Las Positas College
3000 Campus Hill Drive
Livermore, CA 94551-7650
(925) 424-1000
(925) 443-0742 (Fax)

Course Outline for ENGR 10

INTRODUCTION TO ENGINEERING

Effective: Fall 2000

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. Strongly recommended: eligibility for English 1A or 52A. 2 hours.

2.00 Units Lecture

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:

IV. MEASURABLE OBJECTIVES:

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

1. demonstrate a basic knowledge of what is involved with careers of the various engineering disciplines
2. demonstrate by discussing and writing what is expected of engineers
3. explain what is required to become an engineer
4. be familiar with the basic approach to engineering design and problem solving, including the utilization of personal computer software
5. analyze the benefits of professional organizations, professional licenses and mentors
6. develop a resume
7. develop interview techniques
8. write a career plan
9. define and discuss ethics in engineering.

V. CONTENT:

A. Engineering school choices and course work
   1. What school is best for you and why
   2. Analyze course requirements

B. Engineering discipline review
   1. Mechanical engineering
   2. Materials engineering
   3. Electrical engineering
   4. Electronic engineering
   5. Computer science
   6. Chemical engineering
   7. Civil engineering
   8. Environmental engineering
   9. Agricultural engineering
   10. Architectural engineering
   11. Aeronautical engineering

C. Design topics/project overview
   1. Engineering design project – large
   2. Engineering design project – small
   3. Calculations
   4. Project report

D. Expectations of engineers in industry and academia
   1. Education
   2. Experience
   3. Work ethic
   4. Travel
   5. Field
   6. Office

7. Skills
8. Salary

E. Review of what professional organizations do
1. Resources
2. Networking
3. Technical papers

F. Review professional licensing requirements
1. Tests
2. Ethics
3. Consulting
4. Maintaining license

G. Resumes, interviews and mentors
1. Writing resumes
2. Interviewing issues
3. Importance of mentors

H. Career planning
1. Writing one, five and ten year plans
2. Making plans work
3. Act/react work style

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

J. Continuing education and staying competitive
1. Advanced degrees
2. Professional organization courses
3. Job changes
4. Company courses
5. Professional journals
6. Publishing

VI. METHODS OF INSTRUCTION:

A. **Discussion** - Group discussions
B. Assignments
C. Videotapes
D. **Lecture** -
E. **Projects** - Review engineering projects
F. Homework assignments 1. Assigned engineering project to be demonstrated in class 2. Resume writing 3. Career plan development 4. Interview preparation
G. Text reading
H. Field assignments 1. Engineer interviews 2. Lecture topic research 3. Engineering school investigation

VII. TYPICAL ASSIGNMENTS:

A. Reading: 1. Course text: “Quantifying Your Engineering Qualities…Do You Want To Be An Engineer?” Chapter 2, Garcia, pp. 8-22. 2. Engineering school literature: catalogs, department descriptions, course syllabi 3. Professional engineering literature: Professional Engineer’s Code of Ethics, requirements for Professional Engineer license, professional journals B. Field assignments: 1. Interview a practicing engineer 2. Lecture topic research, e.g., what it takes to be an engineer 3. Investigate engineering schools. Study catalogs, college literature and school evaluations 4. Engineering site visit, e.g., consulting engineer’s office, large company’s engineer’s office C. Writing: 1. Essays: a. What current activities might lead you to an engineering career? Summarize and explain. b. Selected topics from lectures, e.g. What Interests you in becoming an engineer? Ethics and Engineering 2. Develop a resume 3. Draft a list of potential interview questions 4. Summarize and evaluate engineering school information, engineer interview, and site visit 5. Develop one, five, ten year career plans D. Oral discussions of written assignments and lectures 1. Review important issues discussed in last lecture and reading/written assignments. 2. Share information obtained from engineering schools, interviews and site visit.

VIII. EVALUATION:

A. **Methods**

1. Exams/Tests
2. Class Participation
3. Final Performance
4. Other:
    a. Weekly assignments
        1. Essays
        2. Interview summaries
        3. Engineering school research
        4. Developing one, five and ten year plans
    b. Class participation
        1. Demonstration of engineering project
        2. Discussion of assignments, lecture topics, video
        3. Sharing information obtained from engineering schools, interviews and site visit
    c. Final examination
        1. Typical question:
            a. After spending a semester learning about the engineering profession, do you still have an interest in becoming an engineer and why? If not, why not?

B. **Frequency**

1. Weekly reading and writing assignments
2. Weekly participation in class discussions
3. Final examination

IX. TYPICAL TEXTS:

1. Garcia, John *Majoring in Engineering.*, Noonday Press, 1995.
2. Horenstein, M. *Engineering Design, A Day in the Life of Four Engineers.*, Prentice Hall, 0.
3. Landis, Raymond *Studying Engineering.*, Discovery Press, 1995.

X. OTHER MATERIALS REQUIRED OF STUDENTS: