

ARCHITECTURAL STRUCTURES II Syllabus

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Office Hours:
Tue, Thur. 9:00-10:00
Fri. 2:00-3:00

Section 001 10:00-11:00 MF
Sections 002 10:00-11:00 W
Sections 003 11:00-12:00 W
Sections 004 10:00-11:00 W
Sections 005 11:00-12:00 W
Sections 006 10:00-11:00 W

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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.

EVALUATION

Evaluation is based on an accumulated total number of points. Points are earned based on performance in all course activities – 3 tests, 13 homework problems, 8 recitation exercises and the tower project. Grades are assigned according to the number of points achieved during the semester:

| | |
|-----------------------------------|------------|
| 3 Tests, 300pts each | 900 |
| Homework problems, 5pts/ question | 930 |
| Bridge testing project | 250 |
| 8 Recitation projects, 20pts each | 160 |
| Lecture notes | <u>160</u> |
| TOTAL | 2400 |

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

| | | |
|---------|------------------|---------|
| A+ 2320 | A 22400 | A- 2160 |
| B+ 2080 | B 2000 | B- 1920 |
| C+ 1840 | C 1760 | C- 1680 |
| D+ 1600 | D 1520 | D- 1440 |
| | E 1368 and below | |

By University policy the minimum passing grade is a D (1520). The highest recorded grade in Architecture is an A.

HOMEWORK PROBLEMS

A set of homework problems covering the primary aspects of the course will be given to each student. Each student will have a unique set of problems to solve. Students submit solutions online for scoring. Each problem may be worked up to 3 times (3 different data sets) for credit. The best score from **one** of the 3 trials will be recorded. Late problems will be penalized at -5% per day up to a maximum of -35%. Problems are accessed through the course web site. A FAQ which explains the policy concerning the problems is also posted.

EXERCISES

Exercises are provided in the text with additional worked problems posted online. Students are expected to read the section to be covered in the textbook before class, and work through the exercises by the next class period. The exercises will not be collected or scored, but solutions can be discussed in the Wednesday recitations.

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.

COURSE EVALUATION

Online course evaluations will be available at the end of the term. Every student is encouraged to fill out the evaluation. Any comments or suggestions for the ongoing improvement of the course are most welcome.

CLASS ATTENDANCE

Roll is not taken during lecture, however attendance is encouraged to better understand the material. Given the complexity of some of the material covered, it may take more than one exposure to understand it. Videos of lectures as well as slides are available on the course website. These are intended as supplemental study aids or as a backup for a missed classes on account of illness or fieldtrips. The posted videos are not a substitute for regular class attendance.

UNIVERSITY AND SCHOOL SERVICES AND POLICIES

Plagiarism is knowingly presenting another person's ideas, findings, images or written work as one's own by copying or reproducing without acknowledgement of the source. It is intellectual theft that violates basic academic standards. In order to uphold an equal evaluation for all work submitted, cases of plagiarism will be reviewed by the individual faculty member and/or the Program Chair. Punitive measures will range from failure of an assignment to expulsion from the University.

If you think you need an **accommodation for a disability**, please let me know at your earliest convenience. Some aspects of this course, the assignments, the in-class activities, and the way the course is usually taught may be modified to facilitate your participation and progress. As soon as you make me aware of your needs, we can work with the Services for Students with Disabilities (SSD) office to help us determine appropriate academic accommodations. SSD (734 - 763-3000; <http://ssd.umich.edu>) typically recommends accommodations through a Verified Individualized Services and Accommodations (VISA) form. Any information you provide is private and confidential and will be treated as such.

The university provides vast **resources for writing** instruction and assistance. For multi-lingual students, Theresa Rohick (trohick@umich.edu) offers office hours in the A&A building. Also the resources of Sweetland Center for Writing are available for both undergraduate and graduate students: <http://lsa.umich.edu/sweetland>

For **other general academic policies** of the college please refer to the college web site:

http://taubmancollege.umich.edu/students/academic_policies/general/