COP 2220 Introduction to Programming in C

Credits: 3 credits

Text book, title, author, and year: *Problem Solving and Programming Design in C 7th Edition*, by Jeri R. Henley and Elliot B. Koffman, Addison-Wesley, 2013.

a. **Supplemental materials:** none.

Specific course information

a. Catalog description: This course provides the fundamental concepts of programming in the language C.

b. **Prerequisites:** A working knowledge of using a computer and Microsoft Windows operating systems

c. **Required, elective, or selected elective:** required

Specific goals for the course

a. Specific outcomes of instruction: By the end of the course students will be able to: (i) Understand and apply top-down design techniques, and modular programming using functions, control structures such as if-else, switch, and loop statements; (ii) Know the definition, and use of arrays, and strings (iii) Understand and apply file processing, structures and their use; (iv) Know the basic concept of data structures, and general programming techniques for larger programs.

Brief list of topics to be covered:

- Overview of C
- Compilation Process: editor, compiler, linker, capturing program output
- Selection and control structures: if and switch statements
- Repetition and loop statements: while, do, for loops
- Programming style conventions: indentation, comments, naming, etc. and standards for documentation
- Libraries, compiling and linking: basic concepts and header files
- Top-down design with functions. Return by value and by reference. Const parameters, and pointer concepts.
- Program testing, debugging, and error handling techniques
- Modular Programming
- Simple Data Types, assignment, and arithmetic and logical operators and expressions
- Input/Output in C: printf, scanf, fopen, fprintf, fscanf, fclose
- Arrays: single and multi-dimensional arrays, declaration and initialization.
- Strings, and basic string functions
- Structure types and their use
- File processing
- General programming techniques for larger programs, and other selected topics as time allows