

## Course Syllabus

### SMFG 211 - Materials and Quality Testing – 3.0 Units

Prerequisite: CHEM 107, PHYS 202A

Recommended: MATH 105

Course Times:	Lecture	M, W	11 AM – 11:50 AM	LANG 104
	Lab	F	11 AM – 1:50 PM	OCNL 130
	Lab	F	2 PM – 4:50 PM	OCNL 130

Instructor: Dr. Nathan L. Anderson ([nlanderson@csuchico.edu](mailto:nlanderson@csuchico.edu))

Office:	Location:	O’Connell 427 – Phone: (530) 898-5976
	Hours:	W: 1:00 to 3:00 PM
		R: 1:00 to 3:00 PM

### **Course Description**

Study of the manufacturing, processing, applications, and testing of common industrial materials, including metals, polymers, and composites.

### **Course Goal**

Provide students a thorough study of metals and polymer materials and material properties and testing methods. Provide an introduction to sustainability for the manufacturing industry.

### **Laboratory Goal**

Provide students a thorough knowledge of the testing methods and laboratory procedures for plastic, composite, and metal materials.

### **Student Learning Objectives**

Students will gain understanding and practice of testing metal and plastic materials for quality assurance testing and sustainability measurements.

### **Course Usage of Blackboard Learn**

Copies of the course syllabus, lectures, and major assignments may be found on Blackboard Learn. You are responsible for regularly checking the online resources, which is accessed through the Chico State Portal at <http://portal.csuchico.edu>.

### **Textbook and Materials**

- Recommended: Callister, Rethwisch, *Materials Science and Engineering: An Introduction*, 8<sup>th</sup> or 9<sup>th</sup> Edition, Wiley. (Any edition past 5<sup>th</sup> will work)
- Required: Lab Manual, Available from Blackboard Learn.

### **Safety**

Laboratory Safety Policies and Procedures are strictly enforced in the labs. Students will be given safety training and are expected to 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 placed on the student's campus ID card upon completion of training.

### **Grading**

1 Midterm exam	25%
1 Final exam	25%
Lab (Reports + lab quizzes)	20%
Homework	10%
Quizzes/Participation	10%
Multimedia report	10%

### **Grade Distributions**

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

A	94-100%
A-	90-93%
B+	88-89%
B	83-87%
B-	80-82%
C+	77-79%
C	70-76%
C-	65-70%
D	55-64%
F	0-54%

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

### **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](mailto:arcdept@csuchico.edu)

## SMFG 211 Schedule

Lab Week	Topic	Lab (Note: Tentative labs)
1	Intro & Atomic Bonding	Safety/Groups/ Excel HW
2	Crystalline Structure	Hardness I
3	Defects/Imperfections	Gauge R&R
4	Mechanical Properties	Hardness II
5	Strengthening Mechanisms	Microscopic Examination I
6	Phase Equilibria	Microscopic II
7	Phase Transformations	Tensile Testing
8	Engineering Alloys	Strain Hardening 1
9	Midterm (Wed)	Strain Hardening 2
10	Polymeric Materials	Stress Concentration 1
11	Composite Materials	Stress Concentration 2
12	Ceramic Materials	No Lab
13	Electronic, Magnetic, Optical Properties	Impact Testing
	Thanksgiving Break	Thanksgiving – Fall Break
14	Advanced Materials	Jominy End Quench
15	Design Report Presentations	FTIR
16	Final Examinations	

Note: The schedule may change during the semester.