

**CS 2604 Syllabus and Course Policies\***  
**Data Structures and File Processing**  
**Fall 2004**  
**Capra Tues/Thurs Section**

**Section:** CRN 91438 TR 2:00pm – 3:15pm McBryde 126

**Instructor:** Mr. Robert Capra

**Office:** McBryde 525

**Office Hours:** Tues & Thurs 10:30am – 11:30am  
and by appointment

**Email:** rcapra3@vt.edu

**Teaching Assistants (GTAs):** Alain Fabian, alfabian@vt.edu  
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**Teaching Assistant Office Hours:** To be announced on course web site

**Textbook (required):** *Data Structures and Algorithms in C++, 2<sup>nd</sup> Edition*  
Adam Drozdek, Brooks/Cole, ©2001.  
ISBN: 0-534-37597-9

**Lecture Notes:** *CS 2604 Course Notes, Fall 2004 Edition*  
W D McQuain, ©2001-2004  
(will be available at A-1 Copies in University Mall,  
also will be available for download on course web site)

**Course Webpage:** <http://courses.cs.vt.edu/~cs2604/fall04/capra/>

**Grade Weighting:**

Item	Weight	Date(s)
Programming Projects	45%	Will be posted on course web site
Homework	10%	Will be posted on course web site
In-class quizzes	5%	Various
Midterm test	15%	In-class, Tuesday, September 23
Final exam	25%	7:00pm – 9:00pm, Monday, Dec 13

\* This syllabus and course policies document contains 8 numbered sections on 7 pages.

## 1. Prerequisites

The following are the prerequisites for CS 2604:

- **CS 2704**
- **CS 2204 or Engineering course covering Unix (ECE 2574)**  
CS Majors and Minors must have completed both of these prerequisites with a grade of C or higher (C- is not acceptable). CpE Majors must have completed these prerequisites with a grade of C- or higher.
- **Math 2534 or Math 3034**  
There is no grade requirement for Math 2534, other than a passing grade.
- **Note:** Students are expected to have prior proficiency in the C++ programming language, including the design and implementation of object-oriented systems. Students are responsible for having a working knowledge of Unix/Linux.

Any student not meeting these requirements (both prerequisites and grades) and not obtaining written permission from the CS department, must withdraw from the course within the first week of classes. Any student who is subsequently found not to meet these requirements **will be subject to an honors violation report** on the basis of falsification of qualifications. Neither instructors nor anyone else in the CS department are bound to investigate the records of students to ascertain their prerequisite status; this is the student's own responsibility. **There will be absolutely NO exceptions to these requirements.**

## 2. Graded Work

Your grade will be based on a midterm test, a final exam, homework assignments, in-class quizzes, and programming projects, weighted as shown on the table listed under "Grade Weighting" on the first page.

### Programming Projects

It is anticipated that there will be four programming projects throughout the semester. If this number changes, an announcement will be made. All programming assignments submitted are required to compile using Gnu g++ under Mandrake Linux, as installed on the computers in the McBryde 124 computing lab. The requirement of Gnu g++ under Linux is absolute for all programming assignments. Programs will only be tested under that environment. If your program fails to compile in the specified environment, or exhibits incorrect behavior, substantial deductions, up to and including a grade of zero may be applied.

It is the student's responsibility to ensure that his/her programs execute correctly in the appropriate environment. Computing facilities are available for use in the Departmental Computing Lab in McBryde 124. The instructor and GTAs will answer questions and provide help **ONLY** for programs that are developed in Gnu g++ and Mandrake Linux. **NO HELP** will be provided regarding other environments. Any problems related to porting code from Visual C++ to g++ will **not** be considered grounds for any extensions, nor for leniency in grading.

All the programming projects will be submitted electronically, using the Curator System. See the Curator Project Page (<http://www.cs.vt.edu/curator/>) for details. Be sure to download and read the Student Guide to the Curator — it contains the answers to most of the questions students have about the Curator System. The Student Guide also contains information about how the Honor Code applies when using the Curator; be sure to read and follow the guidelines given there.

