Overview:- This course introduces you to conceptualising contemporary and emerging trends in the growth of tall buildings and urban habitat, including the use of green principles in modern structures and urban developments. You will examine hybrid structural systems, high performance construction materials, structural analysis methods and design tools involved in the design of tall buildings. Wind engineering, wind acceleration and user comfort, column shortening and design for lateral stability will be discussed through case studies of iconic buildings.

1. Introduction of Design philosophy

- Definition of skyscrapers
- Lateral load design philosophy
- Concept of premium for height
- Relative Structural cost
- Development of High Rise Architecture

2. Wind Effects :

- Design consideration
- Nature of Wind
- Extreme Wind Conditions
- Characteristics of wind
- Code wind loads
- Cladding pressures
- Wind tunnel Engineering

3. Seismic Design:

- Tall Building Behavior during Earthquake
- Philosphy of Earthquake Design
- Static Approach
- Time History Analysis
- Practical Method of Dynamic Analysis

4. Lateral system for Steel Buildings:

- Introduction
- Semi rigid Frame
- Rigid Frames
- Braced Frame

5. Lateral system for concrete Buildings:

- Frame action of column and slab system
- Flat slab and shear walls
- Coupled shear walls
- Rigid Frame with Haunch Girders

6. Gravity systems for the buildings:

- Introduction
- Loads
- Metal deck system
- Open-web joint system

7. Floor system

- Pre - stressed concrete system

8. Tall building Design and Analysis:-

- Introduction
- Preliminary Hand Calculations
- Lumping Techniques
- Partial computer models

9. General computer analysis and Technique

- Special techniques for shear walls
- Finite element analysis

Warm Regards,
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