Course Description: This course covers the behaviors of most commonly used civil engineering materials: metals, concrete, masonry, timber, asphalt, and polymer composites. It emphasizes materials science fundamentals, production and processing, engineering properties, chemical durability, and practical applications. Materials sustainability and latest development in innovative materials and technology are also covered. Laboratories are conducted by students working independently and in groups on material preparation and evaluation topics.

Course Objectives

a) To gain working knowledge of commonly used civil engineering materials.
b) To understand the material behaviors as related to its chemical compositions and microstructures.
c) To develop an ability to select and specify appropriate materials for various civil engineering applications.
d) To understand the impact of civil engineering materials on sustainability

ABET Competencies

a. An ability to apply knowledge of mathematics, science, and engineering.
e. An ability to identify, formulate, and solve engineering problems.
j. Knowledge of contemporary issues.

Course Co/Prerequisite: CE 2123 or equivalent.


Grading:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Project</td>
<td>15%</td>
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<tr>
<td>Midterm exam #1</td>
<td>25%</td>
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<tr>
<td>Midterm exam #2</td>
<td>25%</td>
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<tr>
<td>Final exam</td>
<td>35%</td>
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Course Outline:

1. Fundamentals
2. Metals I
3. Metals II
4. Concrete I
5. Exam #1
6. Concrete II
7. Concrete III
8. Concrete IV
9. Masonry
10. Exam #2
11. Asphalt
12. Polymers I
13. Polymers II
14. Final exam

Important Notes:

1. Course contents and grading weights are tentative and subject to change at the discretion of the instructor as the course progresses.
2. Exams are closed-book and closed notes. However, you are permitted to have one hand-written cheat-sheet of letter size (8 ½ x 11”) during the exam.
3. Only in rare occasions, and upon justification, will late submission of lab and project reports be accepted and there will be 30% penalty for such late submissions.
4. Absence of more than five lectures without justification will result in an “Fail” grade.
5. Any forms of cheating, copying, or plagiarism in labs, quizzes, and examinations will not be tolerated and will result in zero credit, a “Fail” grade, or disciplinary action by the school.