

PALOMAR COLLEGE
ENGINEERING 245
Materials
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Text: Callister, William D, Material Science and Engineering an Introduction

Assignments are to be completed on or before the due date. Homework problems will be assigned, but not collected nor graded.

Attendance: Every student is responsible for all material covered in the text, in lecture, and problem sessions and handouts. All exams and quizzes are open book/ notes. Each student is only allowed to use his/her own original work. All lecture and homework materials should be readily available in each student's notes.

Laboratory work: Approximately ten laboratory experiments will be assigned during the semester. Considerable attention will be given to the preparation of the laboratory reports. Laboratory grade will be determined from the scores on reports and quizzes, and from the performance in the laboratory. No late work will be accepted.

Grading: Grade for the lecture portion of the course will be determined from a total accumulation of points:

Two exams.....	200
Final Exam.....	<u>200</u>
Total possible.....	400

We might add a third exam, and if so, we'll adjust the grading accordingly.

One quarter of the course grade will be based on the laboratory grade. However, a passing grade is required for a passing grade in the course.

Test Schedule

Exam 1: Chapters 1,2,3,4,5,6 Topics: Engineering materials science. Stoichiometry. Atomic bonding. Crystal structure. Imperfections. Diffusion-governed changes. Mechanical properties of metals.

Exam 2: Chapters 6,7,8,9,10 Topics: Plastic deformation. Strengthening mechanisms. Failure. Phase diagrams and transformations. Alteration of mechanical properties.

Final Exam: Chapters 11,12,17,18,19,20 Topics: Thermal processing. Metal Alloys. Composites. Corrosion. Electrical properties, Thermal properties.

Student Learning Outcome

[What's a Learning Outcome?](#)

Student learning outcomes are general skills, knowledge, or masteries which students are expected to have after completing a course or program of study. The faculty responsible for a course or program get together and decide what overall qualities or abilities a successful student should have after completing a course or program; those become the student learning outcomes. Faculty do assess their outcomes; that is, they find a way to determine if their students are achieving those desired outcomes. However, these assessments are not necessarily part of the students' grades in the courses.

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Successful students will be able to experimentally gather data required to generate a stress-strain diagram. Students will be able to identify and analyze all significant properties indicated by the diagram.

Successful students will be able to construct and analyze a BCC, FCC, and HCP atom structure, and calculate 1D & 3D dimensions within the structures.