

CMSC 160: Introduction to Algorithmic Design I (4 credits) Spring 2009

<http://narnia.homeunix.com/~robert/Spring2009/cs160.html>

Instructor: Robert Marmorstein mmarm@sdf.lonestar.org (395-2185)
Lecture: Ruffner 352 1:00pm - 1:50pm MWF
Office Hours: Ruffner 329 10:00am - 10:50am MTWRF or by appointment

Course Description:

An introduction to problem solving and algorithmic design using an object-oriented programming language. Topics include programming logic, iteration, functions, recursion, arrays, memory management, user-defined data types, abstraction, and complexity analysis.

Prerequisites:

This course has no prerequisites.

Course Objectives:

The student will learn to design, implement, test, debug, and document object-oriented programs using C++. The student will learn the representation of the most common data types, their representation in binary, and their limitations.

Textbook and Other Resources:

The textbook for this class is "C++ Programming: Program Design Including Data Structures, Fourth Edition" by D.S. Malik. You will also need to learn how to use the Unix man and info pages.

Course Requirements:

Your grade will depend largely on completion of the weekly lab sessions. These projects will comprise **40%** of your grade. Pop quizzes will count for an additional 10% of your grade. Homework assignments will count for 20% of your grade. The final exam will be 15% of your grade. There will be two midterm exams. The remaining 15% of your grade will come from these exams.

Grading Policy:

Late work will not be accepted unless you have a serious medical or family condition which prevents you from completing the assignment on time. You do not need a doctor's note, but you must send me e-mail at least 12 before the assignment is due to schedule a new due date. At your option, **you may work with a partner on the lab sessions**.

Slip Days:

You may extend the due date of one or more lab sessions using slip days. You will be allocated a fixed number of slip days at the start of the semester. You may use all of your slip days on one assignment or you may use them over multiple assignments. Keep in mind, however, that once you use them up, they are gone for good. Slip days are calculated from the minute the assignment is due until you turn it in. I round **up** to the nearest integer value, so if you turn an assignment in 24 hours and 1 minute late, you will use up **2** slip days. For the purposes of calculating how many slip days you have used, weekends and holidays count as normal business days. That is, if a lab is due on Friday and you turn it in late on Monday, you will have used three slip days, not one. Slip days cannot be shared, traded, bought, or sold.

Grading Scale:

A+: 100, A: 99-96, A-: 95-90, B+: 89-87, B: 86-83, B-:82-80, C+:79-77,
 C:76-73, C-:72-70, D+:69-67, D: 67-63, D-:62-60, F: 60 or less.

Attendance:

I expect you to attend class unless you are sick or engaged in a school-sponsored sport or extracurricular activity. I will rely on your honor for enforcement of the attendance policy. In accordance with Longwood policy, missing more than 10% of scheduled class time to unexcused absences may result in loss of one letter grade. Missing 25% of class or more (whether excused or not) may, at my discretion, result in a failing grade.

Collaboration:

You may work with a partner on any or all of the lab sessions and you may freely discuss the labs with other students, but you must turn in a copy of your own work which YOU have typed. You may NOT copy code electronically from other students (short snippets written on the marker board are okay as long as you remember to erase them before you leave the room). **The final exam, the midterm exam, and quizzes are to be completed entirely on your own.** Infractions of this policy will be dealt with under the Longwood Honor Code. Any student convicted of an honor offense involving this class will automatically receive an F in addition to any penalties imposed by the Honor Board. You should consider all work in this class to be pledged work, whether or not the pledge itself appears on the assignment.

Food and Drink:

Please do not eat in class (it distracts me and the other students). You may bring water or soft drinks to class. Violations of this policy may be considered an unexcused absence.

Cell Phones and Laptops:

Cell phones and laptops are to be turned off and put away during lecture unless I instruct you to bring them to class for use in one of the lab sessions. Violations of this policy may be considered an unexcused absence.

Tentative Course Schedule:

Jan. 12-16	Introduction, Input and Output
Jan. 19	Holiday - No Class
Jan. 21-23	Operators, and Arithmetic
Jan. 26-30	Data Types
Feb. 2-6	Decision Statements and Comparisons
Feb. 9-13	Comparisons, Loops, and Nested Loops
Feb. 16-20	Midterm Review, Midterm Exam
Feb. 23-27	Functions and Recursion
Mar. 2-6	File Input and File Output
Mar. 9-13	Holiday - No Class
Mar. 16-20	Arrays, Multidimensional Arrays
Mar. 23-27	Pointers and References, Memory Allocation
Mar. 30-Apr. 3	Structures, Classes, and User Defined Types
Apr. 6-10	Searching, Complexity Analysis
Apr. 13-17	Sorting Algorithms
Apr. 20-24	Linked Lists, Stacks and Queues, Final Review
May 1	Final Exam(3:00pm-5:30pm,Friday)

Tentative Laboratory Schedule:

Feb. 6	Hello World
Feb. 13	Decisions and Loops
Feb. 18	Functions
Feb. 26	Recursion, Factorial, and the Fibonacci Sequence
Mar. 6	Files
Mar. 11	Holiday - No Lab
Mar. 20	Arrays and Memory Management
Mar. 27	Pointers, Objects, and the Heap
Apr. 3	Encapsulation, Constructors, and Destructors
Apr. 10	Linked Lists
Apr. 17	Searching and Big-O
Apr. 24	Sorting