### Homework

There will be a minimum of 3 and a maximum of 6 homework assignments throughout the semester. Homework assignments will also be submitted electronically. Homework assignments submissions must be typeset using a word processor (e.g. Word), LaTeX, Tex, or a text processor resulting in neatly formatted ASCII text. No handwritten work (including scanned documents) will be accepted.

### Quizzes

There will be a number of in-class quizzes throughout the term. Quizzes will generally be short and based upon class discussions and/or assigned readings. Each student's two lowest quiz scores will be dropped. Missed quizzes may **not** be made up.

### Tests

The mid-term exam will be in-class on Tuesday, September 23, 2004.

The final exam is a common time exam, scheduled for 7:00pm – 9:00pm, Monday, Dec 13, 2004.

## **3. Grading Policies**

This is in large part a programming course, and programming projects account for 45% of your grade. You are expected to produce programs that are both readable and correct. The Computer Science Departmental Documentation Standards entitled, "Elements of Programming Style", will be enforced. A copy of these standards is available on the course web site.

One purpose of a data structures course is to teach efficient algorithms and use of appropriate data structures. Another purpose of this course is to exercise your design abilities. It is not sufficient that a program generates the correct answer and be written with good documentation style. Projects will also be graded in part on quality of design and organization and in part on efficiency. You should certainly pay attention when the instructor discusses issues related to "good" and "poor" design choices for the projects and aspects of efficiency. These issues directly affect your grade.

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 or refer to explicit guidelines that you will be expected to follow. In particular, you will always be expected to follow the guidelines on the Programming Standards page of the course website.

### Grades

The following grade scale will be used AS A GUIDELINE (subject to any curve):

Percentage	Minimum Grade
90%	A-
80%	B-
70%	C-
60%	D-
Below 60%	F

This scale will be used as a GUIDELINE ONLY. The final grade scale may differ. After the mid-term exam, mid-term grades will be posted. A grade curve may or may not be employed in this course. The application of a curve is dependent upon class performance on tests, projects and homework. The decision to utilize a curve rests entirely with the course instructor(s).

### Backups

It is your responsibility to maintain up-to-date backup copies of each programming project (that is in addition to the copy you submit). The hard drives of the lab machines are recloned (i.e. erased and the operating system re-installed) periodically, so don't count on leaving a backup there! It is recommended that you keep a copy of all the relevant files for each project on at least two different types of storage media (e.g. floppy disks, CD-ROM, Flash memory card, VT Filebox) in case your original assignment is mislaid or the files are corrupted. Loss of work due to failure of a storage device (e.g. hard drive) is not grounds for an extension on an assignment.

### **Due Dates and Late Work**

Each programming project and homework assignment will have a due date and time and will include instructions for submission. Late submissions will not be given any credit if submitted after graded assignments or solutions have been released.

Homework assignments are due at the date and time specified in the homework assignment. No late homework assignments will be accepted unless an extension has been granted by the instructor in an email to the student.

Programming projects are due at the date and time specified in the project specification. Programming projects will have three associated due dates: on-time, early, and final. Programs submitted by the early due date will receive a 10% bonus. Programs submitted after the early date, but by the on-time due date will be graded with no bonus or penalty. Programs submitted after the on-time date but by the final due date will receive a 20% penalty. Submissions that are a few minutes after a deadline will receive a penalty of 1% per minute after the deadline until reaching the credit level for the next due date. Example 1: A program submitted 3 minutes after the early deadline would still receive a 7% bonus. Example 2: A program submitted 11 minutes after the early deadline would receive no bonus or penalty and would be considered “on-time”. Example 3: A program submitted 5 minutes after the on-time deadline would receive a 5% penalty. Example 4: A program submitted 21 minutes after the on-time deadline would receive a 20% penalty. Programs will NOT be accepted after the final due date – any submissions made after the final due date will receive a score of 0 except in the rare case that an extension is granted.

