



MERCER
COUNTY COMMUNITY COLLEGE

COURSE OUTLINE

Course Number
CIV105

Course Title
Introduction to Engineering

Credits
1

Hours:
Lecture/Lab/Other
1/0/0

Co- or Pre-requisite
none

Implementation
Semester & Year
Spring 2022

Catalog description:

Provides and introduction to the practice of engineering including: engineering disciplines, work environment, and competencies. The course outlines project management topics such as: scope, budget, schedule, effective communication, and proposal preparation. The course also includes career planning topics such as: resumes, interviews, internships, transferring to 4-year institutions, and professional licensure.

General Education Category:

Not GenEd

Course coordinator:

James Maccariella, 609-570-3462, maccarij@mccc.edu

Required texts & Other materials:

None

Course Student Learning Outcomes (SLO):

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

1. Identify the primary engineering disciplines and duties. [Supports ILG 1; PLO 5]
2. Identify and interpret engineering competencies including: engineering computations, design plan preparation, cost estimation, and specifications. [Supports ILG 1, 11; PLO 5]
3. Identify and interpret project management competencies including: scope, budget, effective communication, and proposals. [Supports ILG 1, 11; PLO 5]
4. Demonstrate familiarity with career competencies including: preparation of resumes and business cards, interviewing skills, obtaining engineering internships, transferring to 4-year engineering schools, and earning a professional engineering licensure. [Supports ILG 1, 11; PLO 5]

Course-specific Institutional Learning Goals (ILG):

Institutional Learning Goal 1. Written and Oral Communication in English. Students will communicate effectively in both speech and writing.

Institutional Learning Goal 11. Critical Thinking: Students will use critical thinking skills understand, analyze, or apply information or solve problems.

Program Learning Outcomes for Engineering Science (PLO)

1. Analyze engineering drawings, demonstrating an understanding of the concept of scale and orthographic projection;
2. Complete written engineering reports;
3. Write computer programs to solve engineering-based problems;
4. Complete computer-aided design (CAD) drawings;

5. Communicate effectively both verbally and in writing;
6. Demonstrate effective mathematical skills and application of scientific principles in solving engineering problems;
7. Apply critical thinking and problem-solving skills in the analysis of data, design of experimental procedures, and evaluation of outcomes;

Units of study in detail – Unit Student Learning Outcomes:

Unit I The Engineering Profession [Supports Course SLO #1, 2]

Learning Objectives

The student will be able to:

- Identify the primary disciplines and duties of engineering including chemical, civil, electrical, and mechanical
- Demonstrate familiarity with the engineering work environment including schedules, locations, and types of assignments
- Demonstrate familiarity with federal, local and private practice engineering compensation.
- Demonstrate familiarity with the current occupational outlook for professional engineers.

Unit II Engineering Competencies [Supports Course SLO #1, 2]

Learning Objectives

The student will be able to:

- Demonstrate familiarity with the proper format of engineering computations.
- Demonstrate familiarity with the accepted formats for engineering design plans.
- Identify the primary components of an engineering construction cost estimate.
- Identify the primary components of an engineering specification.

Unit III Project Management [Supports Course SLO #1, 2, 3]

Learning Objectives

The student will be able to:

- Demonstrate familiarity with the triple constraint (scope, budget, & schedule).
- Demonstrate effective team communication.
- Identify the primary components of an engineering proposal.
- Demonstrate familiarity with budget tracking and estimation techniques.
- Demonstrate familiarity with financial project planning.

Unit IV Career Planning [Supports Course SLO #1, 2, 3, 4]

Learning Objectives

The student will be able to:

- Create resumes and business cards.
- Role play in mock interviews.
- Identify methods to obtain engineering internships.
- Demonstrate how to effectively transfer to 4-year engineering programs.
- Demonstrate how to earn a professional engineering license.

Evaluation of student learning:

Course student learning outcomes will be assessed by the following activities:

Presentations	60%
Quizzes and Homework	40%