

Devi Ahilya Vishwavidhyalaya, Indore, India Institute of Engineering & Technology				III Year B.Tech. (Civil Engineering)		
Course Code & Name	Instructions Hours per Semester and Credits					
6RVPC3 Design of Steel Structures – I	Classroom Instruction (CI)		Lab Instruction (LI)	Term Work (TW) and Self Learning (SL)	Total no. of Hours Per semester	Total Credits (Total Hours/30)
	L	T	P	TW+SL	120	4
	20	10	20	70		

Course Learning Objectives:

1. To Learn the properties of steel sections, design basics, and codal provisions for connections.
2. To Design steel members subjected to tension and compression.
3. To Understand design steps for beams, built-up beams, and connections in beam–column systems.
4. To Design elements in roof trusses and joints using steel design handbooks.
5. To Design plate girders, gantry girders, and light gauge sections.

Prerequisite(s): Mathematical Methods and Mechanics of Materials

COURSE CONTENTS

Unit I

Introduction: Properties of structural steel, sections, limit state & working stress design concepts, types of connections, bolted/riveted/welded joints, eccentric connections, efficiency of joints, high-tension bolts.

Unit II

Tension & Compression Members: Net area, effective sections, lug angles, tension splices, shear lag; compression member theory, codal provisions, slenderness ratio, single/compound sections, lacing & battening columns, column bases, gusseted bases.

Unit III

Beams: Laterally supported/unsupported beams, built-up beams, biaxial bending, plate girders (riveted/welded), stiffeners, web splices.

Unit IV

Roof Trusses & Industrial Structures: Roof trusses, coverings, design loads, purlins, truss elements, end bearing, gantry girders.

Unit V

Light Gauge Sections: Types of sections, flat width ratio, buckling of thin elements, effective width, form factor, design of tension/compression members and beams.

