

### Course Outline of Record

1. Course Code: ENGR-009
2.
  - a. Long Course Title: Introduction to Engineering
  - b. Short Course Title: Intro Engr
3.
  - a. Catalog Course Description:
 

This course is a basic introduction to Engineering and its different fields. Covers procedures and pathways to reach full academic potential in each student's field of choice. Discusses ethics and communication skills while applying design and analysis techniques to projects from various areas of engineering. This course is intended for students pursuing a degree in engineering.
  - b. Class Schedule Course Description:
 

Introduction to the engineering profession and its fields. Emphasis on academic success, ethics, communication skills, teamwork, experimentation, and data analysis.
  - c. Semester Cycle (if applicable): Fall
  - d. Name of Approved Program(s):
    - LIBERAL ARTS with emphasis in Math and Science
4. Total Units: 3.00      Total Semester Hrs: 90.00  
 Lecture Units: 2      Semester Lecture Hrs: 36.00  
 Lab Units: 1      Semester Lab Hrs: 54.00  
 Class Size Maximum: 28      Allow Audit: No  
 Repeatability No Repeats Allowed  
 Justification 0
5. Prerequisite or Corequisite Courses or Advisories:
 

*Course with requisite(s) and/or advisory is required to complete Content Review Matrix (CCForm I-A)*

 Advisory: MATH 054
6. Textbooks, Required Reading or Software: (List in APA or MLA format.)
  - a. Landis, R., B. (2013). *Studying Engineering: A Road Map to a Rewarding Career* (4/e). Los Angeles Discovery Press. ISBN: 978-0-9793487  
 College Level: Yes  
 Flesch-Kincaid reading level: N/A
7. Entrance Skills: *Before entering the course students must be able:*
  - a.  
Able to do basic computations using algebra skills.
    - MATH 054 - Understand the concepts of variables and how variables can be used to represent an unknown quantity or a range of quantities.
    - MATH 054 - Use variables to create algebraic expressions that model quantities in an application problem.
    - MATH 054 - Employ variables to create algebraic equations or inequalities that model an application problem.
    - MATH 054 - Interpret square roots and solve square root equations.
    - MATH 054 - Use dimensional analysis appropriately in applications.
8. Course Content and Scope:

Lecture:

1. Keys to Success
  1. Goal setting
  2. Effort, approach, and attitude
  3. Structure in life
2. Engineering Profession
  1. Overcoming issues for job satisfaction
  2. Engineering disciplines and job functions
  3. Professional registration and societies
3. Taking Advantage
  1. Course and lecture preparation
  2. Reaching out to professors
  3. Seeking other academic resources
4. Learning Process
  1. Organizing the learning process
  2. Preparing for tests
  3. Use of your peers
5. Growth and Development
  1. Assessing strength and areas for improvement
  2. Developing communication skills
  3. Leadership and teamwork
6. Expanding Opportunities
  1. Student organizations
  2. Engineering projects
  3. Internships
7. Furthering Engineering Education
  1. Graduate school
  2. Ph. D in engineering
  3. Full or part-time work

Lab: *(if the "Lab Hours" is greater than zero this is required)*

Potential projects for this course may include, but are not limited to:

1. Testing Material Properties
2. Building Mechanical Structures
3. Basic Drafting
4. Building Simple Circuits
5. Wind Turbine Design
6. Basic Structural design (bridge, building, or truss)
7. Basic Computer Programming

9. Course Student Learning Outcomes:

1.  
Identify various fields of engineering and how their job functions relate to solving real life problems.
2.  
Solve simple engineering problems from the different fields.
3.  
Identify and resolve ethical problems related to the practice of the engineering profession.
4.  
Design and analyze simple experiments. Collaborate with teammates to design models to solve problems using group work. Write laboratory reports.
5.  
Prepare and give presentations using tools and programs.

10. Course Objectives: *Upon completion of this course, students will be able to:*
- Describe the role of engineers in society and classify the different engineering branches, the functions of the engineer, and the industries in which they work.
  - Identify and take route on pathways to four-year degrees in engineering.
  - Develop and apply strategies for academic success.
  - Explain ethic principles and standards within the field of engineering.
  - Demonstrate an understanding of technical writing report requirements and methods for presentations.
  - Analyze and solve basic engineering problems.
  - Demonstrate proper collaborative teamwork during engineering design projects.

