ADVANCED STRUCTURAL DESIGN (ELECTIVE-IV)

Course	Code:	13CE1154	L	Τ	P	C
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Course Educational Objectives: :

- To impart knowledge about the RC design of flat slabs, grid floors, and chimneys.
- To familiarize the student with knowledge of Bunkers, Silos and Voided slabs.

Course Outcomes:

- Students will demonstrate the ability to design reinforce concrete flat slabs, grid floors, and chimneys.
- Students will demonstrate the ability to design reinforce concrete Bunkers, Silos and Voided slabs.

UNIT-I

FLAT SLABS:

Introduction – Components of flat slab construction- Indian code Recommendations (IS : 456 -2000)- Direct design method – Equivalent frame method – Shear in flat slabs – Detailing of flat slabs- Reinforcement detailing and bar bending schedule need to be prepared.

UNIT-II

GRID FLOORS:

Introduction – Analysis and design of grid floors – analysis of rectangular grid floors by Timoshenkos plate theory- Reinforcement detailing and bar bending schedule need to be prepared.

(12 Lectures)

(14 Lectures)

195

BUNKERS AND SILOS:

Introduction - difference between bunker & silo - concepts of loading and design.

UNIT-IV

UNIT-III

CHIMNEYS:

Introduction to chimneys - Parts of chimney - Stress in RC shafts due to self weight and wind loads - Stress due to temperature difference -Design of RC chimneys.

UNIT-V

(14 Lectures)

PLATE GIRDER BRIDGES:

Analysis and design of Plate girder bridges- Detailed drawings must be prepared.

TEXT BOOKS:

- Varghese P.C., "Advanced Reinforced Concrete Structures", 1. 6th Edition, Prentice Hall of India Pvt. Ltd., 2005.
- Punmia B.C., Ashok Kumar Jain and Arun Kumar Jain, 2. "Reinforced concrete structures", Vol- 2, 5th Edition, Laxmi publications Pvt. Ltd., New Delhi, 2007.
- Duggal S.K., "Design of Steel Structures", 3rd Edition, Mc 3. Graw Hill Publishers, New Delhi, 2009.

REFERENCES:

- Pillai S.U, and Menon D., "Reinforced Concrete Design", 1. 2nd Edition, Tata Mc Graw hill Publishing Company, 2008.
- Bhavikatti S.S., "Advanced RCC Design", 4th Edition, New 2. Age International Pvt. Ltd., 2008.

3. Relevant IS: codes.



(10 Lectures)

(12 Lectures)