

Syllabus
COSC 051 Computer Science I
11:00 am - 12:15 pm Tuesday/Thursday
Intercultural Center 116

Instructor: Willis Addison Woods
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Office Hours: Tuesday/Thursday 1:30 pm – 3:00 pm (or by appointment)

TAs: TBD

Course Description: This course is intended for computer science majors and minors, and other students with a serious interest in learning C++ programming. The course covers the following topics: basic data types, the C++ string class, variables and constants, and their declaration, input/output (cin/cout) operators, assignment operators, arithmetic operators, conditional control structures, repetition control structures, basic file operations, user-defined functions, value and reference parameters, scope rules, name precedence, function overloading, template functions, elementary software engineering principles, Standard Template Library (STL), the vector class, elementary searching and sorting, user-defined classes, operator overloading, pointers, self-referential classes, dynamic object creation and destruction, linked lists, and recursion. This course satisfies the college science requirement.

Prerequisites: NONE

Course Objectives:

- Learn the C++ programming language
- Learn to analyze problems and break them into components that can be solved by a computer program
- Use C++ to create a computer program that implements your problem solution

Required Text:

C++ Programming: From Problem Analysis To Program Design, 5th Edition
by D.S. Malik

Suggested/Reference:

C++ Primer, 4th Edition, Lippman, Lajoie and Moo

Grading:

Exams: Midterm (20%), Final (30%)

Programming Projects: Between 4-6 assignments (40%)

Homework/Quizzes/Class participation: (10%)

Grading Scale:

<i>Grade</i>	<i>Range</i>
A	94 and up
A-	90-93
B+	87-89
B	83-86
B-	80-82
C+	77-79
C	74-76
C-	70-73
D	61-69
F	60 and below

Submitting Assignments: Assignments will be posted on Blackboard. All electronic submission requirements (source code, reports, conclusions, etc.) must be posted to Blackboard prior to the due date and time. Source code should be text files with the appropriate extension. For any other hard copy reports or documents, I prefer pdf files but will accept any Microsoft Office compatible file format.

Additionally, please note:

- All assignment are due before class begins on the due date
- 10% penalty per hour for late submission
- No make-up exams will be provided

Programming Environment: This class is about the use of computer programming to solve problems. You will do a lot of C++ programming. There are a wide variety of development environments that you can use to create C++ programs. I will provide links to some of these options separately. Installation and use of any such third party application is optional, is your responsibility, and will not be covered during class. ALL graded projects and homework assignments MUST compile on the computer science server specified for this class (cs-class.uis.georgetown.edu). Before submitting any programming assignment, your source code must be copied to the server and compiled using the GNU C++ compiler provided on that server. Again, there are many different development environments and computer tools that

you may use to accomplish this. The simplest option is to create your programs directly on the server using a UNIX text editor. This is perfectly acceptable and eliminates the need to transfer files to the server prior to compiling your program. If you decide to use some other development environment and work on your notebook or personal computer; it is in your best interest to ensure that you select a GNU C++ compliant compiler.

Attendance and Expectations: Attendance is required. However, I will not take a formal roll call during class and there is no enforcement policy. Not attending lectures will have an adverse effect on your class participation score. Further, you will be responsible for everything covered in class even if it is not in the textbook. Class participation could include pop quizzes and if you miss one of those there will be no makeup. If you need to leave the classroom during a lecture feel free to do so as quietly as possible. Please turn off cell phones or set them to vibrate prior to the start of class.

Academic Honesty: I am required to report any suspicion of academic dishonesty to the Honor Council.

Exams must be entirely your own work. During exams, you are not allowed to view any other students work, show any other student your work, or engage in any discussion unless you need to ask **me** to clarify something regarding an exam question. In general exams will be closed book and closed notes unless otherwise specified.

All homework assignments and individual projects must be the result your own effort. You may use outside resources such as research papers and books from the library but any solution techniques taken from outside sources must be properly documented. You may receive assistance from other students but are required to fully document the type and extent of assistance that you received. You are strictly prohibited from copying someone else's work or source code. You may not email or otherwise provide to someone else the files associated with your programming project or other homework documents. You may not submit someone else's homework file or files as your own. Regardless of how much assistance you receive you must complete the assignment yourself and physically type your programs, reports, and all other assignment products on your own. The point is to get help if you need it to understand the material and complete an assignment. But you must produce the final product yourself and fully disclose the amount, and source of, any assistance that you received.

Weekly Course Schedule: Provided separately.

Schedule of Topics Covered (tentative)

- Introduction to Computers and Programming
- Basic Elements of C++ Language
- Basic Data types
- Simple Input/Output (cin/cout)
- C++ Operators
- Control Constructs (if-else, switch)
- Looping Constructs (for, while)
- Array/Vectors/Strings
- Midterm Exam
- Pointers/Reference variables
- Functions (user defined)
- Functions II
 - Pass-by-value, Pass-by-Reference
 - Recursion
 - Function Overloading
 - Templates
- Structures/Classes
 - Basic Definition
 - Constructors/Destructor
 - Simple inheritances & Composition
 - Dynamic Memory/Object Management
- Introduction to Data Structures
 - Linked List
- Final Exam

Course topics, administrative guidelines, and other specifics discussed in this syllabus are subject to change. Notice of any changes will be provided in class.