

CSCE 240 - Fall 20XX

Advanced Programming Techniques

Instructor:
Office Hours:
Lecture:

Bulletin Description

Credits: 3

Pointers; memory management; advanced programming language structures: operator overloading, iterators, multiple inheritance, polymorphism, templates, virtual functions; Unix programming environment.

Prerequisites: grade of D or better in CSCE 215, grade of C or better in CSCE 146

Course Description

Longer description...

Required Textbooks

Walter Savitch, *Absolute C++, 4th or 5th edition*, Addison Wesley, 2009.

Learning Outcomes

Students will be able to:

1. Independently design and implement C++ programs in a Unix environment
2. Demonstrate mastery of pointers, iterators, memory management including object creation and destruction, and parameter passing in C++.
3. Demonstrate mastery of object oriented programming concepts including: inheritance, polymorphism, operator overloading, template functions and classes, and the use of STL containers.
4. Develop object oriented models using UML
5. Engage in program design and implementation in a team environment.
6. Use a source control tool in a team environment.

Assignments and Tests

Homework assignments are longer programs to be written outside of class. They will be turned in electronically to the departmental drop box, and they must be done individually as your own work. See below for an expanded discussion of what is meant by "your own work".

The final exam will be cumulative.

Grading

Homework Assignments: 50% (one at 10, six at 40 points, total of 250 points)

Midterm Exam: 20% (one at 100 points each)

Final: 30% (one at 150 points each)

A general guideline for grading will be the following:

100 >= score >= 90 A

90 > score >= 87 B+

87 > score >= 80 B

80 > score >= 77 C+

77 > score >= 70 C

70 > score >= 67 D+

67 > score >= 60 D

60 > score >= 0 F

Schedule of Topics

Topics covered and approximate weight (14 weeks, 3 hours/week, 42 hours total)

1. Unix Programming Environment: Unix tools, C preprocessor, Make, Shell, I/O redirection, debugging.
2. Pointers: Pointer manipulation, functions and function pointers, virtual functions.
3. Basic class management: constructors, destructors, data hiding, container classes.
4. Memory management: object creation and destruction, memory leak.
5. Advanced C++ features: operator overloading, iteration, special containers, inheritance, code reuse, multiple inheritance, virtual functions, polymorphism, templates, template libraries.
6. Introduction to UML and object oriented modeling: use-case models, object identification, specifying static behavior, activity diagrams, collaboration diagrams and sequence diagrams, specifying relationships: generalization/specialization, aggregation, associations including multiplicity and roles, dynamic behavior using state diagrams.
7. Introduction to Source Control and Distributed Source Control, for example, using git.

Policies and Procedures

Academic Integrity

You are expected to practice the highest possible standards of academic integrity. Any deviation from this expectation will result in a minimum academic penalty of your failing the assignment, and will result in additional disciplinary measures. This includes improper citation of sources, using another student's work, and any other form of academic misrepresentation.

The first tenet of the Carolinian Creed is, "I will practice personal and academic integrity."

Attendance Policy

When you miss class, you miss important information. If you are absent, you are responsible for learning material covered in class. If you are absent when an assignment is due, you must have submitted the assignment prior to the due date to receive credit. If you miss more than 10% of the classes, whether excused or unexcused, your grade will be dropped one letter grade.

Accommodating Disabilities

Reasonable accommodations are available for students with a documented disability. If you have a disability and may need accommodations to fully participate in this class, contact the Office of Student Disability Services: 777-6142, TDD 777-6744, email sasds@mailbox.sc.edu, or stop by LeConte College Room 112A. All accommodations must be approved through the Office of Student Disability Services.