

<b>IV Year - I Semester</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
	<b>4</b>	<b>0</b>	<b>0</b>	<b>3</b>

## **ADVANCED STRUCTURAL ENGINEERING**

### **(Elective-II)**

#### **Course Learning Objectives:**

The objective of this course is:

- Familiarize Students with Raft Foundations and Retaining walls
- Equip student with concepts of design of different types of RCC water tanks
- Understand Concepts of flat slabs
- Familiarize different types of Bunkers, Silos and Chimneys
- Understand different types of transmission towers

#### **Course Outcomes:**

At the end of this course the student will be able to

- Design raft foundations and different types of RCC retaining walls
- Carryout analysis and design of different types of RCC water tanks
- Solve the problems design of RCC Bunkers, Silos and Chimneys
- Understand various types of transmission towers and loading on them.

#### **SYLLABUS:**

**UNIT – I** Analysis and Design of Raft Foundations – Design of RCC Retaining walls: Cantilever and Counter fort

**UNIT – II** Analysis and Design of RCC Water Tanks, Circular and Rectangular types- Intze tank including staging.

**UNIT – III** Analysis and Design of Flat Slabs- Direct Design and Equivalent Frame Methods- Check for Punching shear

**UNIT – IV** Analysis and Design of Bunkers and Silos- Concepts of Loading

**UNIT-V** Analysis and Design of Chimney, Concepts of loading

**UNIT-VI** Introduction to Transmission Towers- Principles and procedures

**Text books:**

1. Reinforced Concrete Structures' Vol-2, B. C. Punmia, Ashok Kumar Jain and Arun Kumar Jain, Laxmi, publications Pvt. Ltd., New Delhi
2. Reinforced Concrete Structures, N. Subrahmanian, Oxford Publishers
3. Design Drawing of Concrete and Steel Structures, N. Krishna Raju University Press 2005.

**References:**

1. Essentials of Bridge Engineering, D. Johnson Victor, Oxford and IBM publication Co., Pvt. Ltd.
2. Reinforced concrete design, S. U, Pillai and D. Menon, Tata Mc.Grawhill Publishing Company

**Codes:** Relevant IS: codes.

**INTERNAL EXAMINATION PATTERN:**

The total internal marks (30) are distributed in three components as follows:

1. Descriptive (subjective type) examination : 25 marks
2. Assignment : 05 marks

**FINAL EXAMINATION PATTERN:**

The end examination paper should consist of Part A and Part B. part A consist of two questions in Design and Drawing out of which one question is to be answered. Part B should consist of five questions and design out of which three are to be answered. Weightage for Part – A is 40% and Part- B is 60%.