ARCHITECTURAL STRUCTURES II

Syllabus

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Section 001 9:30-10:30 MF

Recitation Sections
with GSI's
9:30-10:30 W
10:30-11:30 W

CATALOG DESCRIPTION

This course covers the basic principles of elastic behavior for different materials such as wood, steel, concrete and composite materials, and compares the properties and applications of materials generally. It investigates cross sectional stress and strain behavior in flexure and in shear, and torsion as well as the stability of beams and columns. The qualitative behavior of combined stresses and fracture in materials is also covered. Prerequisite: ARCH 314

OBJECTIVES

Students are introduced to the fundamentals of analysis and design of simple structural members in steel, wood and concrete. Basic code requirements strength, stability and serviceability are discussed. Both vertical and lateral loads based on ASCE – 7 are considered. Principles of composite materials design, structural continuity, and combined stresses are covered.

ORGANIZATION

A series of lectures are regularly given on each Monday and Friday. The lectures cover concepts and procedures, including demonstrations. Each Wednesday the class is broken into smaller sections for recitation labs in which problems can be solved with more student/instructor interaction. Solutions to homework problems are entered online through the course website. Three tests are used to measure student comprehension of the material. In addition, a construction/testing project is used to allow students an opportunity to apply concepts to a physical design. Computer facilities, including software, are available for supporting computations. Facility and equipment for structural model testing are also available.

TOWER PROJECT

A group project to design, construct and test a compression structure will be assigned during the semester. It will be documented with both preliminary and final reports which together count 250 pts. Details are given on the course web site: http://www.structures.tcaup.umich.edu/project/project.php

TEXT

Two textbooks are recommended for the course: *Structures* by Schodek and Bechthold, and *Statics and Strength of Materials for Architecture and Building Construction* by B. Onouye and K. Kane (older versions of either are ok – and less expensive) A course pack as well as other material is available on the course web site:
http://www.structures.tcaup.umich.edu/
Additional resources are also posted to a course Canvas site.

EVALUATION

Evaluation is based on an accumulated total number of points. Points are earned based on performance in all course activities – topic quizzes (Canvas), homework problems, recitation labs, quizzes in lectures and the bridge project. Grades are based on the total number of points achieved during the semester:

25 lecture quizzes, 10pts each	250
13 topic quizzes, 20pts each	260
12 homework problems, 5 pts / question	860
tower testing project	250
9 recitation labs, 20 pts each	180
TOTAL	1800

The point scale relates to a full range of letter grades assigned as follows:

		A	1680	A-	1620
B+	1560	B	1500	B-	1440
C+	1380	C	1320	C-	1260
D+	1200	D	1140	D-	1080
		E	1079 and below		

By University policy the minimum passing grade for undergraduates is a D (1140) and for graduate students it is a C (1320).