

Montgomery County Community College  
 CIS 235  
 Object Oriented Programming in C++  
 3-2-2

**COURSE DESCRIPTION:**

This course will teach students C++. Emphasis will be placed on object oriented programming and design, programmer defined data types (objects), object derivation, polymorphism, function overloading, object based abstract data structures (linked lists, stacks, collections), and event oriented program control.

**REQUISITES:***Previous Course Requirements*

- CIS 111 Computer Science I: Programming and Concepts

*Concurrent Course Requirements*

None

LEARNING OUTCOMES Upon successful completion of this course, the student will be able to:	LEARNING ACTIVITIES	EVAULATION METHODS
1. Create event-driven programs with proper event management techniques using the C++ language.	Lab Exercises Final Project	Tests Grade Labs/Final Project
2. Write clear, reliable, easily maintainable programs utilizing object-oriented programming constructs, such as classes, inheritance, function/operator overloading and polymorphism.	Lab Exercises Final Project	Tests Grade Labs/Final Project
3. Utilize abstract data structures (linked lists, stacks, trees) in the design and implementation of a program.	Lab Exercises Final Project	Tests Grade Labs/Final Project

LEARNING OUTCOMES	LEARNING ACTIVITIES	EVALUATION METHODS
4. Implement more advanced programming constructs in C++ such as effective memory management, in-line methods, I/O access, static data/methods, collections/containers, nested classes, exception handling, and compositions.	Lab Exercises Final Project	Tests Grade Labs/Final Project

At the conclusion of each semester/session, assessment of the learning outcomes will be completed by course faculty using the listed evaluation method(s). Aggregated results will be submitted to the Associate Vice President of Academic Affairs. The benchmark for each learning outcome is that *70% of students will meet or exceed outcome criteria.*

#### SEQUENCE OF TOPICS:

1. Course Overview; Why C++; Overview on Objects and Classes, C++ Development Environment
2. C++ Programming Basics (Variables, I/O, Arithmetic, Assignment, Loops and Decisions)
3. Structures; Functions
4. Objects and Classes; Arrays
5. Operator Overloading
6. Inheritance
7. Graphics; Pointers
8. Virtual Functions
9. Streams and Files
10. Larger Programs
11. Templates and Exceptions
12. Class Library Organization
13. Windows Programming
14. Projects and Review

#### LEARNING MATERIALS:

*Savitch, Walter, Problem Solving with C++, 10<sup>th</sup> Edition, Pearson, 2018.*  
ISBN 9780134448282

#### Additional resources on the web:

<http://www.cplusplus.com>

<http://www.cprogramming.com>

Other learning materials may be required and made available directly to the student and/or via the College's Libraries and/or course management system.

## COURSE APPROVAL:

Prepared by: Lee Bender	Date: 2/1998
Revised by: Linda Moulton	Date: 6/1998
Revised by: Kathy Kelly	Date: 9/2013
VPAA/Provost or designee Compliance Verification: Victoria Bastecki-Perez, Ed.D.	Date: 12/3/2013
Revised by: Kathy Kelly	Date: 1/9/2018
VPAA/Provost or designee Compliance Verification:	Date: 1/30/2018



*This course is consistent with Montgomery County Community College's mission. It was developed, approved and will be delivered in full compliance with the policies and procedures established by the College.*