

**EGR 100 Engineering, Society, and You**  
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## Overview

This course is designed to familiarize you with what engineers do, how society depends on engineers, and how to succeed as an engineering student.

## Course Objectives

The course objectives include:

- Developing the skills and attitude required to graduate with a high grade point average.
- Understanding different engineering disciplines.
- Understanding the engineering design process and engineering creativity.
- Working as a team.
- Defining and using a systematic approach for solving problems.
- Learning about different facilities, capabilities, and resources available to you at the University.
- Learning how to compute your grade point average.
- Understanding Word, Excel, and PowerPoint.
- Learning how to give a technical presentation.
- Managing your time.
- Having fun.

## Logistics

Lecture: As posted on BroncoDirect

Office: Room 9-310

## Materials

- Landis, R.B., *Studying Engineering: A Road Map to a Rewarding Career*, 4<sup>th</sup> Ed., 2013.
- Leonard, Annie, *The Story of Stuff* (optional text)
- University Catalog (<http://www.csupomona.edu/~academic/catalog/>)
- Access to a computer with PowerPoint, Excel, Word, and Internet access.
- Materials provided on Blackboard.

## Assignments and Exams

Late homework will not be accepted unless arrangements have been made in advance. You should know your status with regard to assignment submission (do not ask the instructor if you are missing any assignments). The course includes a final exam. **You must complete all work to pass the course.**

There will be no extra credit assignments, and there will be no make-up homework, quizzes, or exams.

## Attendance, Note Taking, and Intellectual Engagement

Class starts promptly at the designated start time. **You are expected to be in your seat, ready to start, prior to that time.** Be on time and attend all classes. Bring a notepad and a writing instrument to every class, and take notes during class. Participate in class discussions. Be intellectually engaged. Be aware

of what your body language, your appearance, and your attire communicate about you to your peers and to your professors.

### **Writing**

You are expected to write in a professional manner. Please refer to the *Writing Effectively* guide provided on Blackboard, become familiar with its contents, and apply its requirements to all written assignments.

### **Speaking and Class Participation**

You are expected to participate fully in all class discussions in a clear, articulate, and audible manner. Do not use the word “like” in your communications.

### **E-mail and Blackboard**

We will use e-mail and Blackboard extensively. You should check your e-mail and Blackboard on a daily basis. Only use your Cal Poly e-mail address.

### **Cell Phones**

Turn off your cell phone before entering class. Do not use your cell phone in class, and do not leave class to make or take cell phone calls. Do not send or check text messages in class.

### **Academic Integrity**

You are expected to be an honest person. Any form of academic dishonesty will result in a failing grade for the class, and may result in expulsion from the University. Academic dishonesty includes:

- Plagiarism (presenting words, ideas, or the work of others as one’s own work).
- Cheating (using unauthorized cheat sheets, copying, looking at other students’ work, opening books, obtaining advance copies of exams or quizzes, or having an exam re-graded after making changes).
- Unauthorized study aids (cell phones, text messages, or any other material during an exam or a quiz).

### **Grading**

Grades will be determined as follows:

	<b>Weight</b>
Attendance and Participation	20%
Homework	10%
Quizzes	25%
Group Projects	25%
Final Exam	20%
<b>Total</b>	<b>100%</b>

As mentioned above, all assignments must be submitted on time to pass the course.

On all team assignments, each student will be required to submit a grade and grade justification for their team-mates.

## Schedule

Week	Topics	Readings
1	Introductions. Intellectual engagement and class participation. Becoming a successful student. Study groups. Engineering fields. Brainstorming, painstorming, Pugh diagrams, and the backwards-planning method. Brainstorming project assignment. Written submittal requirements. Writing effectively. Case Study 1 assignment.	Landis Ch 1, 2; Bb Materials
2	Case Study 1 questions due. Study habits. Note taking. Preparing for lectures. Using your instructor's office hours. Time management. Using Excel. Engineering course problem solving. Oral communications.	Landis Ch 3, 4, 5; Bb Materials
3	Brainstorming team presentations. Personal growth and development. Theories of motivation. Adapting to change. Goals and goal setting. Developing a personal success plan. <b>Stress management. Quiz 1.</b>	Landis Ch 6,7; Bb Materials
4	Effective technical presentations. The engineer as a professional. Licensing. Biomimicry and engineering creativity. Team biomimicry assignments.	Landis CH 8; Bb Materials
5	Engineering problem solving and failure analysis. Case Study 2 assignment (laser optics debonding). PowerPoint fundamentals. <b>Student financial aid opportunities.</b>	Assigned Bb Materials
6	Biomimicry team presentations. Case Study 2 questions due. Internships and academic versus job time requirements. Library tutorial assignment. <b>Quiz 2.</b>	Assigned Bb Materials
7	TRIZ and engineering creativity. Team TRIZ assignments. Using Excel. Graphing, formulas, and functions. Transferring data from Excel to Word or PowerPoint. Preparing personal financial and time budgets. Calculating your GPA. Learning styles.	Assigned Bb Materials
8	Personal time budgets due. Ethics. Ethics assignment. Critical thinking. Case Study 3 assignment (water treatment equipment manufacturing company ethics).	Assigned Bb Materials
9	Case Study 3 questions due. Ethics presentations and discussions. <b>Campus resources. Quiz 3.</b>	Assigned Bb Materials
10	TRIZ team presentations. Course review.	
11	Final Exam	

### *A Few Words On Case Studies*

This course uses the case study approach for developing and reinforcing teaching points presented in class. The case study approach is an excellent learning tool commonly used in business and technical training programs. Many people not previously exposed to this teaching technique, however, often experience confusion, frustration, and anxiety. Because of this, I want to offer a few words on how to work with case studies.

What is a case study? A case study is a brief story describing a business or technical situation (a case) that presents a problem (or several problems) for the student to solve. The theory is that by thinking through the problems faced by others in situations related to the concepts developed in classroom lectures and associated readings, students more thoroughly learn the points developed in class. Based on my experience (and the experience of many others), the theory is sound. Case studies make for improved learning.

The above notwithstanding, case studies are frightening to many of us. I believe this is the result of two factors:

- Case studies frequently contain extraneous information not related to questions of interest.
- Case studies frequently do not contain all of the information required to solve a problem.

With the above in mind, I'd like to offer my ideas on the best way to approach a case study. I recommend the following steps:

- Read the case study in its entirety (as you would a short story) to gain a feel for what's going on and who the main players are. Don't be too critical or ask too many questions initially.
- Read the case study a second time, going more slowly, and take notes. Ask *why* specific actions occurred. Look for *internal inconsistencies* in the case study (i.e., areas appearing to contradict each other). Put yourself in the minds of the case study characters, and ask: *Why am I doing this?*
- Study the exhibits, and look for information that supports or refutes information developed in the case study narrative. *In case study analysis, one frequently finds that illustrations, charts, graphs, pictorial data, and numerical data contradict information included in the case study narrative.* This is where you learn to look for internal inconsistencies and think critically.
- Review the questions at the end of the case study. Form preliminary answers to these questions based on your first two readings, and then re-read the case study slowly, critically, and as many times as necessary to find the answers to the case study questions.

In this course, you will be asked to read and analyze case studies. Although the case studies are specific, the concepts developed in the case studies can be applied to many situations. The case studies are designed to develop your ability to recognize key issues, ask the hard questions, and most importantly, to think.