Instructor: Charles J. Roberts, PE, MS
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Office Hours: MW 2-2:50, T 9-9:50, 12-12:50, F 12-12:30

Course Description: The goal of this course is to develop a solid understanding of the behavior of structural elements (stress, strain, deformations, and buckling) under various loading conditions (bending, axial, shear, and torsion). These topics will build directly upon previously acquired skills in mathematics, physics, and statics. The topics of this course are fundamental to understanding of engineering; a firm grasp of these concepts is required for success in further engineering courses and professional practice.

Course Texts:
- Text: Mechanics of Materials, by Beer, Johnston, and DeWolf, latest edition (English units). Note that content is same in previous editions (cheaper), but problems will come from latest edition.

Prerequisites: CIVL 211 with a grade of C- or higher; CIVL 110 or MECH 100 and MECH 100L; MATH 260 and MECH 210 (may be taken concurrently).

Meetings: MTWF 10:00-10:50, in Langdon 105 (Section 1)
            MTWF 11:00-11:50, in Langdon 105 (Section 2)

No Class Days: Mar. 16-20 (Spring Break), Mar. 31 (César Chávez Day)

Final Exam: TBA, common for both sections

Grading Basis: There will be homework, quizzes, 3 one-hour tests and a two-hour final exam. The final grade will be based on the following proportions:

Grading: Three Midterm Exams 45%
          Cumulative Final Exam 35%
          Homework and Quizzes 20%

Minimum Grade Requirement and Assessment: The Civil and Mechanical Engineering Departments both require a C- or better to advance to the next course. This course is also used as part of the embedded assessment of the Civil Engineering program; a grade of C- or better meets the assessment requirement.

Accreditation and Course Materials: Due to accreditation requirements, all class work may be collected at the end of the semester, so it is your responsibility to keep all completed assignments.

Homework Policy and Grading:
Homework will generally be due at the beginning of class. Selected problems will be graded and returned. Late homework may not be accepted.
Assignments must be completed professionally and legibly. Submissions must abide by the following guidelines, or the submission will not be graded and receive a score of zero:

- Include your name and the date in the upper-right corner. Use 8½”x11” engineering paper, and use one side only. Use a single staple in the upper-left corner.
- Start each problem on a new page (or place clear line between short problems).
- Use pencil (ink allowed for sketches).
- State the given information; this will often include a sketch.
- State what the problem is asking you to determine.
- In the solution, include a sketch (unless already included in the given section), and a Free-Body Diagram (when equilibrium equation are used in the solution).
- Show all work, including formulas, calculations, and assumptions. The final answer is not enough; the solution must also contain correct intermediate steps.
- Clearly indicate the final answer at the end of the solution. Include units and an appropriate number of significant figures (typically 3-4).

The homework problems (those that are selected to be fully graded) will typically be graded according to the following guidelines:

- 5 – Totally correct or has one inconsequential error.
- 4 – Basically correct with minor math errors, but no conceptual errors.
- 3 – Several math errors or a conceptual error.
- 2 – Several conceptual errors.
- 1 – An honest effort has been made, but the solution is completely wrong.
- 0 – The problem was not turned in or the submittal does not comply with the stated guidelines.

For each of the problems that are not fully graded, 1 point will be given if an honest effort has been made (i.e. not just a problem statement) and the problem complies with the homework guidelines.

The final homework score will be adjusted such that each weekly submission has equal weight.

**Exam Policy:** Make-up examinations will not be given.

**Attendance Policy:**
There is no policy requiring that you attend class. However, new material will be presented every day and periodic quizzes may be given in class. The purpose of these quizzes is to check your understanding of the course topics, not attendance, but make-up quizzes will not be given.

**Guidelines for Success:**

1. **Statics** - You **must** have a solid understanding of Statics in order to be successful in Strength of Materials. If you feel at all uncomfortable with Statics, use the first week to refresh your memory. If you seriously doubt your Statics ability, come talk to me; it may be wise to retake the course, possibly concurrently with this course. This may sound extreme, but trying to get an engineering education without a solid understanding of Statics is like trying to building tall building without a foundation.

2. **Invest the time** - The topics in this course are challenging. It is essential that you invest the time and effort required to develop a solid understanding of these topic, because a solid understanding of Strength of Materials is critical for your success in future courses and your career. I can not emphasize this point enough.
3. **Start early** - It is essential that you work hard right away and master each concept as it is presented in the course. Many of the concepts of the course are cumulative, so if you start out with a solid understanding of the early concepts, you will find yourself better prepared for the latter and more challenging concepts.

4. **Prepare for class** - Complete the required reading before class, so you are familiar with the lecture topic. Also, review your lecture notes periodically to be sure that you have a clear understanding of each topic.

5. **Follow-up on homework questions** - Spend the time to fully understand the solution to each homework problem. Review the homework solutions, and if your solution is incorrect, then find your error. Be sure you understand the concept, and be sure you can solve similar problems correctly in the future. Your correct problem sets will become useful exam study material.

**Additional Instruction Outside of Class:**
Your understanding of the course material is my primary goal for this course. Please do not hesitate to use my office hours for conceptual help. As needed, I will also be available by appointment.

I encourage each student to enroll in the 1-unit CIVL 311X course, which is composed of a weekly review session (or possibly twice per week) that will be led by an upper-division student. This course is C/NC and the requirement for credit is that you attend a review session for at least ½ the weeks of the semester.