1. *Course number and name*

**ENGR 103: Introduction to Computers**

1. *Credits and contact hours*

1 credit hour; one 2-hour-45-minute lab session/week

1. *Instructor’s or course coordinator’s name*

Instructor: Jonathan Song

Course coordinator: Cheng Chen, Associate Professor

1. *Text book, title, author, and year*

Paul Deitel, C How to Program (w/MyProgrammingLab EText Access Card), 8th edition, Pearson Education, 2015.

1. *other supplemental materials*

* Arduino Starter Kit
* Brian W. Kernighan, C Programming Language, 2nd edition, Pearson, 1989
* Simon Monk, Programming Arduino, 2nd edition, McGraw-Hill, 2016
* Simon Monk, Programming Arduino Next Steps: Going Further with Sketches, McGraw-Hill, 2013

1. *Specific course information*
2. *brief description of the content of the course (catalog description)*

Introductory course on programming, using a high-level language in Program C. Use of algorithms. Program organization, formulation, and solution of engineering problems. Laboratory.

1. *prerequisites or co-requisites*

MATH 226: Calculus I

1. *indicate whether a required, elective, or selected elective course in the program*

Required for Civil Engineering and Mechanical Engineering

1. *Specific goals for the course*
2. *specific outcomes of instruction, ex. The student will be able to explain the significance of current research about a particular topic.*

* Students will demonstrate an ability to use PC based computers and the university main frame.
* Students will demonstrate an ability to use the ANSI-C compiler with multiple operating systems by using PCs and the main frame.
* Students will demonstrate knowledge of the basic grammar of ANSI-C language.
* Students will demonstrate knowledge of "hands–on" practice in the engineering computer lab.
* The student will demonstrate knowledge of writing programming code to solve basic engineering problems.
* Students will demonstrate an ability to program an embedded microcontroller using Program C code architecture

1. *explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.*

Course addresses ABET Student Outcome(s): 1,2,6

1. *Brief list of topics to be covered*

* Introduction to Computers, the Internet and the Web
* Introduction to C Programming
* Structured Program Development in C
* C Program Control
* C Functions
* C Arrays
* C Pointers
* C Characters and Strings
* C Formatted Input/Output
* C Structures, Unions, Bit Manipulation and Enumerations
* C File Processing
* C Data Structures
* C Preprocessor
* Other C Topics
* Programing an embedded microcontroller using Program C
* C++ as a Better C; Introducing Object Technology