

Course Outline for: ENGR 1020 Introduction to Engineering Design

A. Course Description:

1. Number of credits: 4
2. Lecture hours per week: 4
3. Prerequisites: MATH 1100 (C or higher) or placement into MATH 1500 (or higher)
4. Corequisites: None
5. MnTC Goals: None

There are many engineering disciplines, but common to all is the design process. Tailored to first-year students in engineering disciplines, students are exposed to key skills used by practicing engineers in the design process, including visual, written, and oral communication, as well as computer-based design tools. Students will engage in substantial design projects, including prototyping, construction, and robotics.

B. Date last reviewed/updated: January 2025

C. Outline of Major Content Areas:

1. Visual, written, and oral communication.
2. Information gathering.
3. Design process.
4. Modeling / analysis.
5. Reverse engineering.
6. Electronics and microprocessors.
7. Final design project.

D. Course Learning Outcomes:

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

1. Describe the main engineering disciplines.
2. Document engineering designs in an engineering notebook, following standard engineering practice.
3. Reproduce physical objects accurately using a computer-aided design program.
4. Build simple electronic circuits correctly.
5. Write simple computer programs.
6. Work effectively with other students to complete design projects.
7. Write effective engineering documents.
8. Share technical information clearly in oral presentations.

E. Methods for Assessing Student Learning:

Methods for assessment may include, but are not limited to, the following:

1. Written journal
2. Oral presentations
3. Short term projects

4. Final robot project
5. Exams
6. Quizzes
7. Homework

F. Special Information
None