ARC 462: STRUCTURES III: ANALYSIS & LATERAL FORCES 3 credits

Course Description: Continuing study of framing materials and systems for buildings using advanced concepts of structural analysis. Included are earthquake resistant structures, wind resistant design, composite beams, plastic theory, statically indeterminate structures, long spans, moment distribution, multi-story structures, and other related topics. Not for graduate credit. Prerequisite: ARC 362. Restricted to major.

Course Goals and Objectives:
Upon completion of this course, the student will:
1. Define and solve problems using the fundamentals of moment distribution.
2. Solve problems involving statically indeterminate structures.
3. Apply the theories of wind-resistant design to practical structural problems and be able to solve problems involving wind analysis and design.
4. Apply the theories of earthquake design to practical structural problems.
5. Become familiar with the fundamentals of composite design and be able to solve problems involving composite design.
6. Identify several special structural systems used in modern buildings and be able to assign loads and determine stresses.
7. Solve problems involving plastic and ultimate strength theories.
8. Gather information regarding structural failures in buildings and analyze such information, seeking causes and solutions.

NAAB Student Performance Criteria
B.9: Structural Systems  B.12: Building Materials and Assemblies

Topical Outline: Percentage of Time
I. Moment Distribution 12.5%
II. Statically Indeterminate Structures 12.5%
III. Multi-Story Framing 12.5%
IV. Earthquake Resistant Design 12.5%
V. Composite Design 12.5%
VI. Special Structural Systems 12.5%
VII. Plastic and Ultimate Strength Theories 12.5%
VIII. Structural Failures in Buildings 12.5%

Textbooks

Offered: Spring semester

Faculty: Dobbins