

HUDSON COUNTY COMMUNITY COLLEGE
COURSE SYLLABUS



TITLE OF COURSE: CSC 115 Programming in C++ for Computer Science 3 CR

TERM:

PREREQUISITE(S):

INSTRUCTOR:

OFFICE HOURS: TBD

LOCATION:

EMAIL ADDRESS:

PHONE:

COURSE DESCRIPTION:

In this course, the fundamentals of computer science are introduced, with emphasis on programming methodology and problem-solving. Topics include, but are not limited to, concepts of computer systems, software engineering, and algorithm design, programming languages, and data abstraction, with applications. A high level language is fully discussed and implemented and serves as a vehicle to illustrate many of the concepts taught.

2 hours lecture/2 hours lab.

Prerequisite: MAT 100 or MAT 106 or M

STUDENT OUTCOMES/OBJECTIVES:

Upon completion of this course, students will be able to:

**Student Learning
Outcomes:**

Upon satisfactory completion of the course, the student will:

1. be able to describe the components of a computer and the relationships between them;
2. be able to identify the components in the fundamental structure of a C++ program;
3. be able to identify the standard scalar data types, naming rules, and declaration forms and be able to incorporate them into C++ programs.
4. know the standard fundamental input and output functions and be able to incorporate them into C++ programs.
5. understand each of the C++ operators and standard functions and be able to use them in C++ programs;
6. recognize the standard format for program control statements and be able to apply them in writing process statements;
7. be able to apply structured programming techniques when designing and writing a program;
8. understand the structure of one-dimensional arrays and be able to use them in the representation of processing of data;

Course Content:

1. Introduction to Hardware & Software:
 - hardware components of a computer
 - systems software and applications software
 - programming language
2. Program Development:
 - Overview of the program development process
 - System routines, the preprocessor, and the linker
 - Problem specification
 - Algorithm design and representation
 - Source code, object code, and the compiler
 - Syntax errors, run-time errors, logic
3. Interaction with the Computer System
 - Formatting a disk
 - Sign-on and sign-off procedures
 - Creating, editing, and saving a source code file
 - Compiling and executing a program
 - Printing a text file
4. Identifiers
 - Keywords, standard identifiers, and programmer-defined identifiers

 - Variables and symbolic constants
 - Standard scalar data types
 - String data type
 - Literal constants
5. Program Structure: Heading Section & Declaration Section
 - General structure of a C++ program
 - Heading section
 - Comment statements
 - Declaration section
 - Typedef
 - The main() function
6. Program Structure: Input Section
 - Streams and the iostream library
 - Insertion and extraction operators
 - Manipulators without arguments
 - String input
7. Program Structure: Output Section
 - Unformatted output
 - Fstream library and file I/O
 - Writing program output to a disk file
8. Program Structure: Process Section
 - Operator terminology, precedence classes, and associativity
 - Arithmetic operators

Exam 1: Topics 1 through 7

- Increment and decrement operators
 - Side effects and sequence points
 - Implicit and explicit type conversions - type cast operator
 - Assignment operators and assignment statement
 - String copy function
 - Standard mathematical library functions
9. Formatted Output
- Manipulators with arguments
 - ios format flags
 - Output design
 - Creating a program template
10. Conditions and Boolean Expressions:
- Simple conditions and compound conditions
 - Relational, equality, negation, and logical operators
 - Short circuit evaluation
 - Precedence and associativity of operators
 - String compare function
 - Representing conditions by Boolean expressions
11. Selection Control Structures
- If statement and nested if statement
 - Compound statements
 - Conditional operator
 - Switch statement
 - Break statement
 - Program testing and debugging - structured walk-throughs

Exam 2: Topics 8 through 11

12. Repetition Control Structures: do-while and for statements
- Do-while statement
 - Input validation
 - For statement
 - Table generation
13. Repetition Control Structures: while statement
- While statement
 - Continue statement
 - Program testing and debugging - structured walk-through
14. Structured Data Types: One-dimensional Arrays
- Terminology and storage
 - Declaration form - use of typedef
 - Array input
 - Array output
15. Processing One-dimensional Arrays
- Mean component of an array
 - Maximum and minimum component of an array
 - Sorting array components

- Searching an array
- Other fundamental array processing algorithms

16. Top-down functional decomposition and structure charts

- Function declaration, definition, and call
- Program development – the preprocessor and linker
- Scope of a variable
- Return statement
- Reference types and pass by reference

Final Exam

EVALUATION CRITERIA:

Student will be graded based on:

- Test one 15%.
- Midterm 25%.
- Test two 15%.
- Final 25%.
- An evaluation of laboratory projects Attendance and class participation and other assignments 20%.

There will be no makeup for missing tests.

Late Homework assignments will not be accepted.

Any student misses a class for any reason is responsible for the notes and the assignments that are given on the day he/she missed.

The schedule for the tests and the laboratory assignments depends on the covered material.

Excess of absence will result in a failing grade (3 absences maximum).

***** 20 minutes of lateness is considered one absence.***

Grading policy:

95 - 100	A
90 - 94	A-
85 - 89	B+
80 - 84	B
75 - 79	C+
70 - 74	C
65 - 69	D
0 - 64	F

Academic Integrity Standards:

Academic integrity is central to the pursuit of education. For students at HCCC this means maintaining the highest ethical standards in completing their academic work.

Violations of the principle of academic integrity include:

- Cheating on exams.
- Reporting false research data or experimental results.
- Allowing other students to copy one's work to submit to instructor.

- Communicating the content of an exam to other students who will be taking the same test.
- Submitting the same project in more than one course, without discussing this first with the instructor.
- Submitting plagiarized work. **Plagiarism** is the use on another writer's words or ideas without properly crediting that person. This unacknowledged use may be from published books or articles, or another student's work.

Disability Support Services:

Students with disabilities who believe that they might need accommodations in the class are encouraged to contact their **Counselors or the disability Support services.**

Required Text books:

Starting Out with C++ Brief Version, 7th Edition
Update, Tony Gaddis and Barret Krupnow
Pearson/Addison-Wesley

Student Classroom Recording Policy

- Hudson County Community College prohibits the audio-visual recording, transmission, and distribution of classroom sessions. Classes may only be recorded with the advance written permission of the instructor. The Hudson County Community College classroom recording policy must be listed in all syllabi.
- All classroom recordings can only be used for academic purposes by students enrolled in that class. Recordings may not be shared, reproduced, or uploaded to public websites or other mediums, and these recordings may contain copyrighted material and are prohibited from any form of commercial use.
- All students and guests must be informed that the class may be recorded. Due to issues related to privacy and the possible inhibition of student participation, instructors should be mindful of the effects of permitting classroom recording.
- Instructors should retain electronic or paper copies of their written consent to grant classroom recordings.
- Students must destroy their recordings at the end of the semester.
- Students who are granted permission to record their class by the office of Disability Support Services should inform the instructor beforehand and are subject to the policies outlined in this document.
- Violation of this policy is subject to disciplinary action listed under the code of conduct as included in the Student Handbook.

E-mail:

For detailed covered topics and dates, please refer to the course's schedule