MISSISSIPPI GULF COAST COMMUNITY COLLEGE

COURSE OF STUDY

Fall 2017 Date Revised

Course Number and Name: CSC 2134, Computer Programming I with C/C++

Department/Program: Mathematics/Computer Science

Semester Credit Hours: 4

Contact Hours Per Week:

Lecture: 3

Laboratory: 2

Co-requisite Courses: College Algebra (MAT 1313) or permission of the instructor

Course Description: Introduction to problem solving methods and algorithm development; designing, debugging, and documentation in C/C++ with a variety of applications.

Equal Opportunity

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COURSE LEARNING OUTCOMES

Upon the successful completion of this course, the student will be able to:

		Estimated Direct Instruction Hours	Estimated Out-of- Class Hours
1.	Introduction to Programming	4	8
	a. Hardware and Software & High Level Language Programs		
	b. Programming and the Problem solving cycle		
	c. Structured Programming vs. OOP		
2.	Basic Elements of C++	6	12
	a. Parts of a C++ program		
	b. Data Types	1	
	c. Arithmetic Operators and Precedence		
	d. Input & Output, Increment & Decrement, and Preprocessor		
3.	Expression and Interactivity	10	20
	a. Mathematical Expressions		
	b. Formatting Output		
	c. The string type		
	d. File Input/Output		
4.	The Selection Control Structure	10	20
	a. Relational Operators		
	b. Logical Operators and Expressions		
	c. The if, if else, if else if, and switch statements		
	d. Nested if statements and conditional operators		
5.	The Repetition Control Structure	10	20
	a. The while loop, the for loop, and the dowhile loop		
	b. Break and Continue statements		
	c. Nested loops and control structures		
6.	User-Defined Functions	10	20
	a. Predefined and User-Defined Functions	-	
	b. Value returning and void functions		
	c. Value Parameters and Reference Parameters		
	d. Scope, local, global, and static variables		
-	e. Function overloading and default parameters		
7.	Arrays	10	20
	a. Processing one dimensional arrays		
	b. Array initializing and indexing		
	c. C-strings as character arrays	7	
	d. Parallel and multidimensional arrays	7	
	e. The Vector type and List processing	7	
	TOTALS	60	120

CONTENT OUTLINE

I. Introduction to Computers and Programming

- A. Hardware
- B. Software
- C. Processing a High-Level Language Program
- D. Programming with the Problem-Analysis-Coding-Executing Cycle
- E. Structured Programming versus Object-Oriented Programming Methodologies

II. Basic Elements of C++

- A. The parts of a C++ Program
- B. Data Types simple, floating point, and string
- C. Arithmetic Operators and Operator Precedence
- D. Expressions mixed and casting
- E. Input allocating memory and putting data into variables
- F. Increment and decrement variables
- G. Output
- H. Preprocessor Directives
- I. Creating a C ++ Program
- J. Program Style and Form blanks, comments, etc.
- K. More on Assignment Statements

III. Expressions and Interactivity

- A. I/O Streams and Standard I/O Devices -- cin and cout
- B. Mathematical Expressions
- C. Input Failure
- D. Output and Formatting Output -manipulators and functions
- E. Input/Output and the string type
- F. File Input/Output

IV. Control Structures I (Selection)

- A. Control Structures
- B. Relational Operators with simple data types and with string type
- C. Logical Operators and Logical Expressions
- D. The *if*, *if*/*else*, *if*/*else if*, and *switch* statements
- E. Nested if
- F. Conditional operator
- G. Terminating a program with the assert function

V. Control Structures II (Repetition)

- A. Why is Repetition Needed:
- B. while Looping structure
- C. for Looping (Repetition) structure
- D. do.. while Looping (Repetition) structure
- E. Break and continue statements
- F. Nested Control Structures

VI. User – Defined Functions

- A. Predefined Functions
- B. User-Defined Functions
- C. Value-Returning Functions return, Function prototype, Execution flow

- D. void Functions with and without parameters
- E. Value Parameters
- F. Reference Variables as Parameters
- G. Value and Reference Parameters and Memory Allocation
- H. Scope of an Identifier
- I. Side Effects of Global Variables
- J. Static and Automatic Variables
- K. Function Overloading: An Introduction
- L. Functions with Default Parameters

VII. Arrays

- A. Arrays
 - 1. Accessing array components
 - 2. Processing one-dimensional arrays
 - 3. Array index out-of-bounds
 - 4. Array initialization during declaration
 - 5. Some restrictions on array processing
 - 6. Arrays as parameters to functions
 - 7. Integral data type and array indices
- B. C-strings (Character Arrays)
 - 1. String comparison
 - 2. Reading and writing strings
 - 3. String input
 - 4. String output
 - 5. Specifying input/output at execution time
- C. Parallel Arrays
- D. Two-and Multidimensional Arrays
 - 1. Accessing array components
 - 2. Two-dimensional array initialization during declaration
 - 3. Two-dimensional arrays and enumeration types
 - 4. Processing two-dimensional arrays
 - 5. Passing two-dimensional arrays as parameters to functions
 - 6. Array of strings
 - 7. Another way to declare two-dimensional arrays
- E. Multidimensional Arrays
- F. The Vector Type (class)
- G. List Processing

REFERENCES/TEXTBOOKS:

Gaddis, Tony, <u>Starting Out With C++</u>, From Control Structures through Objects, 7th Edition, by Tony Gaddis, Addison Wesley, 2012.

The ISBN number: 978-0-13-257625-3.



Software: This class will be taught with Dev-C++ software.

EVALUATION AND ASSESSMENT METHODS:

The final grade will be determined by major tests, a compressive final exam, and several various programming projects.

Course Assignments/Projects:

10%	Quizzes and homework	
40%	Programming Projects:	(at least 5)
50%	Exams	
	Exam 1	
	Exam 2	
	Comprehensive Final	

GRADING SCALE:

A = 90 and upB = 80 - 89C = 70 - 79D = 60 - 69F = Below 60

Reasonable Accommodation

Mississippi Gulf Coast Community College is in compliance with Section 504 of the Rehabilitation Act of 1973 as amended and the Americans with Disabilities Act of 1990. Prospective students who require special and reasonable accommodation(s) because of physical or mental impairment must make their needs known

prior to enrollment at Mississippi Gulf Coast Community College. Prospective students must follow the guidelines in the college catalogue. If you have a disability of any kind and will need reasonable accommodations or assistance in the classroom or with this course, please see the instructor the first day of attendance.