Plan your time carefully for the programming projects, especially if you will be using computers in the campus labs — you may be competing with other students for computing resources, so don't put things off until the last minute. Note well: delays resulting from machine availability, lab schedules, hardware failures or your failure to maintain a backup of your work do not merit an extension.

Quizzes will not be accepted late.

### **Requests for Extensions**

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

### **Statute of Limitations**

Any questions or complaints regarding the grading of an assignment or test must be raised within one week after the score or graded assignment is made available (not when you pick it up).

### **Absences**

If a serious illness prevents you from taking any of the tests, send your instructor an e-mail message, or a friend with a note, describing your condition before the scheduled test. Also, to establish a valid excuse for an illness you must get a note from a physician or the University infirmary. Before missing a test for any reason, you must make every effort to discuss the problem with your instructor before the day of the test. Excuses other than an illness must be reported to your Dean's office so that they can send your instructor a written explanation of the absence. If you need to be away for an official University event, this must be cleared with your instructor in advance. Without a valid excuse, no makeup tests or exam will be given.

## 4. Getting Help

You may get help from the following sources:

- CS 2604 classmates (see the Important Note below)
- CS 2604 Forum online at [forum.cs.vt.edu](http://forum.cs.vt.edu)
- CS 2604 TAs
- CS 2604 Instructors
- Textbooks and C++ language books

**Important Note:** It is acceptable to discuss with classmates a programming assignment in a general way, i.e., to discuss the nature of the assignment. In other words, you may discuss with your classmates what your program is required to accomplish but not how to 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 the teaching assistants assigned to CS 2604, the instructor(s), or the free tutors provided by the CS ACM/UPE groups. The discussion of your program source code must be limited to these people.

## 5. Course Communication (Website, Discussion Forum, Blackboard)

### Course Website

The official course website for this section of CS 2604 is at:

<http://courses.cs.vt.edu/~cs2604/fall04/capra/>

It is the responsibility of every student to **check the website daily** for announcements.

The Announcements section of the website will be the source for all **official announcements** related to the class. Your instructor may announce tests, assignments, or changes to assignments in class, but there is no guarantee or promise that such announcements will be made in class. The Announcements section of the website is the **only** official, reliable source for announcements, changes, etc. from the instructor. If something the instructor says in class conflicts with information posted by the instructor on the website, then the information posted on by the instructor **on the website takes precedence**. Verbal instructions are easily mis-interpreted, and they do not leave a documentation trail. The excuse “my instructor/GTA said something else” will not be accepted.

### Discussion Forum

In addition to the course website, a CS department class discussion forum for CS 2604 will be set up at:

<https://forum.cs.vt.edu/>

This forum should be available by the end of the first week of classes and will be shared among all sections of CS2604 being offered this semester. When reading posts to the forum, be sure that the post applies to your section. There may be different information or instructions posted for different sections.

### VT Blackboard System

Course grades for this section of CS 2604 will be posted to the Blackboard system available at:

<http://learn.vt.edu>

Students may log in to the Blackboard system using their VT PID and password. Once logged in, there should be a link for CS 2604 on the Blackboard web page. For this section of CS 2604, the Blackboard system will be used primarily for posting grades and it is unlikely that other course material or information will be posted there.

## 6. Honor Code

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 charges will be filed):

- Working with another student to derive a common program or solution to a problem. There are no group programming projects in this course.
- Discussing the details required to solve a programming assignment.
- 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 printer, trash can, etc.

As stated in the “Getting Help” section of this document, it is acceptable to discuss with classmates a programming assignment in a general way, i.e., to discuss with your classmates what your program is required to accomplish, but not how to achieve that goal using C++.

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.
- Always give credit for work that is not entirely your own (e.g., parts of programs or homework answers found in a book).
- Evidence indicating the violation of the policy stated above will be turned in 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.

In addition, the Honor Code statement included in the Student Guide to the Curator is in force for this class.

