Las Positas College
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Course Outline for ENGR 10

INTRODUCTION TO ENGINEERING

Effective: Fall 2016

I. CATALOG DESCRIPTION:
ENGR 10 — INTRODUCTION TO ENGINEERING — 2.00 units

Introduction to careers, activities, and topics related to the field of engineering, including computer applications to design and problem solving.

2.00 Units Lecture

Strongly Recommended
- Eligibility for ENG 1A -
with a minimum grade of C

Grading Methods:
Letter or P/NP

Discipline:

	MIN
Lecture Hours:	36.00
Total Hours:	36.00

II. NUMBER OF TIMES COURSE MAY BE TAKEN FOR CREDIT: 1

III. PREREQUISITE AND/OR ADVISORY SKILLS:

Before entering this course, it is strongly recommended that the student should be able to:

A. -Eligibility for ENG 1A

IV. MEASURABLE OBJECTIVES:

Upon completion of this course, the student should be able to:

1. Demonstrate a basic knowledge of the different engineering branches Understand how engineering branches and engineering functions differ Demonstrate by discussing and writing what is expected of engineers; Identify the 5 basic steps in engineering design, and apply them in developing a solution to a design project assignment Explain the procedural steps, and benefits, involved in obtaining a professional engineering license. Develop, edit and proofread a professional resume. Investigate internet-based content related to the engineering major and the engineering profession Define and discuss ethics in engineering. Develop software spreadsheet skills, using Microsoft Excel, used in computer programming type applications.

V. CONTENT:
- A. Engineering and engineers in society
- B. Engineering Discipline Review
  1. What school is best for you and why
  2. History of Las Positas College engineering transfer students
  3. Identify resources and support services to assist in transfer
- C. Engineering Branches
  1. Mechanical engineering
  2. Civil and Environmental engineering
  3. Electrical and Electronic engineering
  4. Computer science
  5. Materials engineering
  6. Chemical engineering
  7. Industrial engineering
  8. Aeronautical engineering
- D. Interviewing a working engineer
- E. Writing a professional resume
  1. Resume writing techniques
  2. Interviewing issues
- F. Engineering functions
- G. Engineering design / design project
  1. The 5 steps involved in engineering design
- H. Professional Engineer licensing requirements

1. Education and work experience requirements
2. The two main types of licensing examinations
3. What a license allows an engineer to do

I. Ethics in engineering
1. Why necessary
2. Respect and credibility

J. Intellectual Propert
K. Use of Microsoft Excel software in solving engineering-related problems

VI. METHODS OF INSTRUCTION:

A. **Lab** - Computer-based MS Excel assignments
B. **Written exercises and case studies** - Written textbook reading assignments
C. **Discussion** - Small Group Discussion
D. **Guest Lecturers** - Local professional engineers
E. **Lecture** - Powerpoint lectures on a variety of subjects
F. **Projects** - Hands-on engineering design projects
G. **Written exercises and case studies** - Writing an interview summary
H. **Written exercises and case studies** - Writing and editing a professional resume
I. **Demonstration** - Build an audio speaker project

VII. TYPICAL ASSIGNMENTS:

A. Homework
1. Reading assignments from textbooks
2. Interview a working engineer
3. Develop a professional resume, and investigate engineering job openings
4. Researching engineering statistics online
5. Interview a working engineer, and write a summary of the interview.

B. Laboratory assignments
1. Creating a working transcript using MS Excel software
2. Creating a loan calculator program using MS Excel software

C. Hands-on Design and Building Projects
1. Review steps involved in the Engineering design process
2. Table Jumper Design Project
3. Build an audio speaker project
4. Build a truss structure project
5. Build a cardboard chair project

VIII. EVALUATION:

A. **Methods**

1. Exams/Tests
2. Papers
3. Projects
4. Group Projects
5. Class Participation
6. Home Work
7. Lab Activities
8. Other:
a. Excel assignments
b. CAD assignments

B. **Frequency**

1. Exams/Tests
a. One final exam
2. Papers
a. 6-8 written assignments.
3. Projects
a. 1-3
4. Group Projects
a. 1 to 2
5. Class Participation
a. Daily attendence
6. Home Work
a. Periodic reading assignments
b. 6-8 written assignments
7. Lab Activities
a. 1 to 3
8. Other
a. 2 to 3 excel assignments
b. 1 CAD assignment

IX. TYPICAL TEXTS:

1. Landis, Raymond. *Studying Engineering: A Road Map to a Rewarding Career.* 4th ed., Discovery Press, 2013.
2. Oakes, William, Les Leone, and Craig Gunn. *Engineering Your Future: A Comprehensive Introduction to Engineering.*, Oxford University Press, 2010.
3. Stephan, Elizabeth, William Park, Benjamin Sill, David Bowman, and Matthew Ohland. *Thinking Like An Engineer: An Active Learning Approach.* 2nd ed., Pearson, 2013.
4. Moaveni, Saeed. *Engineering Fundamentals: Introduction to Engineering.* 4th ed., Cengage Learning, 2011.
5. Brockman, Jay. *Introduction to Engineering: Modeling and Problem Solving.* 1st ed., John Wiley and Sons, 2009.
6. Martin, Gary. *Welcome to the Professional World.* 3rd ed., Great Lakes Press, 2009.

X. OTHER MATERIALS REQUIRED OF STUDENTS:

A. Computer file storage (e.g., USB drive)