

ENGI-110: INTRODUCTION TO ENGINEERING

Effective Term

Fall 2024

SECTION A - Course Data Elements

CB04 Credit Status

Credit - Degree Applicable

Discipline

Minimum Qualifications	And/Or
Engineering (Master's Degree)	

Subject Code

ENGI - Engineering

Course Number

110

Department

Engineering (ENGI)

Division

Science and Engineering (SE)

Full Course Title

Introduction to Engineering

Short Title

Introduction to Engineering

CB03 TOP Code

0901.00 - Engineering, General (requires Calculus) (Transfer)

CB08 Basic Skills Status

NBS - Not Basic Skills

CB09 SAM Code

E - Non-Occupational

Rationale

Last update more than 6 years ago.

SECTION B - Course Description

Catalog Course Description

This course introduces the major engineering disciplines, engineering decision-making and ethics, and factors for success in academic and professional settings. It provides general knowledge of engineering design, communications, problem solving, fundamental physical concepts, and computational engineering tools. Presents the relationship of engineering to materials, the environment, and mathematics. Speakers, field trips, and classroom activities expose students to the many ways engineering affects our lives and the variety of roles of engineers in society. Recommended for both technical and non-technical majors.

SECTION C - Conditions on Enrollment

Open Entry/Open Exit

No

Repeatability

Not Repeatable

Grading Options

Letter Grade or Pass/No Pass

Allow Audit

Yes

Requisites**SECTION D - Course Standards****Is this course variable unit?**

No

Units

3.00000

Lecture Hours

54.00

Outside of Class Hours

108

Total Contact Hours

54

Total Student Hours

162

Distance Education Approval**Is this course offered through Distance Education?**

Yes

Online Delivery Methods

DE Modalities	Permanent or Emergency Only?
Entirely Online	Permanent
Hybrid	Permanent
Online with Proctored Exams	Permanent

SECTION E - Course Content**Student Learning Outcomes**

Upon satisfactory completion of the course, students will be able to:	
1.	Identify and understand the major engineering fields, job functions, the ethics and decisions involved in the engineering design process, learning process, opportunities for personal growth and development to be successful in an engineering career.
2.	Demonstrate knowledge of engineering problems in different engineering fields and understanding of how the engineering design process is applied to solve them while considering ethics and decisions involved regarding the connection of new technology with human values and social goals.
3.	Understand the engineering curriculum and its requirements along with knowing how hardware and software engineering tools are utilized for data collection, data analysis, simulation, and data presentation.

Course Objectives

Upon satisfactory completion of the course, students will be able to:	
1.	Describe the major engineering disciplines and job functions.
2.	Understand and explain the importance of success factors in the academic and professional career of engineers.
3.	Understand and describe the engineering design process and how engineers communicate their ideas, design, and/or plans.
4.	Value the importance of engineering ethics in engineering decision-making.
5.	Understand how fundamental physical engineering concepts make the basis for engineering problem solving.
6.	Understand how computers are used to solve engineering problems.

- 7. Describe the relationship between engineering decision-making and the environment.
- 8. Write critical evaluations of presentations and/or class field trips.

Course Content

- 1. The Engineering Profession
- 2. Success Factors for Engineering Students
- 3. Orientation to Engineering Education
- 4. Introduction to Engineering Design
- 5. Engineering Communications
- 6. Engineering Ethics
- 7. Introduction to Problem Solving
- 8. Understanding and Using Computers
- 9. Tables and Graphs
- 10. Fundamental Physical Engineering Concepts
- 11. Computational Engineering Tools
- 12. Engineering Materials
- 13. Engineering and the Environment
- 14. Mathematics in Engineering
- 15. Speakers: Professional Engineers
- 16. Field Trips to Engineering Companies

Methods of Instruction

Methods of Instruction

Types	Examples of learning activities
Discussion	Applications of engineering, engineering professions, why study engineering, success factors for engineering students, problem solving skills.
Lecture	Presentation of course material
Visiting Lecturers	From local engineering companies
Other	Lectures. Live demonstrations. Computer simulated demonstrations. Video presentations. Individual and group problem solving in the classroom. Peer oriented guided instruction where the students help one another under the guidance of an instructor. Public Speakers.

