Devi Ahilya Vishwavidyalaya, Indore, India Institute of Engineering & Technology					III Year B.Tech. (Civil Engineering)	
Course Code & Name	**Instructions Hours per Semester and Credits**					
5RVPC1 Design of RCC Structures – II	**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**	**90**	**3**
	20	**10**	**0**	**60**		

Course Learning Objectives:

1. To impart knowledge of the general behavior of advanced reinforced concrete structures.
2. To understand the principles involved in analysis and design of advanced reinforced concrete structures.
3. To learn about the methods of design of reinforced concrete Multistory Buildings
4. To learn about the methods of reinforced concrete Water Tanks
5. To understand the principles of prestressed concrete for design of prestressed reinforced concrete members.

Prerequisites: Basic knowledge of subject RCC-I and structural mechanics

COURSE CONTENTS

Unit I

Design of Multistorey Buildings: Sway and non-sway buildings, Shear walls and other bracing elements

Unit II

Earth Retaining Structures: Cantilever type retaining walls, Counterfort type retaining walls

Unit III

Water Tanks: On-ground and underground tanks: square, rectangular, circular, Overhead tanks: square, rectangular, circular, Intze tanks

Unit IV

Bridges: T-beam and slab bridges, Designed for highway loading (IRC Loads)

Unit V

Prestressed Concrete: Concepts and materials of prestressing, Systems of prestressing and losses, Introduction to working and limit state design

NOTE: - All designs for **strength and serviceability** must strictly adhere to the latest versions of:

- IS: 456 – Plain and Reinforced Concrete Code
- IS: 13920 – Ductile Detailing of Reinforced Concrete Structures
- IS: 1893 – Criteria for Earthquake Resistant Design

- IS: 875 – Code of Practice for Design Loads
- IS: 3370 – Concrete Structures for Storage of Liquids
- IRC: 6 – Road Bridges, General Features of Design
- IRC: 21 – Standard Specifications and Code of Practice for Road Bridges
- **SP-16 (Design Aids for Reinforced Concrete)**

Course Outcome (CO):

CO. No.	CO	PO
CO1	Apply the code of practice for design of reinforced concrete structural members and elementary structural systems.	PO-1, PO-2, PO-5
CO2	Identify the general behavior of advanced reinforced concrete structures.	PO-1, PO-2, PO-4
CO3	Apply the design concept of cantilever and counterfort types of retaining walls	PO-1, PO-2, PO-3
CO4	Design the underground, elevated liquid and material storage structures.	PO-1, PO-2, PO-3
CO5	Apply the principles of prestressed concrete for the design of prestressed reinforced concrete members.	PO-1, PO-2, PO-3,

Books recommended:

1. Plain & Reinforced Concrete Vol. I & II – O.P. Jain & Jay Krishna
2. Advanced Reinforced Concrete Design – P.C. Varghese; Prentice Hall of India, New Delhi
3. Design of Reinforced Concrete Elements – Purushothman; Tata McGraw Hill, New Delhi
4. Reinforced Cement Concrete – Gupta & Mallick; Oxford and IBH
5. Design of Concrete Structure – B.C. Punmia & A.K. Jain; Laxmi Publications
6. Advanced Reinforced Concrete Design – N.K. Raju; CBS Publishers
7. Essentials of Bridge Engineering – D.J. Victor
8. Bridge Engineering – Ponnuswamy

CO-PO Relationship

CO	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12
5VLRC1.CO1	3	3			2							
5VLRC1.CO2	3	3		2								
5VLRC1.CO3	3	3	3									
5VLRC1.CO4	3	3	2									
5VLRC1.CO5	3	3	3									