CE 389 MATERIALS TESTING LABORATORY
SPRING 2017

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Office Hours: Tue: 11:00-12:00, Fri: 11:00-12:00
Text: Design and Control of Concrete Mixtures, 15th Edition, Portland Cement Association

Course Description:

This course is meant to supplement the students' understanding and appreciation of material behavior and structural theory through personal contact with and observation of tests on common engineering materials and systems. It is also intended to teach a student how to prepare and submit a brief report on an experiment. Concrete mix design and concrete testing are the first topics treated. Included under these topics are concrete aggregate tests, the mechanics of computing mix design quantities, batching and testing of fresh concrete and the actual testing of concrete cylinders. Concrete testing is followed by tests of steel and wood in compression, tension, bending and torsion.

Objective:

a) To familiarize the students with the principal structural materials and to give them a knowledge of their properties and their behavior under various conditions of loading.
b) To acquaint the students with the standard technique of testing materials and train them in making accurate observations of phenomena and correct interpretations of results.
c) To afford training in working up test data and preparing reports embodying the results of the tests.
d) To demonstrate experimentally the principles of strength of materials, which course should precede or accompany this course.
e) To familiarize the students with testing machines and various procedures and learn how to develop a new testing protocols for conducting research.

Laboratory Reports:

Lab reports are group work, but every member of the group has to submit their own calculations. You will get 1 week time after each experiment to submit the report. No reports will be accepted after that time. Reports should be prepared according to the guidelines that are given in the laboratory manual. Please note that the report will be checked for plagiarism with the entire report database until date and failing to pass that criteria will be reported directly to Head of Department and suitable action will be taken accordingly.

Grading:

The breakdown of the grading scheme is shown below.

Midterm: 20%
Lab Reports: 30%
Final: 35%
Term Project: 10%
Participation and attendance: 5%

Absence:

If you need to be absent from the class for justifiable reasons (sickness, family obligations, jury duty etc.) you must inform the instructor in advance. The instructor would report to the Registrar's Office if the total absence exceeds 3 classes (for example: if you miss 2 Monday lectures and 1 Monday/Wednesday lab), which may result in administrative drop from the class. Covered-toe shoes and eye protection (goggles, glasses, sunglasses, etc.) are required by the department during all material testing. Failure to do so will be counted as absence from the class.

Tentative schedule:

Date	Experiment name
1/23 & 1/25	Sieve analysis
1/30 & 2/1	Max dry bulk density of aggregate blend
2/6/ & 2/8	Specific gravity and adsorption of fine and coarse aggregate
2/13 & 2/15	Trial mixing and casting of concrete (Hand mixing): Unit weight and yield of freshly mixed concrete, Slump, Air content of freshly mixed concrete by volumetric method
2/20 & 2/22	MIDTERM
2/27 & 2/29	Compression test on wood
3/6 & 3/8	Flexural test on wood
3/11-3/19	SPRING BREAK!
3/20 & 3/22	Concrete mixing and casting, Unit weight and yield of freshly mixed concrete, Slump of hydraulic cement concrete, Air content of freshly mixed concrete by volumetric method

Date	Experiment name
3/27 & 3/29	7 days Compressive strength of cylindrical concrete specimens
4/3 & 4/5	14 days Compressive strength of cylindrical concrete specimens
4/10 & 4/12	21 days Compressive strength of cylindrical concrete specimens
4/17 & 4/19	28 days Compressive strength of cylindrical concrete specimens + Flexural strength of concrete + Splitting tensile strength of cylindrical concrete specimens
4/24 & 4/26	Tensile test and modulus of elasticity of steel
5/1 & 5/3	Torsion test on steel
5/5/17	FINAL EXAM