

BACHELOR OF TECHNOLOGY

Civil Engineering Department

Semester - VII

Course Scheme

Course Code	Course Name	Lecture hours	Tutorial hours	Practical hours	Credit
GE XXXXXX	Open Elective	3	0	0	3
CE 214001	Design of Steel Structure	3	1	0	4
CE 214002	Irrigation and Water Supply Engineering	3	2	0	5
CE XXXXXX	Department Elective-2	3	0	0	3
CE 214501	BTP - 1	0	0	0	8
	Total	12	3	0	23

Civil Engineering Department

Semester : V

I	Course Code	CE 214001			
II	Course Title	Design of Steel Structure			
III	Credit Structure	L	T	P	C
		3	1	0	4
	Prerequisite(If any for the student)	Engineering Mechanics and Strength of Materials			
V	Course Content	<ul style="list-style-type: none"> • Introduction: Properties of structural steel, Factor of safety, Loads and load combinations, Introduction to working stress method, Introduction to different types of steel structures and members • Concepts of Limit State Design: Ultimate limit state and serviceability limit state, Partial safety factors, Concept of plastic analysis of beams and frame structures • Connection Design: Types of connections: bolted and welded connections; Efficiency of connection, Design of simple connection, Design of eccentric connection, Design of column base • Design of Tension Member: Steel members subjected to axial tension, Limit state design of tension member • Design of Compression Member: Steel members subjected to axial compression, Eulers theory, Effective length, Slenderness ratio, Mode of failure for a column, Limit state design of compression members, Design of built-up compression members: laced and battened columns, Design for compression with bending • Design of Truss: Introduction to types of loading on industrial structures with truss, Effect of wind load, Design of truss members, Types of connection in truss, Design of truss connection • Design of Flexure Member (Beam): Limit state design of unrestrained and restrained beams, Design of Beam-Column, Design of base plate, Introduction to design of plate girder • Design Project: Analysis of assigned steel structure using Staad Pro. software, Design of typical compression, tension and flexural member from the assigned steel structure using MS excel/Matlab program and manual calculations 			
VI	Text/References	<ol style="list-style-type: none"> 1. IS 800-2007, General Construction in Steel – Code of Practice, Bureau of Indian Standards, New Delhi 2. IS 875 - Part I to V, Indian Standard Code of Practice for Design Loads (Other than Earthquake) for Buildings and Structures, Bureau of Indian Standards, New Delhi 3. N. Subramanian, Steel Structures - Design and Practice, Oxford University Press, New Delhi 4. G. Ballio and F M Mazzolani, Theory and Design of Steel Structures, Chapman and Hall, London 5. S. K. Duggal, Design of Steel Structures, Tata McGraw-Hill Publishing Company Limited, New Delhi 6. S. Ramamrutham, Design of Steel Structures, Dhanpat Rai Publishing Company, New Delhi 			

		<p>7. S. S. Bhavikatti, Design of Steel Structures (By Limit State Method as Per IS: 800-2007), I. K. International Publishing House Private Limited, New Delhi</p> <p>8. L. S. Negi, Design of Steel Structures, Tata McGraw-Hill Publishing Company Limited, New Delhi</p> <p>9. Other relevant Indian Standard codes</p>
VII	Any other Remarks:	

Civil Engineering Department

Semester : V

I	Course Code	CE 214002			
II	Course Title	Irrigation and Water Supply Engineering			
III	Credit Structure	L	T	P	C
		3	2	0	5
	Prerequisite(If any for the student)	Fluid Mechanics and Hydrology and Hydraulic Structures			
V	Course Content	<p>Part-I Irrigation Engineering:</p> <ul style="list-style-type: none"> • Introduction: Definition, Necessity of irrigation, Types of irrigations, Techniques of water distribution in the farms. • Irrigation Demand: Crop water requirement, Duty, Delta, Irrigation Efficiencies, Optimal water use, Consumptive use and its estimation, Consumptive Irrigation Requirement, Net Irrigation Requirement, Soil-Moisture-Irrigation Relationship. • Canal Irrigation System: Important definitions of canal irrigation system, Alluvial and Non-alluvial Canals, Alignment of canals, Distribution system for Irrigation canals, Design capacity of Irrigation Canal, Losses of water in canals, Canal regulation. • Sediment transport in Irrigation Channels: Importance, Forms of bed formation, Mechanics of Sediment Transport, Shield's Entrainment motion, Estimation of Suspended and Bed Loads, • Design of Irrigation Channels: Stability of channel slopes, Design of stable channels, Design procedure for irrigation canals, Maintenance of irrigation canals. • Lining of Irrigation Channels: Advantages and Economics of Lining, Design of Lined Canals, Different Types of Linings, Construction Methods and Usefulness of Lining of Irrigation Canals. <p>Part-II Water Supply Engineering:</p> <ul style="list-style-type: none"> • Estimation of water demand: Various types of demands, Per-capita demand and factors affecting it. Variation in demands, Design periods, Population forecasting methods. • Transporting water through conduits: Various types of conduits, Hydraulics of Flow, Flow in pipe system, Factors acting on pressure conduits, Types of pipes and pipe appurtenances. • Distribution system for water supply: Layout of distribution networks, Methods of water distributions, Pressure in the distribution system, System of Supply, Distribution reservoirs, Wastage of water in distribution networks, Design and analysis of distribution networks, Appurtenances in the distribution system. 			
VI	Text/References	<ol style="list-style-type: none"> 1. Irrigation Engineering and Hydraulic Structures, Santosh Kumar Garg, Khanna Publishers. 2. Irrigation Theory and Practice, by A. M. Michael, Vikas Publishing House. 3. Water Supply Engineering, Santosh Kumar Garg, Khanna Publishers. 4. Design of Water Supply Pipe Networks, Prabhata K. Swami and Ashok K. Sharma, Wiley and Sons Inc. Publication. 			

VII	Any other Remarks:	
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