

DESIGN OF STEEL STRUCTURES AND DRAWING

VI Semester: CE								
Course Code	Category	Hours / Week			Credits	Maximum Marks		
ACEB30	Elective	L	T	P	C	CIA	SEE	Total
		3	-	-	3	30	70	100
Contact Classes: 45	Tutorial Classes: Nil	Practical Classes: Nil			Total Classes: 45			
<p>COURSE OBJECTIVES: The student will try to learn:</p> <p>I. The concepts of limit state design and the behaviour of structural steel used in design and its properties.</p> <p>II. Design of structural elements necessary for creating efficient and economic steel structures.</p> <p>III. Design and drawing of multi storeyed industrial and residential structures including bridges for creating high performance and durable structures.</p> <p>COURSE OUTCOMES: After successful completion of the course students are able to:</p> <p>CO 1 Recall the concepts of structural steel properties, different loads and their combinations for understanding the behavior of steel structures.</p> <p>CO 2 Explain the concept of limit state design, different limit states, design strengths, deflection limits and serviceability requirements for the designing of steel structural elements.</p> <p>CO 3 Design bolted connections for joining two or more steel structural elements for the transfer of loads.</p> <p>CO 4 Analyze the strength of tension members, compression members, beams and girders for designing industrial trusses and steel bridges.</p> <p>CO 5 Design tension members, compression member / column, beams and girders using Indian standard code method.</p> <p>CO 6 Design built up sections, purlins and large plates for web buckling and web crippling using Indian standard code method.</p> <p>CO 7 Design eccentric connections with brackets, beam end connections, web angle and truss joints for large crane movement in industries.</p> <p>CO 8 Design of plate girders with and without stiffeners for designing bridge structures and large span beams.</p> <p>CO 9 Make use of the chronological sequence of design of structural elements for designing multi-storeyed steel structures and steel bridges.</p>								
MODULE-I	INTRODUCTION ON MECHANICAL BEHAVIOR OF STEEL						Classes: 09	
Materials, making of iron and steel, types of structural steel, mechanical properties of steel, concepts of plasticity yield strength, loads and combinations, behavior of steel, local buckling. Concept of limit state design – different limit states as per IS 800:2007. Design strengths deflection limits, serviceability, bolted connections, efficiency of joint, prying action, design of tension members, design strength of members.								
MODULE-II	COMPRESSION MEMBERS						Classes: 09	
Design of compression members, buckling class, slenderness ratio, strength design, laced columns, battened columns, slab base.								

MODULE-III	BEAMS	Classes: 09
Design of beams and bending and shear strength laterally supported beams.		
Design of built-up sections, large plates web buckling, crippling and deflection of beams, design of purlin.		
MODULE-IV	ECCENTRIC CONNECTIONS	Classes: 09
Design of eccentric connections with brackets, beam end connections, web angles, design of truss joints.		
MODULE-V	PLATE GIRDERS	Classes: 09
Design of plate girders, optimum depth, design of main section, design of end bearing stiffness and intermediate stiffness. Connection between web and flange.		
Text Books:		
<ol style="list-style-type: none"> 1. S. K. Duggal, "Limit state design of steel structures", Tata McGraw-Hill, 3rd Edition, 2019. 2. N. Subramanian, "Design of steel structures", Oxford University Press, 2nd Edition, 2018. 3. S.S. Bhavikatti, "Design of steel structures", 4th Edition, IK International Publication House, New Delhi, 2014. 		
Reference Books:		
<ol style="list-style-type: none"> 1. K. S. Sai Ram, "Design of steel structures", Pearson Education, 2nd Edition, 2015. 2. Ramachandra and Virendra Gehlot, "Design of steel structures Volumes 1 and 2", Standard Publications, 2nd Edition, 2010. 3. Edwin H. Gaylord, Jr. Charles N. Gaylord and James Stallmeyer, "Design of Steel Structures", Tata McGraw-Hill Education private Limited, 3rd Edition, 2010. 		