Introduction to Data Structures
and
Software Engineering

McQuain

Intro Data Structures and SE

Instructor

Instructor:	William D McQuain
Email:	`mcquain@cs.vt.edu`
Office:	631 McBryde Hall
Office Hours:	8:30 – 9:30 MTWRF
	and by appointment

TAs

The TAs will not be setting their office hours until their class schedules are set.

Jamie Smith
Qing Li
Meg Dickey

The TA office hours will be held in McBryde 116/118.

Intro Data Structures and SE

Course Description

Credits:	3
Prerequisites:	CS 1044

CS majors and minors must have earned a grade of C or better. A C- is NOT acceptable. (AP/IB credit covers the grade requirement, as does CbE.)

I will grant NO exceptions to the prerequisite requirements.

Objectives

The purpose of this course is to provide a means for students to learn how to design and develop medium-large programming systems involving multiple modules using basic data structures and software engineering techniques.

Course website

courses.cs.vt.edu/~cs1704/fall03/

Work load

Heavy. Very heavy.

Recommended

C++ How to Program, 4th Ed., Deitel & Deitel, Prentice-Hall, ©2003

CS 1704 Course Notes, Fall 2003 Edition, by McQuain and Barnette, ©2003

(as available on the course website)

Required

Visual C++ .NET 2003

Available free to students enrolled in CS courses. See course website for details.

Installed in the McBryde 118 Computer Science lab.

Programming in C++, 3rd Ed., N. Dale, C. Weems & M. Headington,
   Jones and Bartlett Pub., © 2002

The C++ Programming Language, 3rd Ed., B. Stroustrup, Addison-Wesley Publishing Co., © 1997
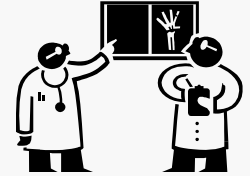
Other Useful Sources of Information

         Visual C++ .NET Online Help

         CS 1704 website: **http://courses.cs.vt.edu/~cs1704/**

         C/C++ Usenet group: **alt.comp.lang.learn.c-c++**

Evaluation and Grading

Final grades will be based on the average achieved over the following elements:

Item	Weight	Tentative Dates
Homework	10%	Varied
Projects and Software Engineering	50%	Varied
Tests (2)	10% each	TBA
Final Exam	20%	1:05 – 3:05 Monday, December 15

Grade Scale

The usual 10-point scale will apply (subject to any curve). A final average of 90% will guarantee an A-, 80% will guarantee a B-, and so forth.

Curve

A curve may or may not be employed in this course.The application of a curve is dependent upon class performance on tests and homework. The decision to utilize a curve rests entirely with the course instructor.
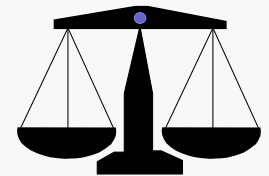
Statute of Limitations

Any questions or complaints about the evaluation of an assignment must be raised within two weeks of the posting of score information.

Homework

The homework assignments will usually consist of multiple-choice questions that relate to the lectures, course notes, projects and reading. Since I will use the same format for the questions on the tests and final exam, doing and understanding the homework assignments will help you prepare for those tests.

Projects

The programming projects must be implemented in ANSI C/C++, as described in the course notes. You may use any ANSI conformant compiler you like, however unless noted otherwise your programs will be compiled and tested using Visual C++ .NET 2003, running on Windows XP or Advanced Server 2003.

Each project will build on earlier projects.

Evaluation will consider whether your solution achieves specified operation, and the quality of your design and internal documentation.

S/E and Documentation Evaluation

All programming projects will be graded for adherence to good software engineering principles, including documentation, design, conformance to the stated specification, and programming style.

Each project specification will include explicit guidelines that you will be expected to follow.

For auto-graded projects, The TAs will grade your (first) submission to the Curator that received the highest score, and e-mail you the results. Note that if you make an incomplete submission (e.g., omitting required documentation) and that receives a perfect score, then the TAs will evaluate that incomplete submission.

There will be no exceptions to this policy.

Due dates

Each programming project and homework assignment will have a due date and time and will include instructions for submission.

Homework

Usually, no late submissions will be allowed for homework assignments.

Projects

Except in the very rare case that an extension is granted, late submissions will incur a penalty per diem late penalty that will be included in the project specification. This is typically 20%.

Extensions

Any request for an extension must be made, preferably by email, at least 24 hours prior to the due date.

Late submissions will not be given any credit if submitted after graded assignments or solutions have been released.

Class Organization

Sources for Help/Questions etc.

