



# Pre-Engineering

## Program Description

To prepare capable and interested high school students for a future engineering career, a collaborative program has been designed by the University of Michigan-Flint and Lapeer County ISD Education and Technology Center. This pre-engineering program started in the Fall of 2008 and is managed by the Computer Science, Engineering Science and Physics Department of UM-Flint. The series of four courses is taught by UM-Flint faculty.

## Qualifications

Selected high-ability, highly motivated senior students from the six public high schools in Lapeer County will be eligible to enroll in the class. Students should be interested in post-secondary study of engineering. In order to qualify for this program, interested students are expected to:

- Be enrolled in Calculus and AP Calculus in their home high schools
- Have either completed or to be enrolled in high school physics
- The program is limited to 25 qualified students

## Courses Offered:

### Fall

EGR 165-Computer Aided Design (3 credits)  
The goal of this course is to familiarize engineering students with fundamental principles of computer aided design and perform basic engineering analysis, such as stress and deflection using solid modeling and parametric design using Pro-Engineer software.

CSC 101-Fluency with IT and Computing (3 Credits)  
Develops IT fluency for productive daily use and prepares the student for a high-level programming course through an intuitive environments such as Smartphone's and LEGO Mindstorms.

### Winter

CSC 175-Problem Solving and Programming I (4 credits) This course introduces students to the structured programming language C++ which is essential for engineering applications and problem solving. Programming language concepts, arrays, structures, and subprograms will be included.

EGR 102-Introduction to Engineering (3 credits)  
This course introduces students to various engineering disciplines, and common engineering science foundations of all branches, teaming, ethics, and communication. Fundamental principles of various engineering disciplines will be taught using one central problem from each discipline.

## Dual Enrollment

**Students who participate in this program will be dual-enrolled in their home high schools and University of Michigan-Flint. Credit earned will be recorded on official UM-Flint transcripts as regular UM-Flint courses. Students completing the program will earn a total of 12 University of Michigan-Flint credits, applicable to degree programs at UM-Flint and other institutions.**

## Lapeer County Education and Technology Center

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