

Branch Name:	Civil Engineering
Semester/Year:	Semester III / Second Year
Subject Title:	Design of Tall Structures (Elective - IV)
Subject Code:	1ET2060302
Pre-requisite:	Design of concrete Structures, Design of steel structure

Course Objective:

With the rapid development of infrastructure facilities, large number of tall structures like tall buildings, chimneys, cooling tower, transmission line towers, microwave towers etc. are being designed and constructed across the globe. The course on Design of Tall Structures acquaints the structural engineering students to analyze and design such structures as per Indian Standard code of practice.

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture	Tutorial	Practical	Credit	Theory		Practical		Total
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
3	2	-	5	60	40	-	-	100

Subject Contents				
Sr. No	Topic	Total Hours	Weightage (%)	
01	Tall Building: Structural systems for (a) floor systems (b) vertical load resisting systems (c) lateral load resisting systems, and (4) connections, Interaction of frames and shear wall, Twist of frames, Effects of opening, Analysis of coupled shear walls; Various methods of analysis like static linear/nonlinear, dynamic, buckling analysis, construction stage analysis etc.; Structural control and energy dissipation devices for tall building.	12	30	
02	Chimney: Design Factors, Stresses due to temperature, components, Platform and Safety ladders, Steel stacks, Refractory linings, Caps and foundation	08	20	
03	Cooling towers: types, components, design forces, analysis and design	11	25	
04	Transmission Line and Microwave towers: types of loads, Tower Configuration, Analysis and Design of towers	11	25	

Course Outcome:

After learning the course, the students should be able to design:

1. Tall buildings,
2. Chimney,
3. Design Cooling Tower,
4. Transmission Line towers and,
5. Microwave towers.

List of Tutorials:

1. Case study on tall buildings of the world, India and Gujarat.
2. Design of tall structure based on the syllabus. The design report shall consist of full analytical treatment, design procedure, references and all necessary drawings in the form of neat dimensioned sketches.

List of Reference Books :

1. Tall buildings - B. S. Taranath
2. Handbook of Concrete Structures - Mark Fintel
3. Tall buildings - Coull and Smith
4. Design of Multi-storeyed structures - U. H. Variani
5. Tall Chimneys: Design & Construction - S. N. Manohar
6. Transmission Line Structures - Santhakumar & Murthy
7. IS:6533 (Part 2) –Code of Practice for Design and Construction of Steel Chimney
8. IS:4998 (Part 1)- Criteria for Design of Reinforced Concrete Chimneys.
9. IS: 4091 Code of Practice for Design and Construction of Foundations for Transmission Line Towers and Poles

E – Resources :

<http://nptel.ac.in/>

<http://www.ctbuh.org/>

<http://www.emporis.com/>

<http://skyscrapercenter.com/>