Instructor-Initiated Online Contact Types

- Announcements/Bulletin Boards
- Chat Rooms
- Discussion Boards
- E-mail Communication
- Video or Teleconferencing

Student-Initiated Online Contact Types

- Chat Rooms
- Discussions
- Group Work

Course design is accessible

Yes

Methods of Evaluation

Methods of Evaluation

Types	Examples of classroom assessments
Projects	Engineering activities and group projects
Class Participation	- Contribute to the class discussion topics, share homework responses
Homework	Question from handouts and/or instructor
Exams/Tests	

Other	Homework assignments, speaker and field trip evaluations, class participation, midterms, and final project. Examples: 1. Estimate the number of toothpicks that can be made from a log measuring 3 ft in diameter and 20 ft long. 2. As an engineer, you are given the task to design and implement a replacement for the Golden Gate Bridge. Clearly and completely describe the general steps that you would take to accomplish your assignment. Be sure to use the Engineering Design Process.
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Assignments

Reading Assignments

Read assignments from the text, class handouts, and online resources.

Examples:

1. Go to the NSPE (National Society of Professional Engineers), find the Code of Ethics, and read it.
2. Read Section 2.3 on Moral Theories
3. Read Section 3.3 on Problem-Solving Skills

Writing Assignments

Homework assignments are collected and graded.

Written in-class assignments related to class lectures and discussions.

Written evaluations are required for each speaker and field trip.

Written final project followed with an oral presentation.

Examples: 1.

What is the difference between accuracy and precision? Provide one example when accuracy is more important than precision and one example in which precision is more important than accuracy. Be creative with your examples.

2. In chapter 2, we covered engineering ethics. What is ethics? How does it relate to engineering? Why is ethics important to engineering?

SECTION F - Textbooks and Instructional Materials

Material Type

Textbook

Author

Mark Holtzapple and W. Reece

Title

Foundations of Engineering

Edition/Version

3rd

Publisher

McGraw Hill

Year

2023

ISBN

9781260253931

Material Type

Textbook

Author

Saeed Moaveni

Title
Engineering Fundamentals: An Introduction to Engineering

Edition/Version
6th Edition

Publisher
Cengage Learning

Year
2019

ISBN #
9781337705011

Proposed General Education/Transfer Agreement

Do you wish to propose this course for a UC Transferable Course Agreement (UC-TCA)?
No

Course Codes (Admin Only)

ASSIST Update
No

C-ID Approval Dates

C-ID Descriptor	Approval Date
C-ID ENGR 110 Introduction to Engineering	07/31/2016

CB00 State ID
CCC000312230

CB10 Cooperative Work Experience Status
N - Is Not Part of a Cooperative Work Experience Education Program

CB11 Course Classification Status
Y - Credit Course

CB13 Special Class Status
N - The Course is Not an Approved Special Class

CB23 Funding Agency Category
Y - Not Applicable (Funding Not Used)

CB24 Program Course Status
Program Applicable

Allow Pass/No Pass
Yes

Only Pass/No Pass
No

Reviewer Comments

- Stacey Howard (showard) (Thu, 28 Sep 2023 17:52:53 GMT):** Added anticipated Fall 2023 effective date as no rearticulation required.
- Stacey Howard (showard) (Thu, 28 Sep 2023 18:25:31 GMT):** Selected anticipated fall 2023 begin date as no rearticulation required for existing CSU/UC transferability. No matching C-ID descriptor currently.
- Stacey Howard (showard) (Thu, 28 Sep 2023 18:26:38 GMT):** Correction on last comment: Anticipated fall 2024 implementation.

Stacey Howard (showard) (Thu, 28 Sep 2023 18:45:37 GMT): ENGI 160 - Anticipated Fall 2024 begin date of COR update ok as no rearticulation for CSU/UC transferability required. Changed term from fall 2025 to 2024. Please add "group" to term or final project. Highly recommended to add this as UC Davis will not articulate this course for any applicable major agreement in ASSIST without inclusion of a group term project. Thank you!

Stacey Howard (showard) (Thu, 28 Sep 2023 19:21:38 GMT): ENGR 242 - Suggestion addition of Differential Equations (C-ID MATH 240) as co-requisite. Previous C-ID denial due to missing co-req as per C-ID ENGR 260 descriptor and reviewer.

Stacey Howard (showard) (Thu, 28 Sep 2023 19:58:57 GMT): ENGI 240 - Anticipated fall 2024 implementation ok as CSU/UC rearticulation is not required.

Stacey Howard (showard) (Thu, 28 Sep 2023 20:10:50 GMT): ENGR 241 - Anticipated begin date of fall 2024 ok as CSU/UC rearticulation not required. C-ID ENGR 130 submission expired. Resubmission required.