ADVANCED STRUCTURAL ANALYSIS AND DESIGN

Course Code Category Hours / Week Credits Maximum Marks ACE016 Core L T P C CIA SEE 1 3 1 - 4 30 70 100 Contact Classes: 45 Tutorial Classes: 15 Practical Classes: Nil Total Classes: 60 COURSE OBJECTIVES: The course should enable the students to: Image: Course of the course should enable the students to: Image: Course of the course should enable the students to: Image: Course of the course should enable the students to: Image: Course of the course should enable the students to: Image: Course of the course should enable the students to: Image: Course of the course should enable the students to: Image: Course of the course should enable the students to: Image: Course of the course should enable the students to: Image: Course of the course should enable the students to: Image: Course of the course should enable the students to: Image: Course of the course should enable the students to: Image: Course of the course should enable the students to: Image: Course of the course should enable the students to: Image: Course of the course should enable the students to: Image: Course of the course should enable the students to: Image: Course of the course should enable the students to: Image: Course of the cour	VII Semester: CE								
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- 12. Understand the design of retaining walls.
- 13. Understand the design of water tanks.
- 14. Know the design concepts and IS code provisions for the flat slabs and deep foundations.

- 15. Understand the design of flat slab. 16. Understand the design of raft foundation. 17. Understand the design of pile foundation. 18. Know the design concepts and IS code provisions for the chimneys, bunker and silos. 19. Understand the design of chimney. 20. Understand the design of bunkers. 21. Understand the design of silos. UNIT-I MATRIX METHODS OF ANALYSIS Static and kinematic indeterminacy, stiffness and flexibility methods; Stiffness method of analysis for continuous beams including settlement of supports; Single storey portal frames including side sway, pin jointed determinate plane frames; Flexibility method of analysis for continuous beams up to three degree of indeterminacy. UNIT -II **APPROXIMATE METHODS OF ANALYSIS** Analysis of multi-storey frames for lateral loads: Portal method and cantilever method; Analysis of multistorey frames for gravity (vertical) loads; Substitute frame method.
 - Classes: 12 **DESIGN OF RETAINING WALLS AND TANKS** Classes: 12

Design of retaining walls.

Design of water tanks. Design concepts and IS code provisions.

UNIT -IV **DESIGN OF SLABS AND FOUNDATIONS**

Design of flat slabs, Design of raft and pile foundations; Design concepts and IS code provisions.

UNIT -V **DESIGN OF CHIMNEY, BUNKER AND SILOS**

Classes: 12

Classes: 12

Classes: 12

Design of chimneys, Design of bunkers and silos; Design concepts and IS code provisions.

Text Books:

UNIT -III

- 1. G S Pundit and S P Gupta, "Structural Analysis: A Matrix Approach", Mc Graw Hill Education Publishers, 2nd Edition, 2008.
- 2. S S Bhavikatti, "Structural Analysis- II", Vikas Publishing House Pvt. Ltd., 3rd Edition, 2009.
- 3. Varghese, "Advanced reinforced concrete structures", Prentice Hall of India Pvt. Ltd, 2009.
- 4. Pillai and Menon, "Reinforced Concrete Design", Tata McGraw-Hill Publishing Company, 2009.

Reference Books:

- 1. Devdas Menon, "Structural Analysis", Narosa Publishing House, 2nd Edition, 2008.
- 2. Devdas Menon, "Advanced Structural Analysis", Narosa Publishing House, 2nd Edition, 2009.
- 3. C S Reddy, "Basic Structural Analysis", Tata McGraw-Hill Education, 2001.
- 4. B C Punmia, Ashok Kumar Jain and Arun Kumar Jain, "Reinforced Concrete Structures", Vol. 2, Laxmi Publications, 2012.