

Computer Programming I

CS140 : 4 (4, 0, 0)

Prerequisites:

NO

Objectives:

1. Summary of the main learning outcomes for students enrolled in the course.
Upon successful completion of the course, the student should be able to:
 - (a) Introduce the student to the fundamentals of structured programming, with emphasis on understanding variables, control structures, arrays, and functions.
 - (b) Introduce the student to various tools used in programming, including editors, compilers, linkers, and loaders.
2. Briefly describe any plans for developing and improving the course that are being implemented. (eg increased use of IT or web based reference material, changes in content as a result of new research in the field)

Course Description:

- General description in to be used for the Bulletin or Handbook

This course is to introduce the students to the principles of computer programming via the C/C++ programming language. The course will focus on the concepts of structured programming. Topics include input, output, sequence, selection, repetition, functions, recursion, arrays, and pointers.

Syllabus:

- 1- **Introduction to computers and basic programming concepts and constructs:** Writing simple C++ programs, main parts of C++ programs, main function, variables and built-in data type
- 2- **Simple control structures for decision making and repetition:** if...else and while statements, Control statements: for, do...while, switch, break, and continue statements, Logical operator &&/||/!, simple condition and compound condition and bool data type
- 3- **Functions and recursion:** Program Modules in C++. Declaring and using Functions, Passing arguments by values and by reference, Recursive functions, Math library functions, Function overloading and Scope of Declarations
- 4- **Arrays:** Declaring and Creating Arrays, Examples Using Arrays, Passing Arrays to functions, Searching Arrays, Multidimensional Arrays (2-D Arrays as an example) and Sorting Arrays,
- 5- **Pointers and strings:** Introduction to pointers and pointer arithmetic, directly and indirectly referencing a variable, Pointer operators & and *, Pass-by-reference with pointer arguments, Introduction to Strings and String manipulations and Library string manipulation functions.

References:

- 1- Required Textbox :
 - C++: How To Program, Deitel and Deitel, 8th edition, Prentice Hall, 2011
- 2- Essential References
 - Programming in C, Stephen Kochan, 3rd edition, Sams, 2004.
 - The C Programming Language, Brian W. Kernighan and Dennis M. Ritchie, 2nd edition, Prentice Hall, 1988.
 - C Programming: A Complete Guide to Mastering the C Language, Augie Hansen and August Hansen, Addison-Wesley, 1989.
 - The C Book, Michael Banahan and Mike Banahan, Addison-Wesley, 1988.
 - C Programming: A Modern Approach, Kim N. King and Norton, 1996.
 - Expert C Programming: Deep C Secrets, Peter van der Linden, Prentice Hall PTR, 1994.