

OHLONE COLLEGE
Ohlone Community College District
OFFICIAL COURSE OUTLINE

I. Description of Course:

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| <p>1. Department/Course: <u>ENGI - 101</u></p> <p>2. Title: <u>Introduction to Engineering</u></p> <p>3. Cross Reference:</p> <p>4. Units: 3 Lec Hrs: 2 Lab Hrs: 3</p> <p>5. Repeatability: No</p> <p>6. Grade Options: Grade Only (GR)</p> | <p>7. Degree/Applicability: Credit, Degree Applicable, Transferable - CSU (T)</p> <p>8. General Education:</p> <p>9. Field Trips: <u>Not Required</u></p> <p>10. Requisites: Co-requisite: CAOT-210G</p> <p>11. Advisory Engl 151B & 163</p> |
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12. Catalog Description:

This course examines the engineering field, disciplines, job functions, salaries, career, ethics, engineering process, organization, management. It provides hands-on design projects and teambuilding skills.

Class Schedule Description:

Introduction to the field of engineering: careers, salaries, hands-on design projects, teambuilding

14. Counselor Information:

This course educates students about the engineering profession and helps students examine engineering as a career choice. Major focus on hands-on, design projects and teambuilding. This course is required for transferring engineering students.

II. Student Learning Outcomes

The student will:

1. Describe the engineering field in terms of engineering disciplines, job functions, career opportunities, salaries and ethics
2. Maintain an Engineer's Logbook, which details all the activities involved in a design project
3. Develop a flow chart of the design process, describe various aspects of the engineering design and engineering methods
4. Participate as team members on a design project
5. Identify and resolve a variety of ethical problems by solving engineering problems
6. Prepare and give an engineering presentation using appropriate software.

III. Course Outline:

A. Introduction to Discovering Engineering:

1. Introduction to Engineering
2. Welcome to Engineering
3. How to Discover Engineering
4. Engineering Education: What You Should Expect
5. Summary

B. What Is Engineering

1. Introduction
2. Defining Engineering
3. Engineering as an Applied Discipline
4. Engineering as Creative Problem Solving
5. Engineering as Constrained Optimization
6. Engineering as Making Choices
7. Engineering as Helping Others
8. Engineering as a Profession
9. Summary

C. Engineering Careers

1. Introduction
2. Engineering Jobs
3. Job Satisfaction in Engineering
4. Future of Engineering Employment
5. Summary

D. Engineering Disciplines

1. Introduction
2. How Many Engineering Disciplines Exist?
3. Chemical Engineering
4. Civil Engineering
5. Electrical and Computer Engineering
6. Industrial Engineering
7. Mechanical Engineering
8. Major Engineering Sub-disciplines
9. How do Emerging Engineering Disciplines Evolve?
10. Summary

E. Engineering Design Method

1. Introduction
2. Generating Multiple Solutions
3. Analyzing Alternatives and Selecting a Solution
4. Implementing the Solution
5. Evaluating the Solution
6. Design Examples
7. Design Parameters
8. Innovations in Design
9. Summary

F. Engineering Models

1. Introduction

2. Why Use Models
3. Types of Models
4. Using Models and Data to Answer Engineering Questions
5. Summary

G. Computing Tools in Engineering

1. Introduction
2. Computer Hardware
3. General Computer Software
4. Engineering and Science Specific Software
5. The Internet
6. Summary

H. Engineering Ethics

1. Introduction
2. Professional Issues
3. Codes of Ethics
4. Examples of Engineering Ethics
5. Summary

I. Introduction to the Engineering Case Studies

1. Millennium Bridge Case Study
2. Controllability Case Study
3. Dissolution Case Study
4. Computer Workstation Case Study
5. Power Transmission Case Study
6. Walkway Collapse Case Study
7. Trebuchet Case Study

J. LABORATORY ACTIVITIES:(3 hours per week or 54 hours per semester)

K. Design:

1. Formation of Teams and Team Building Exercise
2. Introduction to Design and Design Method
 - a. Participation in Design Projects
 - b. Participate in Hands-on- Projects

IV. Course Assignments:

A. Reading Assignments

1. Textbook

B. Projects, Activities, and other Assignments

1. Projects
2. Oral Presentations

C. Writing Assignments

1. Engineer's Logbook
2. Design and Lab Reports
3. Technical Documents

V. Methods of Evaluation/Assessment:

- A. Mid- Term
- B. Final Exam
- C. Engineer's Logbook
- D. Design Presentation (PowerPoint)
- E. Design Report (word processor)

VI. Methods of Instruction:

- A. Laboratory
- B. Discussion
- C. Demonstration
- D. Videos
- E. Lecture

VII. Textbooks:

Required

1. Prentice Hall Engineering Source Custom Book

ENGI-101 Introduction to Engineering – Ohlone College

ISBN: 0-536-19845-4

VIII. Supplies:

A. Notebook CID1