

**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 earth- quake 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**

Ambrose, J. *Design for Earthquakes*. New York: John Wiley & Sons, Inc. 1999.

**Offered:** Spring semester

**Faculty:** Dobbins