Department Chair: Merille Siegel

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Course Code: CIS 165   **Course Title:** Fundamentals of C++ Programming

Department: CIS/Engineering   **Semesters Offered:** Fall, Spring

Course Description:
This course introduces the C++ programming language. Emphasis is placed on the logical analysis of a well-structured program in the language, which is capable of handling low-level language features. The run-time libraries, program correctness, portability, and maintainability are thoroughly discussed. Systems and application programs are constructed during open lab hours.

Prerequisites: CIS 108

Credits: 4   **Lecture Hours:** 4   **Lab/Studio Hours:** 0   **Clinical/Fieldwork Hours:** 0
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Required Textbook/Materials:
Textbook: "A First Book of C++"; G. Bronson, Course Technology, Cengage Learning; 2012
Reference: "Starting Out with C++ - Early Objects"; T. Gaddis/J. Walters/ G. Muganda; Pearson - Addison Wesley; 2011. ISBN-13: 978-0-13-607774-9.

Additional Time and Supplemental Requirements:
Based on a 15 week semester, students are expected to spend an additional 8 hours per week out of class working on this course.

Special Facilities/Equipment:

> Hardware: WinTel Platform PC or lab top.
> Software: Visual Studio C++ Compiler or Any C++ Windows based Compiler.
> Storage Media: At least 1 GB Flash Drive for saving projects.

Course Learning Outcomes:
Upon completion of this course, students will be able to:
- Demonstrate structured programming skills utilizing the C++ language.
- Implement data structures to support specification techniques on the application level.
- Apply data abstraction of specification techniques in construction of algorithms.
- Discuss the problem of software reuse and object oriented programming languages.
- Use modular programming and step-wise refinement in problems solution.
- Use library skills to explore and learn memory management, object oriented languages and available pre-processors.

General Education Outcomes: This is not a general education course.

Grading Standards:

Tests, Projects and Homework	Points
Tests and Class Participation	
Test Grades	30
Final Examination	30
Class Participation, Attendance, and Homework	10
Lab Programming Projects	30

Lab Programming Projects are mandatory for successful completion of this course. A minimum of (6) projects are assigned and are to be completed during open laboratory hours or at home.

Course Content:

(Schedule and suggested topics, readings, and assignments subject to change based on instructor and instructional resource)

Week	Topics
1	**Getting Started**: Review of Hardware and Software Introduction to Programming Concepts The cout Object, Programming Style.
2	**Data Types, Declarations, and Displays**: Data Types, Arithmetic Operators Numerical Output Using cout Variables and Declarations, Integer Qualifiers.
3	**Assignment and Interactive Input**: Assignment Operations Mathematical Library Functions Program Input Using the cin Object The const Qualifier
4 & 5	**Modularity using Functions**; Functions and Parameter Declarations Returning a Single Value
6 & 7	**Selection:** Relational Expressions The if-else Statement Nested if Statements The switch Statement Errors, Testing, and Debugging
8 & 9	**Repetition**: The while Statement cin Within a while Loop The for and do Statements

10	**Functions**:	
		Pass by Reference
		Variable Scope
11 & 12	**Arrays**:	
		One –Dimensional Arrays
		Array Initialization
		Arrays as Arguments
		Linear Search and Binary Search
13	**Files:**	
		I/O File Stream Objects and Methods
		Reading and Writing Character based Files
14	**Pointers**:	
		Addresses and Pointers
		Array names as Pointers
15	**FINAL EXAM**	

College Policies:

For Information regarding:
- PCCC's Academic Integrity Code
- Student Conduct Code
- Student Grade Appeal Process

Please refer to the PCCC Student Handbook and PCCC Catalog

Panther Alert:

The College will announce delayed openings, closings, and other emergency situations through the Panther Alert System. Students are encouraged to sign up for Panther Alert Notifications by logging into their student accounts through the PCCC website at www.pccc.edu and following Panther Alert System instructions.

Notification for Students with Learnings Disabilities:

If you have a disability, and believe you need accommodations in this class, please contact the Office of Accessibility Services at 973-684-6395, or email ods@pccc.edu. You should do so as soon as possible at the start of each semester. If you require testing accommodations, you must remind me (the instructor) one week in advance of each test.