

# Inver Hills Community College

## ENGR 1110: Introduction to Engineering

### A. COURSE DESCRIPTION

Credits: 4

Lecture Hours/Week: 3

Lab Hours/Week: 2

OJT Hours/Week: \*.\*

Prerequisites:

This course requires any of these 12 prerequisites

MATH 1119 - College Algebra II (Minimum grade: 2.0 GPA Equivalent and Number of Years Valid: 2)

MATH 1120 - Survey of Calculus (Minimum grade: 2.0 GPA Equivalent and Number of Years Valid: 2)

MATH 1127 - PreCalculus (Minimum grade: 2.0 GPA Equivalent and Number of Years Valid: 2)

MATH 0940 - Intermediate Algebra (Minimum grade: 2.0 GPA Equivalent and Number of Years Valid: 2)

MATH 1118 - College Algebra I (Minimum grade: 2.0 GPA Equivalent and Number of Years Valid: 2)

A score of 50 on test Accuplacer College Level Math

A score of 8 on test ACCP local Math History

A score of 250 on test Accuplacer NG Advanced Algebra Functions

A score of 250 on test Accuplacer NG COMP Advanced Algebra Func

A score of 1158 on test MN Comprehensive Assessment Math

A score of 22 on test ACT Math

A score of 530 on test SAT Math Composite

Corequisites: None

MnTC Goals: None

Introduces students to the fundamentals of engineering in a hands-on setting. Topics include: skills necessary for practicing engineers, elements of electric circuits, micro-controller programming, computer programming for problem solving, and fundamentals of engineering graphics. Students will complete a substantial project using the engineering design process, write a brief design report, and give a final project presentation. Prerequisites: A grade of C or higher in MATH 0940 or placement into MATH 1118 or placement into MATH 1127 or higher. ENGR 1000 and ENG 1108 strongly recommended.

**B. COURSE EFFECTIVE DATES:** 08/24/2015 - Present

### C. OUTLINE OF MAJOR CONTENT AREAS

1. Engineering Design Process, and Project Management, Ethics (15%)
2. Fundamentals of 2-D & 3-D graphics, measurement (15%)
3. Computer programming for problem solving (25%)
4. Micro-controller Programming, and Applied DC electric circuits (20%)
5. Project work (25%)

#### **D. LEARNING OUTCOMES (General)**

1. Use computer programming language to obtain solutions to basic problems.
2. Utilize software to solve engineering problems, and for written reports and presentations.
3. Approach problem solving in a systematic manner. Employ design tools/techniques such as engineering design process, project management, and decision methods.
4. Write a brief design report, and deliver a technical oral presentation of the design report.
5. Demonstrate skills with electronic components, and in microprocessor programming. Design, construct, and present a microprocessor-controlled system.
6. Measure and report linear dimensions using vernier caliper and micrometer.
7. Understand and use basic engineering graphics including orthographic projection, section views, dimensioning and tolerancing, assembly drawings, and systems of projection.
8. Work on projects individually and as part of a team.
9. Articulate ethical and professional responsibilities in engineering.

#### **E. Minnesota Transfer Curriculum Goal Area(s) and Competencies**

None

#### **F. LEARNER OUTCOMES ASSESSMENT**

As noted on course syllabus

#### **G. SPECIAL INFORMATION**

None noted