CSCI-135. Spring 2015. Syllabus.

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Tuesday and Friday 3:45 - 5:00 pm.
Hunter West W207.

This first course for prospective computer science majors and minors concentrates on problem-solving techniques using a high level programming language (currently C++). The course includes a brief overview of computer systems. Fulfills the GER 2/E requirement.
Prerequisite: CSCI 127 or equivalent. Corequisite: CSCI 136.

Textbook

Walter Savitch, Absolute C++, 5th ed. Addison Wesley. 2010. ISBN-10: 0-13-283071-X.

Office Hours

After the class or by appointment. Feel free to email me.

Policies and expected workload

Homework programming assignments every 2-3 weeks. All homeworks must be submitted on time. Late submissions are penalized as follows: Less than one day late: ×0.5; less than 2 days late: ×0.25; less than 3 days late: ×0.125; 3+ days late: 0.

Programs are graded on correctness (code meets the specification), quality, readability, as well as the clarity and correctness of comments.

The last homework is a big project (more than 500 lines of code).

Two Midterms and the Final (cumulative).

Grading

You must get a 50% average on the midterms and the final to pass the course. If you meet this average, your final grade is computed as follows:

Homeworks and the project: 40%
Midterm 1: 15%
Midterm 2: 15%
Final: 30%

Accessability office and academic integrity notices

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Jan 30   C++ Hello world. Variables. Types. Basic I/O. Standard library and header files.

Control flow and implementing algorithms.

Feb 3   Control of Flow. Boolean expressions. Branching with `if` and `switch`.
Feb 6   Control of Flow. Loops.

Feb 10   Functions. Library functions and user-defined functions.
Feb 13   More about functions. Recursion. Scope.

Feb 17   Parameters of functions. Call by value and call by reference.
Feb 20   Overloading. Default arguments. Assertions.

Feb 24   Arrays. Intro.
Feb 27   Programming with arrays. Algorithms and security issues.

Mar 3   Multidimensional arrays.
Mar 6   More programming with arrays.

Mar 10   Midterm 1.

User-defined data structures and C++ Standard library.

Mar 13   Structures.

Mar 17   Classes and object-oriented programming.
Mar 20   Separate compilation. Writing header files. Makefiles.

Mar 24   Streams and file I/O.
Mar 27   Constructors.

Mar 31   Static members and other OOP issues.
Apr 3   Spring Recess.

Apr 7   Spring Recess.
Apr 10   Spring Recess.

Apr 14   Generic data structures. Vectors. Intro to using templates.
Apr 17   Old C strings and I/O. `<stdio.h>` and `<cstring>`.

Apr 21   New C++ `string` class. The rationale for having new strings and how they work.
Apr 24   More programming with classes, vectors and strings.

Apr 28   Midterm 2.

Pointers, memory management, and other advanced features.

May 1   Introducing pointers.

May 5   Pointer arithmetic and dynamic arrays.
May 8   Pointers to objects, the arrow operator, `->`, and the pointer `this`.

May 12   Operator overloading. Friend functions and classes. References.
May 15   Review

May 19   Final Exam (1:45 - 3:45 pm)