CS 1704 Forum for questions

CS 1704 TAs & Instructor

CS 1704 Listserv for announcements by instructor
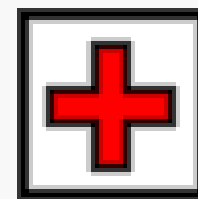
General C++ Language Help

USENET Newsgroup: alt.comp.lang.learn.c-c++

A panel of "experts" will respond to questions.

I DO monitor the group.

Lecture Instruction

Lectures will consist of presentations, applications, problems and solutions interspersed with classroom discussion.

Test Environments

- All programming assignments submitted are required to compile under Microsoft Visual C++ .NET 2003.

- Programs will be tested under Windows XP or Advanced Server 2003.

- It is the student's responsibility to ensure that his/her programs execute correctly in the appropriate environment; programs that do not will receive substantial deductions.

Students developing under Windows 95/98/Me/XP Home are wanted that these are not suitable environments for programming.

Students using another compiler for development (e.g., g++, Visual C++ 6.0) are warned that there are many pitfalls.

Compliance with the ISO C++ Standard varies widely among older compilers, especially g++ prior to version 3.2 and Visual C++ prior to .NET 2002.

Your programs WILL be tested with the environment listed above. If it fails to compile, or exhibits incorrect behavior, we don't care that it may compile elsewhere, or appear to run correctly elsewhere.

Program Evaluation

- The early projects will be tested and auto-graded by the Curator System.
- Students are required to submit all of their project implementations to the Curator System.
- Be sure to read the *Curator Student Guide* and the *Submitting Assignments* page on the course website. They describe how to prepare to submit an assignment to the Curator, and how the Curator scores your submissions.
- Be very careful about development environment issues!
- All submissions to the Curator are subject to the Virginia Tech Honor Code. Read the online Course Policy Statement for a detailed discussion

Project Demos

- Some of the later projects will require that you participate in a live demo of your solution with one of the TAs.
- Scheduling details will be posted when the time comes.
- Failure to carry out a demo will result in a score of zero for the project.

Damage Control

Backups

- **Students are responsible for making backup copies of all their work in this course**. Loss of work due to hard drive failure is **NOT** an acceptable excuse. Backup copies of files on the same hard drive are not backup copies. Backup copies of files on second hard drives are also risky. Backup copies should be maintained on two separate distinct storage mediums, (e.g., hard drives and floppies).
- Backup copies should be maintained until after the end of the term and students have received their course grade. (The Army lives by triplicate for a reason.)
- Remember: Computer systems are mechanical devices. Systems fail. Plan for it. It is inevitable!

Deadlines

- **Assignments have deadlines.**
- **Deadlines are temperamental little beasts, hug one too tightly and it is likely to bite.**

An exhaustive list of Honor Code violations would be impossible to present here, but among other things, each of the following is a flagrant violation of the Virginia Tech Honor Code, and violations will be dealt with severely (Honor Court):

- Working with another student to derive a common program or solution to a problem. <u>There are no group projects in this course.</u>

- Discussing the details required to solve a programming assignment. You may not share solutions.

- Copying source code (programs) in whole or in part from someone else.

- Copying files from another student's disk even though they might be unprotected.

- Editing (computer generated) output to achieve apparently correct results.

- Taking another person's printout from a lab printer, remote rprint printer, trash can, etc.

It is acceptable to discuss with classmates a programming assignment in a general way, i.e., to discuss the <u>nature</u> of the assignment. In other words, you may discuss with your classmates <u>what</u> your program is required to accomplish but <u>not how to</u> achieve that goal using C++. In no way should the individual statements of a program or the steps leading to the solution of the problem be discussed with or shown to anyone except those people cited in the following statement.

Feel free to discuss the homework assignments and your program source code with the teaching assistants assigned to CS 1044, the instructor, or the free tutors provided by UPE. The discussion of your program source code <u>must</u> be limited to these people. Note that this specifically excludes discussions of your program source code with other students (even if they are not enrolled in CS 1704), or with tutors except for those named above. Privately hired tutors are not an exception to this requirement, nor are athletic or other tutors provided by the University.

Copies of all submitted work are retained indefinitely by the Department. Submitted programs are subjected to automated analysis for detection of cheating.

If you have any question as to how the Honor Code applies to this class, remember that:

- Any work done in this class must be done on an individual basis.

- Credit will be given only for work done entirely on an individual basis.

- Do not make any assumptions as to who can provide help on a programming assignment.

- All submitted work is archived. All submitted programs will be subjected to automated cheat analysis.

Evidence indicating the violation of the policies stated above will be submitted to the Honor Court.

It is much easier to explain a poor grade to parents or a potential employer than to explain an Honor Court conviction.