11. Methods of Instruction: *(Integration: Elements should validate parallel course outline elements)*

- Collaborative/Team
- Demonstration, Repetition/Practice
- Experiential
- Laboratory
- Lecture
- Participation

12. Assignments: *(List samples of specific activities/assignments students are expected to complete both in and outside of class.)*

In Class Hours: 90.00

Outside Class Hours: 72.00

a. Out-of-class Assignments

- |   |
|---|
| <ol style="list-style-type: none"><li>1. Reading assignments</li><li>2. Written assignments</li><li>3. Laboratory reports</li></ol> |
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b. In-class Assignments

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| <ol style="list-style-type: none"><li>1. Note taking</li><li>2. Participation in Discussion</li><li>3. Take midterm and final exam</li></ol> |
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13. Methods of Evaluating Student Progress: *The student will demonstrate proficiency by:*

- Written homework  
Assigned from the textbook.
- Laboratory projects  
Several laboratory projects.
- Computational/problem solving evaluations  
Some design calculations.
- Presentations/student demonstration observations  
Presentation of group projects.
- Group activity participation/observation  
Individual participation in group projects.
- Product/project development evaluation  
Performance of projects.
- Mid-term and final evaluations  
Midterm exams and a final exam.
- Student participation/contribution  
Individual contribution to group work.
- Other  
Project reports.

14. Methods of Evaluating: Additional Assessment Information:

15. Need/Purpose/Rationale -- *All courses must meet one or more CCC missions.*

PO-GE C1-Natural Sciences

Apply the scientific process and its use and limitations in the solution of problems.

Draw a connection between natural sciences and their own lives.

Make critical judgments about the validity of scientific evidence and the applicability of scientific theories.

Demonstrate knowledge of the use of technology in scientific investigation and human endeavors, and the advantages and disadvantage of that technology.

Use college-level mathematical concepts and methods to understand, analyze, and explain issues in quantitative terms.

IO - Personal and Professional Development

Self-evaluate knowledge, skills, and abilities.

Develop realistic goals.

Demonstrate an understanding of ethical issues to make sound judgments and decisions.

IO - Scientific Inquiry

Analyze quantitative and qualitative information to make decisions, judgments, and pose questions.

IO - Critical Thinking and Communication

Apply principles of logic to problem solve and reason with a fair and open mind.

16. Comparable Transfer Course

University System	Campus	Course Number	Course Title	Catalog Year
UC	UC Irvine	ENGR 7A	Introduction to Engineering I	2014
CSU	San Jose State University	ENGR 10	Introduction to Engineering	2014

17. Special Materials and/or Equipment Required of Students:

None.

18. Materials Fees:  Required Material?

Material or Item	Cost Per Unit \$0	Total Cost \$0
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19. Provide Reasons for the Substantial Modifications or New Course:

This course is meant to expand the number of engineering courses offered and better prepare students with an interest in transferring to a four year college to study engineering. The goal is for this course to be transferable toward a Bachelor's degree in Engineering

20. a. Cross-Listed Course (*Enter Course Code*): *N/A*  
 b. Replacement Course (*Enter original Course Code*): *N/A*

21. Grading Method (*choose one*): Letter Grade Only

22. MIS Course Data Elements

- a. Course Control Number [CB00]: CCC000559865  
 b. T.O.P. Code [CB03]: 90100.00 - Engineering, General (req  
 c. Credit Status [CB04]: D - Credit - Degree Applicable  
 d. Course Transfer Status [CB05]: B = Transfer CSU  
 e. Basic Skills Status [CB08]: 2N = Not basic skills course  
 f. Vocational Status [CB09]: Not Occupational

# ENGR 009-Introduction to Engineering

- g. Course Classification [CB11]: Y - Credit Course
- h. Special Class Status [CB13]: N - Not Special
- i. Course CAN Code [CB14]: N/A
- j. Course Prior to College Level [CB21]: Y = Not Applicable
- k. Course Noncredit Category [CB22]: Y - Not Applicable
- l. Funding Agency Category [CB23]: Y = Not Applicable
- m. Program Status [CB24]: 1 = Program Applicable

Name of Approved Program (if program-applicable): LIBERAL ARTS with emphasis in Math and Science  
*Attach listings of Degree and/or Certificate Programs showing this course as a required or a restricted elective.)*

## 23. Enrollment - Estimate Enrollment

First Year: 20  
Third Year: 28

## 24. Resources - Faculty - Discipline and Other Qualifications:

- a. Sufficient Faculty Resources: Yes
- b. If No, list number of FTE needed to offer this course: N/A

## 25. Additional Equipment and/or Supplies Needed and Source of Funding.

All materials are available in science and engineering department.

## 26. Additional Construction or Modification of Existing Classroom Space Needed. (Explain:)

N/A

## 27. FOR NEW OR SUBSTANTIALLY MODIFIED COURSES

Library and/or Learning Resources Present in the Collection are Sufficient to Meet the Need of the Students Enrolled in the Course: Yes

With our other engineering courses there is sufficient materials in the library.

## 28. Originator Sasha Kiselstein Origination Date 07/01/14