

**Tompkins Cortland Community College**  
**Master Course Syllabus**

**Course Discipline and Number: CIS 213**  
**Course Title: Programming in C++**

**Year: 2021-2022**  
**Credit Hours: 3**

**Attendance Policy:** *To maintain good grades, regular attendance in class is necessary. Absence from class is considered a serious matter and absence never excuses a student from class work. It is the responsibility of all instructors to distribute reasonable attendance policies in writing during the first week of class. Students are required to comply with the attendance policy set by each of their instructors. Students are not penalized if they are unable to attend classes or participate in exams on particular days because of religious beliefs, in accordance with Chapter 161, Section 224-a of the Education Law of the State of New York. Students who plan to be absent from classroom activity for religious reasons should discuss the absence in advance with their instructors. See college catalog for more information.*

**Services for Students with Disabilities:** *It is the College's policy to provide, on an individual basis, appropriate academic adjustments for students with disabilities, which may affect their ability to fully participate in program or course activities or to meet course requirements. Students with disabilities should contact the Coordinator of Access and Equity Services, to discuss their particular need for accommodations. All course materials are available in alternate formats upon request.*

### **Course Description**

An introduction to the C++ programming language using structured programming and Object Oriented Programming techniques. Students learn basic program structure, data types, control structures, pointers, arrays, strings, and are introduced to classes and objects. Emphasis is on writing structured programs to solve business-oriented problems. Prerequisites: C or better grade in CIS 108 or CSCI 160; MATH 095 and RDNG 099 if required by placement testing; ENGL 099 or prior completion or concurrent enrollment in ESL 120, 121, and 122 (or prior completion of ESL 103) if required by placement testing. 3 Cr. (2 Lec., 2 Lab.) Spring semester.

### **Course Context/Audience**

This is a required course in the Computer Forensics and Computer Information Systems programs. Students with programming backgrounds who are interested in learning C++ may also take this course as an elective.

### **Basic Skills/Entry Level Expectations**

**Writing:** W2 Student should have completed ENGL 099 (if needed). The course requires short written responses and/or short papers without documentation, particularly personal reflection or narrative.

**Math:** M4 Completed MATH 095(if needed) - Course requires the use of basic mathematical skills plus basic algebra skills.

**Reading:** R2 Before taking this course, students must have a C or better in RDNG 099 or assessment indicating that RDNG 099 was not required.

### **Course Goals**

This course has three 3 primary goals:

1. To give the student experience expressing the solutions to programming problems in the form of an algorithm.
2. To teach the fundamentals of programming using the C++ programming language.
3. To develop good, structured programming techniques and an appreciation of the importance of adhering to programming standards and conventions.

### **Course Objectives/Topics**

<b>Objective/Topic</b>	<b># Hours</b>
The student will construct a complete C++ program using appropriate header files and program structure.	3 Hours
The student will declare data using appropriate data types.	3 Hours

The student will receive input into a program as well as produce well-formatted output in a program. The input and output will be interactive or from a data file.	3 Hours
The student will understand the need for breaking a large program into functions.	3 Hours
The student will write functions, using value and/or reference parameters as appropriate.	6 Hours
The student will write conditional structures in C++, including if statements, nested if statements, and switch statements.	3 Hours
The student will write C++ programs that include while and for loops.	6 Hours
The student will create and use single-subscripted arrays in C++.	3 Hours
The student will create and use double-subscripted arrays in C++	3 Hours
The student will declare and use pointers to reference elements of an array.	6 Hours
The student will understand the concept of abstract data types, and the concept of classes and objects in C++	6 Hours

### General Education Goals - Critical Thinking & Social/Global Awareness

<b>CRITICAL THINKING OUTCOMES</b>	<b>HOW DOES THE COURSE ADDRESS THE OUTCOMES</b> (Include required or recommended instructional resources, strategies, learning activities, assignments, etc., that must or could be used to address the goal/outcomes)
<p>Students will be able to</p> <ul style="list-style-type: none"> <li>➤ develop meaningful questions to address problems or issues.</li> <li>➤ gather, interpret, and evaluate relevant sources of information.</li> <li>➤ reach informed conclusions and solutions.</li> <li>➤ consider analytically the viewpoints of self and others.</li> </ul>	NA
<b>SOCIAL/GLOBAL AWARENESS OUTCOMES</b>	<b>HOW DOES THE COURSE ADDRESS THE OUTCOMES</b> (Include required or recommended instructional resources, strategies, learning activities, assignments, etc., that must or could be used to address the goal/outcomes)
<ul style="list-style-type: none"> <li>➤ Students will begin to understand how their lives are shaped by the complex world in which they live.</li> <li>➤ Students will understand that their actions have social, economic and environmental consequences.</li> </ul>	NA

### Instructional Methods

Students learn how to program best by doing. The student should be required to complete several independent programming projects. Students also benefit from looking at alternative solutions to a given problem. Introduction of new topics is often best done by providing samples of code and walking through the execution of the code together. Non-examples are also very appropriate - looking for errors or bugs in existing code can help with debugging techniques.

### Methods of Assessment/Evaluation

Method	% Course Grade
Exams (may include final examination) - minimum of 3 exams	60%
Programming assignments and/or homework problems	40%

### Text(s)

D.S. Malik, C++ Programming: From Problem Analysis to Program Design, 3<sup>rd</sup> Edition © 2007 Thomson Course Technology

### Bibliography

C++ How To Program, Deitel and Deitel, Latest edition Edition, Pearson Education

B. Stroustrup, Programming: Principles and Practice Using C++, © 2008, Addison-Wesley

### Other Learning Resources

<b>Audiovisual</b> No resources specified
<b>Electronic</b> No resources specified
<b>Other</b> No resources specified