Design of slab base and gusseted base; Introduction of plastic design.
Module 4 Design of a unit	Visit to a construction site to study steel fabrication work. Design of shed in steel structure Foundations: Types of foundations for RCC structures, Design of isolated column footing, retaining wall. Design of short and long axially loaded RCC Columns, Principles of staircase design.

Module 5 Innovative designs in steel for space and box frames. (To be decided by the subject teacher)

Note: Most Architectural subjects do not have Textbooks. The Reference books mentioned below are for reference only and University question paper should be prepared from the Syllabus descriptions.

References

1. *Ramachandra. S, Design of steel structures Vol. I, Standard publication, New Delhi, 1992.*
2. *Vazirani. V.N, and Ratwani .M.M, Steel structures, Khanna Publications, New Delhi, 1995.*
3. *Arya. A.S, Ajamani. J.L, Design of Steel Structures, Nem Chand and Bros, Roorkee, 1999.*
4. *Subramanian, N. (2008). Design of Steel Structures. Oxford University Press.*
5. *Duggal, Design of Steel structures, Tata McGraw Hill Company, New Delhi, 2000*
6. *Lin. T.R, and Scalzi. J.B, Design of Steel structures – Bressler Wiley Eastern Pvt. Ltd., New Delhi, 1960.*
7. *Dayaratnam. P, Design of Steel Structures, Wheelers Publishing Company Co. Ltd, 1990*
8. *Handbook of Typified Designs for Structures with steel roof trusses, SP 38 (SandT) – 1987, BIS, New Delhi, 1987.*
9. *Code of practice for Earthquake Resistant Design and Construction of Buildings IS4326-1976, BIS, New Delhi.*