



INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal - 500 043, Hyderabad, Telangana

COURSE CONTENT

DESIGN OF HIGH-RISE STRUCTURES								
II Semester: ST								
Course Code	Category	Hours / Week			Credits	Maximum Marks		
		L	T	P		C	CIA	SEE
BSTD16	Elective	3	0	0	3	40	60	100
		Contact Classes: 48		Total Tutorials: Nil		Total Practical Classes: Nil		Total Classes: 48
Prerequisite: Reinforced Concrete Structures Design and Drawing, Steel Structures Design and Drawing								

I. COURSE OVERVIEW:

The high-rise building is generally defined as one that is taller than the maximum height. The foundations of high-rise buildings must sometimes support very heavy gravity loads, and they usually consist of concrete piers, piles, or caissons that are sunk into the ground. Skyscrapers are created using a steel skeleton structure. Giant girder grids are formed by riveting metal beams end to end to form vertical columns. At each floor, the vertical columns are connected to horizontal girder beams to help strengthen and reinforce the structure.

II. COURSE OBJECTIVES:

The student will try to learn:

- I. The Analysis, design and detailing of Transmission/ TV tower, Mast and Trestles with different loading conditions.
- II. The design principles and techniques such as P-Delta effect, soil structure interaction for efficient design of high rise structures.
- III. The behavior of various structural systems under extreme loading conditions.

III. COURSE OUTCOMES:

After successful completion of the course, students should be able to:

- CO 1 Analyze various components involved in design of chimneys
- CO 2 Identify about different systems and various loads in tall structures.
- CO 3 Identify about various structural systems and their behavior.
- CO 4 Interpret static, dynamic and stability analysis of various systems.
- CO 5 Classify various Flooring systems and modern progress of tall structures.
- CO 6 Develop Application of software in analysis and design.

IV. COURSE CONTENT:

MODULE-I: DESIGN OF TRANSMISSION/ TV TOWER (09)

Mast and trestles: Configuration, bracing system, analysis and design for vertical transverse and longitudinal loads.

MODULE-II: ANALYSIS AND DESIGN OF RC AND STEEL CHIMNEY (10)

Foundation design for varied soil strata.

MODULE-III: TALL BUILDINGS (10)

Structural Concept, Configurations, various systems, factors affecting growth, height and structural form.

Gravity load, dead load, live load, live load reduction technique, impact load, Wind and Seismic loads, combination of load.

MODULE-IV: FIREFIGHTING PROVISION OF TALL BUILDINGS (10)

Dynamic approach, structural design considerations and IS code provisions. Firefighting design provisions.

MODULE-V: APPLICATION (09)

Application of software in analysis and design.

V. TEXT BOOKS:

1. Varyani U. H, “Structural Design of Multi-storeyed Buildings”, South Asian Publishers, New Delhi, 2nd edition, 2002.
2. Taranath B. S, “Structural Analysis and Design of Tall Building”, McGraw Hill, 1988.
3. Shah V. L. & Karve S. R., “Illustrated Design of Reinforced Concrete Buildings (GF+3storeyed)”, Structures Publications, Pune, 2013.

VI. REFERENCE BOOKS:

1. Smith Byran S. and Coull Alex, “Tall Building Structures”, Wiley India. 1991.
2. Wolfgang Schueller, “High Rise Building Structures”, Wiley., 1971

VII. ELECTRONICS RESOURCES:

1. <http://nptel.ac.in/courses/105106113/13>
2. <http://www.byggmek.lth.se/fileadmin/byggnadsmekanik/publications/tvsm5000/web5213.pdf>

VIII. MATERIALS ONLINE:

1. Course Template
2. Tutorial Question Bank
3. Assignments
4. Model Question Paper – I
5. Model Question Paper - II
6. Lecture Notes
7. Power point presentation