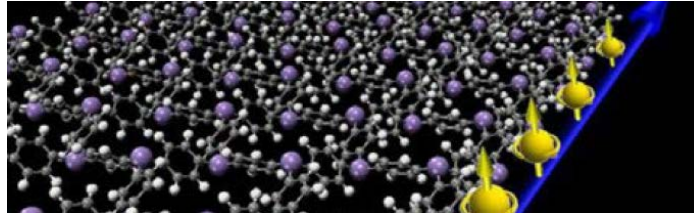


MECH 410 Syllabus
Advanced Materials Science and Engineering



Instructor Contact

Dr. Nathan L. Anderson, nlanderson@csuchico.edu, Office: OCNL 427, Office Phone: (530) 898-5976

Office Hours

TR: 3-4:50PM

<https://csuchico.zoom.us/j/8375880302?pwd=TmNWdk5UMkwvUHczbU5MdXBIT0Nodz09>

Other times/locations may be available upon request. Times/locations also subject to change, updates will be sent via Blackboard and email.

Course

Lectures: Three videos posted per week for online asynchronous viewing.

Discussion: W: 3:00-3:50PM optional online synchronous.

3.0 Units Course Credit

Course Description

Design, manufacture, and practical applications of advanced engineering materials. Failure analysis and prevention of material failure in mechanical design. Microfabrication of micromechanical devices. 3 hours discussion.

Prerequisites

Prerequisites: MATH 260, MECH 210. Recommended: CIVL 311

Text/Requirements

Recommended: Essentials of Materials Science and Engineering, 3rd Edition, Donald R. Askeland, Cengage Learning; 2013; ISBN: 9781111576851.

Required: Laptop/computer with internet access to: Blackboard Learn, Zoom, Microsoft Office (Google Docs/Slides).

Homework

Homework assignments will be posted to Blackboard and will be due as noted. Homework will typically consist of computer and handwritten assignments to be uploaded to Blackboard. **Late homework will not be accepted!**

Design Project

Throughout the semester you will be working on a design and manufacture proposal for a product that involves multiple types of materials. The design can be unique or based on an existing product but it cannot be a replica. More info to follow as we proceed through the semester.

Exams

There will be a midterm and a final exam. The midterm will take place on the week denoted in the schedule at the regularly scheduled lab time. Final day/time will be announced when made available. The exams will be cumulative. If extenuating circumstances prevent you from attending an exam, contact me as soon as possible for other arrangements to be made.

Grading

Assignment Type	Contribution
Homework	25%
Design Project	25%
Midterm Exam	25%
Final Exam	25%

If you feel that there is an error in the grading, please submit to me in writing a short statement of why you think that you deserved more credit along with the original graded work. This must be done within a week of the assignment being returned, or will lose consideration.

Final grades will be given according to the following distribution after the weighting above has been performed for each category.

Grade	Percentage
A	94-100%
A-	90-93%
B+	88-89%
B	83-87%
B-	80-82%
C+	78-79%
C	73-77%
C-	70-72%
D	60-69%
F	0-59%

Note: This distribution is subject to change during the course of the semester.

Required Skills

If at any time you are experiencing technical difficulties you should contact ITSS.

During this course you may be expected to:

- Use the chat, response, and poll features in Zoom and PollEverywhere.

- Use the text editor in Blackboard (or elsewhere; e.g., discussion board, blog, short-answer essay question).
- Submit assignments via Blackboard.
- Attach, open, or create pdf documents.
- Use email professionally (i.e., use proper tone, respond promptly, etc.).
- Watch an online video using a variety of video players (e.g., Quickime, YouTube. etc.).
- Create and post your own web video using a web camera.
- Create and post your own presentation using a variety of software (i.e., PowerPoint and Prezi).
- Take an online, traditional assessment (i.e., quiz, test).
- Take a screenshot.
- Hyperlink a URL.
- Embed an image in a text document.
- Edit an image.
- Use chat applications-- both text and video.

Resources

There are a number of resources available to assist you through this course. In addition to coming to my office hours or scheduling a meeting with me, there is free tutoring available from multiple student organizations. My schedule/availability will be posted on the MMEM website, and additional meeting times can be scheduled in advance.

Online Etiquette

A distinguishing feature of any online class is that most communication occurs through the written word. Due to this the body language, voice, tone, and instantaneous listener feedback of a traditional class are all absent. Please take this into consideration when taking part in a discussion or class communication. Key points to consider:

- Respect others and their opinions
- Avoid inappropriate material
- Be forgiving
- Consider others privacy
- Use the right tone
- Be as concise as possible
- Stick to the point
- Take a pause before you send

Disruptive Behavior

Students are required to adhere to the behavior standards articulated in the Campus Policies and Code of Student Conduct, and to refrain from disrupting classes and other academic settings. "Disruptive behavior" means conduct that materially and substantially interferes with or obstructs the teaching or learning process in the context of a classroom or educational setting.

Disruption in the classroom may include but is not limited to:

- Engaging in activities not related to the class, or other overt inattentiveness including but not limited to sleeping, talking to others, doing work for another class, reading the newspaper, checking e-mail, and exploring the Internet

- Monopolizing class discussion and refusing to defer to instructor, or listen to others; persisting when the instructor has indicated that the student's remarks are off topic and it is time to move on
- Disputing authority or arguing with faculty and other students
- Inappropriate, disrespectful, or uncivil responses to the comments, opinions, presentations, etc. of others in the classroom
- Failure to adhere to the instructor's rules or instructions
- Vulgar or obscene language, slurs, memes or other forms of intimidation
- Showing up to class under the influence of alcohol/drugs
- Threats of any kind
- Improper use of equipment, materials or resources
- Any behavior that puts the health or safety of the instructor or other students in the class in jeopardy

Academic Integrity

Read and understand the university policy (<http://www.csuchico.edu/sjd/integrity.shtml>). Examples of academic dishonesty include: a) copying the work/assignment of others, and b) allowing others to copy yours.

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.

Accessibility Resource Center

530-898-5959
Student Services Center 170
arcdept@csuchico.edu

<i>Week</i>	<i>Lecture/discussion topics</i>	<i>Week</i>	<i>Lecture/discussion topics</i>
1	Functional materials and applications	9	Ceramics, plastics, and composites
2	Atomic/ionic arrangements	10	Mechanical properties
3	Atomic/ionic imperfections	11	Electrical properties
4	Atom and ion movements	12	Dielectric properties I
5	Solidification	13	Electromagnetic properties
6	Phase equilibria	14	Optical properties
7	Processing, Midterm 1	15	Magnetic properties
8	(Spring break)	16	Design project presentations, Final review

Note that modifications to the syllabus may be made throughout the semester. Please check back to Blackboard for the most current version.