

Widener University
Department of Civil Engineering
Structures and Materials Laboratory
Spring 2009 Syllabus
CE 306A (Tuesday Labs)

Instructors:

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Required Texts:

A Writer's Handbook for Engineers by McMurrey and Buckley, Thomson Learning, 2008, ISBN-13: 978-0-495-24482-0, ISBN-10: 0-495-24482-1. (Available in bookstore)

CE 306 Lab Manual, Widener University Civil Engineering Department, Spring 2009. (Available through the shared files on the Campus Cruiser course web page or purchased in the CE office).

Co-requisites: ENGR 323 Mechanics of Deformable Bodies

Course Purpose:

CE 306 is a writing enriched course that provides students an opportunity to conduct laboratories and participate in a group design-build-test project in Civil Engineering topics including engineering mechanics, construction materials, and structures. The labs and projects give students hands-on experiments that demonstrate theoretical topics covered in previous/concurrent engineering courses and provide an introduction to topics that will be covered in future courses.

The laboratories emphasize measurement techniques, analysis and interpretation of data, and technical writing in the form of lab reports. The design-build-test project gives students an opportunity to work in teams, and present their work in an oral presentation and group report.

Course Objectives:

The Structures and Materials Laboratory is intended to (1) supplement theoretical knowledge in CE structures and construction materials; (2) provide exposure to basic measurement and experimental techniques to examine properties of materials and structural components; (3) develop the ability for planning and design of projects; (4) familiarize the student with basic statistics for analysis of experimental data; (5) develop written and oral communication skills; and (6) provide exposure to the interpersonal relationships involved in group work.

Upon successful completion of the course, students will be able to:

1. Conduct experiments to measure properties of materials and systems for civil engineering applications.
2. Analyze data for error analyses, comparison of experimental and theoretical results, application of regression analyses.
3. Prepare engineering laboratory reports using appropriate technical writing methods.
4. Design, conduct, and present an independent project.

Program Outcomes: This course supports the following CE Program Outcomes:

2. An ability to apply the fundamental knowledge of mathematics, science, & engineering, as well as the ability to use the techniques, skills, and modern engineering tools to solve civil engineering problems in practice.

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4. The ability to design a civil engineering system, component, or process to meet the requirements of safety, cost, quality, and performance.
5. An ability to conduct laboratory experiments, and to analyze and interpret data in various civil engineering disciplines.
6. An ability to communicate effectively and function well on multidisciplinary teams.

Grading: The +/- system will be used for course grades.

Labs and Lab Reports: 75% of the course grade will be based on participation in laboratory experiments and preparation of lab reports (both writing and editing). A total of 7 labs are planned. Lab reports are due **one week** after the completion of the lab. Lab reports handed in **after the due date but not more than one week late** will receive a maximum score of 80%. **LAB REPORTS WILL NOT BE ACCEPTED MORE THAN ONE WEEK AFTER THE DUE DATE. A LAB REPORT MUST BE HANDED IN TO RECEIVE A NON-ZERO GRADE FOR THE LAB.**

Two lab reports will be edited by the instructors and handed back to students to revise and resubmit so that students can learn to edit and improve their technical writing. The first lab report submitted must be revised and resubmitted by every student. The second lab report to be revised and resubmitted is student choice (it would be wise to revise a report you do poorly on, to improve your grade, as the final grade for the lab will be based on the resubmitted lab report). **The original report MUST be handed in with the revised and resubmitted lab report in order to receive full credit for the lab.**

Your performance and preparation for the lab will be assessed as part of the lab grade. You are expected to be familiar with the objectives and lab procedures prior to the lab, and you may be asked to write them prior to the start of the lab. Unannounced quizzes may be given prior to the lab to assess your preparation. Lab procedures will be discussed in the lecture period prior to the lab, with any changes or deviations from the lab manual explained by the instructor.

Design-Build-Test Project: 25% of the course grade will be based on the design, conduct, and presentation (oral presentation and written **group** project report) of a group design-build-test (DBT) project. This year we will be using the 2009 EDPACI Concrete Beam student competition for the DBT project.

Attendance:

Attendance and participation is required in order to receive a grade for each lab, unless prior notification and arrangements are made with the instructor. All unforeseen emergencies will be dealt with on a case by case basis. **Instructors will NOT routinely excuse students from lab. Documentation of ANY planned or emergency absence will be required.**