Degree Applicable
Course ID 005203

Glendale Community College
November 2015

COURSE OUTLINE

**Computer Science/Information Systems 135 (C-ID Number: COMP 122)**
**Programming in C/C ++ (C-ID Title: Programming Concepts and Methodology I)**

## I. Catalog Statement

CS/IS 135 is a course in programming using the C/C ++ languages, which are easily transportable languages with uses in applications programming for real time, business, and image processing systems as well as systems programming. Types, operators, control flow functions, object-oriented programming, classes, data abstraction, and program structure pointers and arrays are covered in the programming assignments.

Total Lecture Units: 3.0
Total Laboratory Units: 0.0
**Total Course Units: 3.0**

Total Lecture Hours: 48.0
Total Laboratory Hours: 0.0
Total Laboratory Hours To Be Arranged**:** 0.0
**Total Faculty Contact Hours: 48.0**

Prerequisite: CSIS 112 or equivalent

## II. Course Entry Expectations

Prior to enrolling in the course, the student should be able to:

- analyze problems and give logical solutions to them using flowcharts or pseudocode;
- code, debug, and test programs;
- demonstrate understanding of using a computer for programming.

## III. Course Exit Standards

Upon successful completion of the required coursework, the student will be able to:

- analyze a programming task in order to develop and communicate efficient algorithms to implement that task;
- recognize programming problems on a function-by-function basis and develop structured/procedural code based on this approach;
- demonstrate an understanding of object-oriented programming concepts and object-oriented design;
- program in the C++ language including use of objects, pointers, and structures.

## IV. Course Content **Total Faculty Contact Hours = 48.0**

A. Introduction to the C/C ++ Language **(4 hours)**
   1. Languages before C/C++
      a. Family of languages
      b. Procedural vs object-oriented
   2. Components of the C/C++
   3. Variables and arithmetic
   4. Data types
   5. Operators and expressions
B. Creating a Program **(3 hours)**
   1. Required files
   2. Input/output
   3. Formatting
   4. Functions and scope
C. Control Flow Statements **(7 hours)**
   1. Branching - IF, IFELSE
   2. Loops - WHILE and FOR
   3. Switch
   4. Break and continue
   5. Go to and return
D. Functions and Complex Expressions **(14 hours)**
   1. Function arguments, types, and parameters
   2. Scope rules
   3. Recursion
   4. Compound assignments
   5. Operator precedence
E. Arrays **(4 hours)**
   1. Single and multidimensional
   2. Declaration, reference, store and initialize
   3. Use of arrays in string processing
F. Pointers **(3 hours)**
   1. Pointers and addresses
   2. Syntax and use of pointer operator
   3. Pointers and arrays
   4. Pointers to functions
G. Data Structures and Classes **(3 hours)**
H. Introduction to Object-Oriented Programming **(8 hours)**
I. Input and Output **(2 hours)**
   1. Standard I/O
   2. Formatted I/O

## V. <u>Methods of Instruction</u>

The following methods of instruction may be used in the course:

- lecture;
- demonstration;
- multimedia;
- programming projects.

## VI. Out of Class Assignments

The following out of class assignments may be used in the course:

- programming assignments (e.g. design/develop an object-oriented program);
- computer assignments (e.g. hands-on exploration of GUI programming fundamentals).

## VII. Methods of Evaluation

The following methods of evaluation may be used in the course:

- quizzes;
- midterm examinations;
- final examination.

## VIII. Textbook(s)

Bronson, Gary. *A First Book of C++*. 4th ed. Boston: Course Technology, 2012. Print. 10th Grade Textbook Reading Level. ISBN: 978-1111531003

## IX. Student Learning Outcomes

Upon successful completion of the required coursework, the student will be able to:

- implement object-oriented programming concepts and object-oriented design;
- design, code, and debug basic object-based programs and procedural programs;
- utilize objects, pointers, and structures to program in the C++ language.