



ANTELOPEVALLEY COLLEGE

**Academic Affairs
Course Outline of Record**

Academic Affairs Only

- New Course
- COR Revision 2/14/2008
- COR Update
- Pre Req/Advisories
- Other Changes 2/14/08
- Effective Date

COURSE SUBJECT & NUMBER: ENGR 110

COURSE NAME: *Engineering Orientation and Basic Skills

COURSE UNITS: 3 **COURSE HOURS:** 3 hours weekly

COURSE REQUISITES: *(Follow format of similar courses found in the college catalog.)*

Advisory: Eligibility for MATH 102

COURSE DESCRIPTION: *(Write a short paragraph providing an overview of topics covered. Be sure to identify target audience--transfer, major, GE, degree/certificate, etc. If repeatable, state the number of times at end of description.)*

The purpose of this course is to provide an introduction to the profession of engineering and its connection with society today and in the future. The development of basic engineering skills for future success in the field will be emphasized. Engineering disciplines, functions, and employment opportunities will be considered. Application of the engineering problem solving method, teamwork, and the design process are practiced. Typical engineering problems will be solved aided by use of computer software. College courses required for individual engineering majors will be illustrated. (CSU, UC, AVC)

COURSE OBJECTIVES: *(Use Bloom's taxonomy to formulate concise, performance-based measurable objectives common to all students. Objectives must be closely aligned with course content, assignments, and methods of evaluation.)*

Upon completion of course, the successful student will be able to:

1. Review, interpret, and apply engineering text material.
2. Apply the engineering problem solving method.
3. Design a special project.
4. Practice teamwork.
5. Describe requirements for the B.S. Degree in various disciplines.
6. Practice learning skills.
7. Define and practice the procedures of technical report writing, resume preparation, and Power Point presentations.
8. Illustrate the importance of an engineering degree and the individual actions necessary for success in obtaining this degree.
9. Apply computer software to solve problems, analyze, and organize raw data.
10. Explain the contribution of engineering to society.

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COURSE CONTENT: *(Enter course content in terms of specific topics or a specific body of knowledge that each instructor must cover. Put topics in outline form with major and minor headings. Title 5 requires that each instructor must cover all material listed below.)*

- I. Introduction to the engineering work environment and engineering college requirements.
- II. Discover Program at the Career Center.
- III. Engineering majors, emerging fields.
- IV. Profiles of engineers.
- V. Computer tools: the Internet, word processing, engineering software.
- VI. Microsoft Power Point presentations and Excel spreadsheets.
- VII. A statistical profile of the profession by discipline, degree, and salary.
- VIII. Problem solving techniques in engineering.
- IX. Teamwork skills.
- X. Engineering design process.
- XI. Technical communication (verbal and written).
- XII. The SI system of units.
- XIII. Engineering mathematics.

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TYPICAL HOMEWORK ASSIGNMENTS: READING, WRITING, COMPUTATIONAL, OTHER

This information is necessary for all credit courses. Assignments should be closely related to course objectives, content, and methods of evaluation. (See sample of a “Model Outline” in the AP&P Standards & Practices handbook.) Include a range of assignments (minimum of three) from which faculty may choose when designing their syllabus.

1. Describe nature and frequency of typical reading assignments if applicable; note if any are required:

Reading may include approximately 15 pages from the textbook per week.

2. Describe nature and frequency of typical writing assignments if applicable; note if any are required:

Writing will include, but not limited to, reports in technical writing style.

3. Describe nature and frequency of typical computational assignments if applicable; note if any are required:

Computational assignments will utilize Excel software to perform: calculations on math balances and energy balances, and thermal calculations of heat taken out of a system.

4. Describe other types of homework assignments that students may be asked to complete; note if any are required:

Assignments will include Internet research, computer calculations, and presentations.

5. Describe those critical thinking skills that are derived from assignments listed above; be sure that they reflect course objectives.

Critical thinking will be included in engineering problem solving homework and special projects.

6. For categories 1-4, describe the estimated time per week it would take a student to complete homework assignments.

Title 5 uses the Carnegie formula for establishing units using a 2:1 ratio as follows: 1 hr. lecture = 2 hrs .homework; 2 hrs. lecture = 4 hrs .homework; etc. For example: reading textbook—2 hours; writing reports—3 hours.

Reading: 2 hours of reading per week

Writing: 2 hours weekly

Computational: 3 hours numerical problem solving.

Other: Typically 2 hours of outside work per week including internet research. .

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METHODS OF INSTRUCTION: *(Methods must be consistent with content and appropriate to objectives; state in terms of what instructor will be doing in order to present course content to students: for example, lecture, demonstration, facilitate group work, etc. Do not list specific instructional equipment.)*

Lecture, lab, and computer demonstrations, and group projects.

METHODS OF EVALUATION: *(These must be clearly related to course content, assignments, and objectives in order to comply with Title 5 requirements. Describe what instructor will be looking for when evaluating various assignments and tests in order to determine whether students have met course objectives. Grades must be based on demonstrated proficiency in subject matter and determined, where appropriate, by essays, objective and essay tests, research papers or projects, problem solving exercises, or skills' demonstrations.)*

Evaluation will be through the use of tests (including a final exam), special projects (which will include assembling mechanical or electrical components in the laboratory utilizing information gathered from use of the Internet), oral presentations, written reports, and numerical assignments.

Suggested Texts or other Instructional Materials *(list several when possible; include title, author, publisher, date, and latest edition.)*

Title: Engineering Your Future, 5th Edition, 2006
Author: Oakes
Publisher: Great Lakes Press