

1. *Course number and name*
ENGR 103: Introduction to Computers

2. *Credits and contact hours*
1 credit hour; one 2-hour-45-minute lab session/week

3. *Instructor's or course coordinator's name*
Instructor: Susan M. Bowley, Ph.D.

Course coordinator: Cheng Chen, Associate Professor

4. *Text book, title, author, and year*
Paul Deitel, C How to Program (w/MyProgrammingLab EText Access Card), 8th edition, Pearson Education, 2015.
 - a. *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

5. *Specific course information*
 - a. *brief description of the content of the course (catalog description)*
Introductory course on programming, using a high-level language. Use of algorithms. Program organization, formulation, and solution of engineering problems. Laboratory.
 - b. *prerequisites or co-requisites*
MATH 226: Calculus I
 - c. *indicate whether a required, elective, or selected elective course in the program*
Required for Civil Engineering and Mechanical Engineering

6. *Specific goals for the course*
 - a. *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 basic engineering problems.

- b. *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): A, K

7. *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
- C++ as a Better C; Introducing Object Technology