

YAP 563E – Structural Design of Tall Buildings

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Objective

The objective of this course is to teach design approaches that are used in practice for tall building structures under gravity and lateral loads.

Background

Structural design of tall buildings is an important area in structural engineering, and the number of tall buildings in all over the world is constantly increasing. Successful structural design of a tall building is a challenging task and requires many years of practical experience with completed projects. This course has -by no means- the intention of teaching the complete subject in detail. Becoming proficient in the design of tall buildings is a matter of practice, not learning through a course, and can only be achieved by actually doing it under the supervision of more experienced engineers. Therefore, students should not expect to “learn;” rather, they should expect to be exposed to the topics as preparation to their possible future practical experience, which is adequate for a graduate course. In overall, the course is tailored for engineers and students, who is and will be working on the structural design of tall buildings.

Course Format

The course will cover a broad range of structural design topics for tall buildings at a medium-to-high level (low level coverage: more detail with theory, high level coverage: less detail with practice). The students are expected to have a general understanding of the topics rather than the ability of full implementation. In addition to the material covered, the students will be working on a tall building project, in groups or as individuals. It is during the project work that the students are expected to do reading and research on a specific topic to correctly implement it with more details.

Out-of-Class Activities

There are several out-of-class activities planned for this course as follows:

- Master Classes: Master classes given by engineers, academicians and consultants prominent in the design of tall buildings are planned to be organized. Topics may vary from a specific design topic to design of a tall building project
- Site Visits: Site visits to some of the major tall building projects are planned.

Textbook

There is no textbook for the course. Students will be asked to follow major reference books and research papers on tall buildings. Following references are suggested as a starting point:

1. Taranath, B. S. “Structural Analysis and Design of Tall Buildings,” Marcel Dekker, New York, U.S.A., 2011.

2. Taranath, B. S. "Reinforced Concrete Design of Tall Buildings," CRC Press, Florida, U.S.A., 2010.
3. Taranath, B. S. "Structural Analysis and Design of Tall Buildings: Steel and Composite Construction," CRC Press, Florida, U.S.A., 2012.
4. Smith, B. S. and Coull A. "Tall Building Structures: Analysis and Design," John Wiley and Sons, New York, U.S.A., 1991.
5. Schodek, D. "Structures," PH Publishing, 2014.

Grading

Grading will mostly depend on the homework and the project. Homework topics will be towards the project. There will be one midterm. Tentative grading policy is as follows:

- Midterm: %20
- Homework: %40
- Project: %40

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[IN PROGRESS]