Instructor  Dr. Ozgul Yasar  
OCNL 424  
Phone: 530-898-6142  
email: oyasar@csuchico.edu  
Office Hours: Mondays: 1 pm -3 pm and Wednesdays: 1 pm -3 pm or by appointment

Description  This is CURE-E (Course-Based Undergraduate Research and Entrepreneurial Mindset) course. Standards and procedures for materials testing. Hands-on experience with commonly used equipment for materials testing. Test data acquisition and integration for material properties. Presentation of test data and findings in technical reports. Understand the importance of scaffolds in bio-related applications/tissue regeneration. Literature search and effective use of research databases. Identification of research questions and goals. Gaining research skills by fabricating the scaffolds at different concentration, performing experiments and tests to determine the mechanical properties of the scaffolds. Developing entrepreneur mindset. 3 hours of laboratory.

Co-requisite  MECH 210 (Materials Science and Engineering)

Textbooks  Materials Science and Engineering Laboratory, C. Hsu et. al., CSU Chico, 2016  
Available in the Bb Learn site for the course.

Lab Times  Section-01 Tuesday 11:00 am – 1:50 pm  
Section-02 Thursday 11:00 am – 1:50 pm  
Section-03 Thursday 2:00 pm – 4:50 pm

Evaluation  The overall course grade will be based on lab reports, quizzes, and a final exam.

<table>
<thead>
<tr>
<th>Grade</th>
<th>A</th>
<th>A-</th>
<th>B+</th>
<th>B</th>
<th>B-</th>
<th>C+</th>
<th>C</th>
<th>C-</th>
<th>D+</th>
<th>D</th>
<th>F</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>93-100</td>
<td>90-92</td>
<td>87-89</td>
<td>83-86</td>
<td>80-82</td>
<td>77-79</td>
<td>73-76</td>
<td>70-72</td>
<td>66-69</td>
<td>60-65</td>
<td>&lt;60</td>
</tr>
</tbody>
</table>

Lab Reports  60%  
Quizzes  15%  
Final Project Report  15%  
Final Project Pres.  10%
Safety
Laboratory Safety Policies and Procedures are strictly enforced in the lab. Students are expected to attend the safety training and become familiar with the safety policies and procedures. Each student is required to submit a signed acknowledgment form for safety training before the first lab experiment. A sticker will be attached to the student’s university I.D. card after the safety training is satisfactorily completed. Shirts and shoes are required in the laboratory. Sandals and open-toe shoes are not allowed for safety reasons. Students not safely dressed will be asked to leave the laboratory resulting in absence or tardiness.

Lab Reports
Lab reports are strictly individual and must be single sided, Times New Roman, size 11 font, typed, single space, standard 1” margins, figures and tables labeled, equations typed, page numbers, clean, tidy, and professional for complete credit. Reports must have a Title Page, Assignment (from Laboratory Manual), Objectives, Materials/Apparatus, Results, Calculations, Conclusion sections, and Raw Data. The cover page should show the course name and section, experiment title, student name, lab partner names, and date. The Calculation and Results section should contain all calculations, figures from experimental data, and results in the proper order. Figures must be produced using Excel (or similar software) and clearly labeled.

Outdoor wireless coverage areas on the campus can be found at:
https://www.csuchico.edu/calendar/detail/2020-08-20-outdoor-wireless-coverage-available-on-campus-map.shtml

Lab reports found with digital copied content will result in an automatic F pending further review by Student Judicial Affairs.

Quizzes
There will be two closed-book quizzes during the semester. Questions will cover the preceding lab experiments.

Final Project
The final project consist of written final report and presentations. They will be based on the CURE-E Project. They consist of literature search, fabrication and test techniques, results, entrepreneur mindset, and future work.

Expectations
Students are expected to acquire knowledge of the following topics
1. Determine the crystal and chemical structure of materials.
2. Measure the hardness of metals and plastics.
3. Prepare microscopy samples of steel and analyze the grain structure.
4. Execute a tensile test and interpret the results.
5. Harden a metal with cold forming.
6. Identify stress concentration in a body under force.
7. Execute a Charpy Impact Test and interpret the results.
8. Execute a Jominy Quenchability Test and extrapolate the results.
9. Increase the hardness of aluminum with the Precipitation Hardening method.
10. Obtain an infrared spectrograph of a plastic and interpret the results.
11. Be able to interpret commercial data sheets of the mechanical properties of a metal or plastic.
12. Be able to prepare a professional looking laboratory report using a word processor, a spreadsheet, and an equation editor.
13. Understand the importance of scaffolds in bio-related applications/tissue regeneration.
14. Learn how to conduct literature search and effective use of research databases. (CURE-E)
15. Gain experience identifying the research questions and goals. (CURE-E)
16. Gain research skills by fabricating the scaffolds at different concentration, performing experiments and tests to determine the mechanical properties of the scaffolds. (CURE-E)

17. Evaluate the experiment results and gain experience in writing technical reports and presentations and develop entrepreneur mindset. (CURE-E)

