DESIGN OF ADVANCED CONCRETESTRUCTURES

II Semester: ST								
Course Code	Category	Ho	urs / W	'eek	Credits	Maximum Marks		
DCTD14	Elective	L	Т	Р	С	CIA	SEE	Total
BS1B10		3	0	0	3	30	70	100
Contact Classes: 45	Tutorial Classes: Nil	Practical Classes: Nil		Total Classes: 45				

I. COURSE OVERVIEW:

Design of reinforced concrete structures is an introductory design course in civil engineering. In this course, basic elements governed by bending, shear, axial forces or combination of them are identified and are considered as building blocks of the whole structure. The design will be done as per IS 456:2000.

II. COURSE OBJECTIVES:

The student will try to learn:

- I. The design of special structures by understanding their behaviour in terms of shear force and bending moment.
- II. Design and prepare detail structural drawings for execution citing relevant IS codes.
- III. The Design independently civil engineering structures as per the requirements of client and provide detailed design drawings, quality control reports during construction for ensuring quality and economical structures.

III. COURSE OUTCOMES:

After suc	cessful completion of the course, students should be able to:	
CO 1	Understand the behaviour of reinforced concrete under flexure and shear for designing beams, slabs and columns under various load condition	Understand
CO 2	Explain the concepts of plastic hinge and plastic moment for understanding the redistribution of moments and moment rotation characteristics of reinforced concrete members	Understand
CO 3	Analyse flat and ribbed slabs under given loading for designing and obtaining the reinforcement detailing in end and middle strips of the slab	Analyse
CO 4	Analyse the load distribution in deep beams for designing and fixing of reinforcement details in deep beams	Analyse
CO 5	Develop the concept of axial, uni-axial and bi-axial loading on compression members for designing the same to meet the safety and serviceability conditions.	Apply
CO 6	Analyse the soil properties for designing various types of footings for transferring the superimposed loads safely to the soil beneath.	Analyse
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UNIT-I	DESIGN PHILOSOPHY	Classes: 09

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Modeling of Loads, Material Characteristics			
UNIT-II	REINFORCED CONCRETE	Classes: 09	
P-M, M-phi H	Relationships, Strut-and- Tie Method, Design of Deep Beam and Corbel.		

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UNIT-III	ANALYSIS AND DESIGNING OF SHEAR WALLS	Classes: 09			
Introduction, fundamental concepts, types of shear walls, rigidity and relative rigidity of a shear wall.					
Design considerations for shear walls, Design of Shear Wallsas per IS code & ACI code,					
UNIT-IV	UNIT-IV DESIGN OF SHEAR AND TORSION				
Compression	Compression Field Theory for Shear Design, Design against Torsion; IS, ACI and Euro code.				
UNIT-V	UNIT-V STEEL STRUCTURES				
Stability Design, Torsional Buckling - Pure, Flexural and Lateral, Design Of Beam-Columns, Fatigue Resistant Design, IS code, AISC Standards and Euro code					
Text Books:					
 Pillai S. U. and MenonD, 'Reinforced Concrete Design", Tata McGraw-Hill, 3rdEdition, 1999. Subramaniam N, "Design of Steel Structures", Oxford University Press, 2008. Park R.and Paulay T, "Reinforced Concrete Structures", John Wiley & Sons, 1995 					
Reference B	Reference Books:				
 Varghese P. C, "Advanced Reinforced Concrete Design", Prentice Hall of India, New Delhi. Hsu T. T. C. and Mo Y. L, "Unified Theory of Concrete Structures", John Wiley & Sons, 2010. SalmonC. G., Johnson J. E. and Malhas F. A. "Steel Structures Design and Behavior Emphasizing Load and Resistance Factor Design", Pearson Education, 5th Ed, 2009. Ramchandra, "Design of Steel Structures", Vol. II, Standard Book House, Delhi. Neal B G. "Plastic Methods of Structural Analysis" Chapman and Hall London 					
Web References:					
1. https://	1. https://lecturenotes.in/subject/179/design-of-advanced-concrete-structures-dacs				
E-Text Books:					
1. http://n	1. http://nptel.ac.in/downloads/105105104/				