CIVE 302 – Evaluation of Civil Engineering Materials
Fall 2015
Lecture: TR 9:00-9:50am TILT 221

Instructor:
Dr. Rebecca Atadero
Office: A207J Engineering
Email: Rebecca.Atadero@colostate.edu
Phone: 491-3584
Office Hours: 10:00-11:00am Tuesdays and Thursdays, please also feel free to stop by anytime my door is open
Course Website: Canvas

Teaching Assistants:
Aura Lee Harper-Smith AuraLee.Harper-Smith@colostate.edu Labs 1&4 OH: M&W 1-2pm
Kyle Nickless nickless@rams.colostate.edu Labs 2&3 OH: M 10am-12pm
Assal Hussein ahussein@rams.colostate.edu Lab 5 OH: M&W 12-1pm

Office: A10B Engineering
Phone: 491-6788

Course Description: In this course students are introduced to the properties and uses of materials commonly used in civil engineering applications and the design constraints and tradeoffs involved in material selection. The course covers standards describing materials and tests for determining material properties and includes a lab component where students conduct tests, analyze the resulting data, and prepare technical reports. Principles from an introductory materials science course such as material microstructure and failure theories are briefly introduced. Concepts related to sustainability are also introduced, including Life Cycle Analysis and sustainability rating systems. Civil engineering failures of the past are included through readings and course discussion.

Course Objectives:
A student successfully completing this course should be able to:
1. Describe the basic properties of a variety of civil engineering materials including metals, concrete, aggregates, asphalt, and wood.
2. Explain the importance of standards in the context of civil engineering materials, and know how to locate and use relevant standards.
3. Follow standards to conduct tests of material properties and perform the calculations necessary to interpret test results.
4. Express the results of tests in the form of a letter report.
5. Identify and explain significant considerations in choosing a material for a specific application and discuss design trade-offs.
6. Define sustainability and explain the role of material selection in sustainable design.
7. Locate, interpret and evaluate information about materials that can be used for design and decision making.

ABET Outcomes Addressed:
(a) an ability to apply knowledge of mathematics, science, and engineering
(b) an ability to design and conduct experiments, as well as to analyze and interpret data
(e) an ability to identify, formulate, and solve engineering problems
(f) an understanding of professional and ethical responsibility
(g) an ability to communicate effectively
(i) a recognition of the need for, and an ability to engage in life-long learning
(j) a knowledge of contemporary issues
(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Required Texts:

Prerequisites: CHEM 111 General Chemistry I
CIVE 203 Engineering Systems and Decision Analysis
CIVE 360 Mechanics of Solids

Calculators: FE approved calculators must be used for exams.

Assignments and Grading:
Lab attendance is mandatory. If you miss more than two labs without properly documented university excused absences you will fail the course. If you know you will need to miss a lab, consult with your TA BEFORE you miss it.

You must have a passing grade in both the lab and lecture components to pass the class.

Final grades will be assigned using +/- grading. I generally do not have a curve in my courses. Remember that your grade is a reflection of your work throughout the semester. You need to start worrying about your final grade NOW. If you wait until December it will be too late. The graded components of the course are described below.

Laboratory Reports (25%) There will generally be a report due each week in the laboratory sections. Details on lab activities and report requirements will be given in lab each week. Most reports will be completed by individual students, but some will be completed in groups. All lab reports are due at the start of lab. Late reports will be accepted for up to one week with a 50% grade deduction. No work will be accepted thereafter.

Homework Assignments (10%) This course will have periodic homework assignments. In some cases the assignments will be based on lecture material, in other cases they may help you prepare for an upcoming lab. I anticipate that some weeks you will have time to work on your assignments in groups during lab. Homework assignments may be due during lecture or lab, as indicated on the assignment. NO LATE ASSIGNMENTS WILL BE ACCEPTED.

Exams (30%) This course will have two midterm exams. Each exam will be worth 15% of the course grade. The exams will be given during lecture on the dates indicated in the attached Course Schedule. We will discuss exam topics and format in lecture one week before each exam. All tests will be cumulative with an emphasis on more recent material. Students must use a FE approved calculator on exams.

Quizzes (8%) The attached course schedule includes weekly reading assignments from the textbook. In order to encourage you to read the textbook we will have weekly online quizzes on Canvas. These quizzes will be due by midnight of the assigned due date.
Why Buildings Fall Down Reflections (7%). Each week there will be an assigned reading from Why Buildings Fall Down as shown on the Course Schedule. Students are responsible for preparing a roughly 1 page reflection for 3 of the readings. The questions to consider in your reflection are:

1) Describe one thing you learned/ found interesting/ found surprising/ will be valuable for the future and why.
2) What questions did the reading raise for you, or what would you like to know more about?
3) Read the ASCE code of ethics at http://www.asce.org/Ethics/Code-of-Ethics/. Were there ethical issues involved in any of the failures described in this reading? If so, discuss these issues. Can failures happen even when the Code of Ethics is followed?

Reflections should be submitted through the assignments created in Canvas. The reflections can be submitted at any time, but no late assignments will be accepted. Final due dates for the three reflections are:

- 1st reflection must be submitted by: September 29th
- 2nd reflection must be submitted by: October 29th
- 3rd reflection must be submitted by: December 3rd

Final Project (20%) Students will work in groups of four to five to prepare a poster about a specific material and its applicability to various civil engineering situations. More detail on the project will be given in lecture later in the semester. Posters will be presented during the final exam period scheduled by the university: Thursday, December 17th 6:20-8:20pm.

Academic Integrity:
This course will adhere to the Academic Integrity Policy of the Colorado State University General Catalog (online at http://catalog.colostate.edu/general-catalog/policies/students-responsibilities/) and the Student Conduct Code (online at http://www.conflictresolution.colostate.edu/conduct-code).

As stated by the Catalog “Academic integrity is conceptualized as doing and taking credit for one's own work.” In this class some work will be completed by individuals and some work will be completed in groups. Below I have described in general terms how academic integrity applies to each graded component. This description is not all inclusive; please contact me if you have questions about behaviors not specifically described here.

Exams will include the following honor pledge for you to sign: I have not received or given any unauthorized assistance on this exam.

Lab Reports – I encourage students to discuss the lab procedures and results with each other as they are preparing individual lab reports. However, the written work that you turn in should be your own work. If sources are used they must be clearly cited. For group lab reports I consider pulling your own weight to be a form of academic integrity. Each individual should clearly understand everything that is described in a group report.

Homework Assignments – Unless otherwise indicated, these assignments will be individual assignments. I encourage students to consult with each other to help learn the material, but the written work that is submitted should your own work.
Exams – The midterms should be completed individually without notes or aid from other students. Exams must be taken with FE approved calculators.

Why Buildings Fall Down Reflections – Each student should read the assigned chapters themselves and write their own responses to the questions.

Textbook Questions - Each student should read the assigned sections of the textbook themselves and take the Canvas quiz independently.

Final Project – As a group project it is important for each person to make significant contributions to the final product. Your group will be conducting research and it is important to give credit to sources and avoid plagiarism.

Grievances:
Any issues regarding the grading of lab reports should be first addressed with your TA, in person, within one week of receiving the graded assignments. Concerns with other graded components should be brought directly to me, promptly.

Special Concerns:
If you have any other particular concerns about this class, please come visit me during office hours so that we can discuss how I can help you be successful in this course.