MECH 210L Lab Schedule for Fall Semester 2022 (Tentative)

<table>
<thead>
<tr>
<th>Wk</th>
<th>From</th>
<th>To</th>
<th>EXPERIMENT</th>
<th>Wk</th>
<th>From</th>
<th>To</th>
<th>EXPERIMENT</th>
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<tbody>
<tr>
<td>2</td>
<td>29-Aug</td>
<td>2-Sept</td>
<td>Intro to CURE-E Project</td>
<td>10</td>
<td>24-Oct</td>
<td>28-Oct</td>
<td>Strain Hardening</td>
</tr>
<tr>
<td>3</td>
<td>5-Sept</td>
<td>9-Sept</td>
<td>SEM</td>
<td>11</td>
<td>31-Oct</td>
<td>4-Nov</td>
<td>Stress Concentration</td>
</tr>
<tr>
<td>4</td>
<td>12-Sept</td>
<td>16-Sept</td>
<td>FTIR</td>
<td>12</td>
<td>7-Nov</td>
<td>11-Nov</td>
<td>Impact (Safety Glass Req’d)</td>
</tr>
<tr>
<td>5</td>
<td>19-Sept</td>
<td>23-Sept</td>
<td>Microscopy</td>
<td>13</td>
<td>14-Nov</td>
<td>18-Nov</td>
<td>Quiz#2 (CURE-E Results and Entrepreneurship Discussion)</td>
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<tr>
<td>6</td>
<td>26-Sept</td>
<td>30-Oct</td>
<td>Hardness</td>
<td>14</td>
<td>21-Nov</td>
<td>25-Nov</td>
<td>Thanksgiving Break</td>
</tr>
<tr>
<td>7</td>
<td>3-Oct</td>
<td>7-Oct</td>
<td>Quiz#1</td>
<td>15</td>
<td>28-Nov</td>
<td>2-Dec</td>
<td>Jominy</td>
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<tr>
<td>8</td>
<td>10-Oct</td>
<td>14-Oct</td>
<td>CURE-E Project-Fabrication (CURE-E Literature Review Submission)</td>
<td>16</td>
<td>5-Dec</td>
<td>9-Dec</td>
<td>No Lab (Dead Week)</td>
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<td></td>
<td>17</td>
<td>12-Dec</td>
<td>16-Dec</td>
<td>CURE-E Report Submission and Presentations</td>
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**Dropping and Adding Class**

Students are responsible for understanding the policies and procedures about add/drops, academic renewal, etc., found in the [CSU Chico University Catalog](#). You should be aware of the new deadlines and penalties for adding and dropping classes.

**Academic Integrity**

Students are expected to be familiar with the University’s Academic Integrity Policy. Your own commitment to learning, as evidenced by your enrollment at California State University, Chico, and the University’s Academic Integrity Policy requires you to be honest in all your academic course work. Faculty members are required to report all infractions to the Office of Student Judicial Affairs. The policy on academic integrity and other resources related to student conduct can be found at: [http://www.csuchico.edu/sjd/integrity.shtml](http://www.csuchico.edu/sjd/integrity.shtml)

**Americans with Disabilities Act**

If you need course adaptations or accommodations because of a disability or chronic illness, or if you need to make special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Please also contact Accessibility Resource Center (ARC) as they are the designated department responsible for approving and coordinating reasonable accommodations and services for students with disabilities. ARC will help you understand your rights and responsibilities under the Americans with Disabilities Act and provide you further assistance with requesting and arranging accommodations.
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530-898-5959
Student Services Center 170
arcdept@csuchico.edu
hhunt@csuchico.edu

Student Learning Center

The mission of the Student Learning Center (SLC) is to provide services that will assist CSU, Chico students to become independent learners. The SLC prepares and supports students in their college course work by offering a variety of programs and resources to meet student needs. The SLC facilitates the academic transition and retention of students from high schools and community colleges by providing study strategy information, content subject tutoring, and supplemental instruction. The SLC is online at http://www.csuchico.edu/slc

Reminder

All students are required to complete their COVID-19 Vaccination Self-Certification by 8/15/2022. For additional information regarding this requirement please visit https://www.csuchico.edu/coronavirus/vaccine-certification-student.shtml

Chico State may at any time require the use of an approved face covering which covers the nose and mouth in all indoor campus spaces and in order to participate in this course when in person. When face coverings are optional, they are always welcome on campus. You will be notified if face coverings are required.

Policies and requirements regarding COVID-19 are subject to change pursuant to campus, local, state and/or federal guidelines. Please note that dishonesty relating to the vaccination policy and/or your failure to comply with any COVID-19 related safety policy or mandate may result in disciplinary action against you through the office of Student Conduct, Rights and Responsibilities, which can include suspension or expulsion from the California State University system.

It is very important for students to contact the COVID-19 hotline if they become symptomatic, believe they have been exposed, or have tested positive for COVID-19. The hotline is (530) 898-2222 or covidhotline@csuchico.edu