The Honor Code will be strictly enforced in this course. All assignments submitted shall be considered pledged graded work, unless otherwise noted. All aspects of your work will be covered by the Honor System. Honesty in your academic work will develop into professional integrity. The faculty and students of Virginia Tech will not tolerate any form of academic dishonesty.

## 7. Special Accommodations

If any student needs special accommodations because of a disability, please contact the instructor during the first week of classes.

## 8. Tentative Calendar

A tentative calendar is given on the next page and will be updated on the course web site. Please note that the dates and topics on the tentative calendar are subject to change.

Lecture Topic	Drozdek	Notes	Estimated Date
<b>Introduction &amp; Review</b>	1.1 - 1.9	Admin Math Review	Aug 24 Aug 24-26
<b>Linear Structures</b>			
General Lists	3.1 - 3.3	Linear Structures	Aug 26 – 31
Stacks and Queues	4.1 – 4.3	Linear Structures	Aug 31 – Sep 2
Skip Lists	3.4	Skip Lists	Sep 2
<b>Algorithm Analysis</b>			
<b>Asymptotics</b>	2.1 - 2.8	Algorithm Analysis Asymptotics	Sep 7 Sep 9
<b>Binary Trees</b>			
Binary Trees	6.1 - 6.2	Binary Trees	Sep 14
BSTs	6.3 - 6.6	Binary Search Trees	Sep 14-16
Balanced Trees (splaying)	6.8		Sep 16
AVL Trees	6.7.2	AVL Trees	Sep 21
<b><u>Midterm Test – In-class, Tuesday, September 23</u></b>			
<b>Heaps</b>	6.9	Heaps	Sep 28
<b>Sorting I</b>		Sorting	
Insertion Sort	9.1		Sep 30
Theoretical Bounds	9.2		Sep 30
Shell Sort	9.3.1		Oct 5
HeapSort	9.3.2		Oct 5 – 7
<b>Secondary Storage</b>		Secondary Storage	
Physical Characteristics			Oct 7
Access Times			Oct 12
Buffer Pools			Oct 12 – 14
<b>Binary File I/O</b>		Binary File I/O	Oct 14 – 19
<b>External Sorting</b>		External Sorting	Oct 19
<b>Sorting II</b>		Sorting	
MergeSort	9.3.4		Oct 21
QuickSort	9.3.3		Oct 26
Radix Sort	9.3.5		Oct 28
<b>Indexing</b>		Tree Indexing	
Linear Indices	3.6	Tables	Nov 2
Hashing	10.1 - 10.4	Hashing	Nov 4
B trees	7.1.1		Nov 9
B+ trees	7.1.3		Nov 9 - 11
Red-Black Trees			Nov 11
<b>General Trees</b>		General Trees	Nov 16
<b>Graphs</b>		Graphs	
Representation Schemes	8.1		Nov 18
Traversal Algorithms	8.2		Nov 30
Shortest Path	8.3		Dec 2
Minimal Spanning Trees	8.5.2		Dec 2
<b>Review / Last Day of Class</b>			Dec 7

**CS 2604 Syllabus and Course Policies**  
**Data Structures and File Processing**  
**Fall 2004**  
**Capra Tues/Thurs Section**

**Statement of Receipt and Understanding**

By signing below I certify that:

- I have received a complete copy (8 sections on 7 pages total) of the course policies for CS 2604 in the document titled, “CS 2604 Syllabus and Course Policies, Data Structures and File Processing, Fall 2004, Capra Tues/Thurs Section”.
- I have read and understand the course policies and have had a chance to have any questions I have about the policies answered by the instructor.
- I also understand that course policies for other sections of CS 2604 may be different and that for my section, the policies outlined in the document specified in the first bulleted item above apply.

Signature \_\_\_\_\_  
(sign legibly)

Date \_\_\_\_\_

Printed Name \_\_\_\_\_  
(print legibly)

Student ID Number \_\_\_\_\_  
(print legibly)