CS3114: Data Structures and Algorithms
Fall 2014

Time/Location:	CRN 82147: TuTh 11:00-12:15 in Surge 107
	CRN 82148: TuTh 3:30-4:45 in Surge 117A
Instructor:	Dr. C.A. Shaffer, Torgersen 2000A, 540-231-4354
	Office Hours: TuTh 2:00-3:00
	E-Mail: `shaffer@cs.vt.edu`
Textbook:	Coursenotes/textbook materials will be posted at the website.
Course Website:	`http://courses.cs.vt.edu/~cs3114/Fall14`
Grade Weighting:	4 Projects: 40-45% total
	Midterms and Final: 35%
	Out-of-class homework assignments: 20-25%

Honor Code:

The Virginia Tech Honor Code applies to this course and will be strictly enforced. Homework assignments, quizzes, and exams **must** be done strictly on an individual basis. For programming assignments you are permitted to work with a partner. If you do so, the pair will jointly submit the assignment. Aside from your programming partner, it is acceptable to discuss with classmates a programming assignment in a general way. In other words, you may discuss with your classmates what your program is required to accomplish but not in detail how to achieve that goal using Java. In no way should the individual statements of a program be discussed with or shown to anyone except the course teaching assistants, the instructor, or the free tutors provided by ACM or UPE. Any discussion of your program source code must be limited to these people or your pair partner.

Always give credit for work that is not entirely your own (e.g., parts of programs or homework answers borrowed from a book).

Prerequisites:

The Computer Science Department rigorously enforces the prerequisite requirements for all courses. Additionally, for majors or minors in Computer Science the Department enforces the requirement that all prerequisite Computer Science courses be completed with a grade of C or better. Any student not meeting these requirements and not obtaining written permission from the course instructor to remain in the course, 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. Instructors are NOT bound to investigate the records of students to ascertain their prerequisite status; this is the student's responsibility. In **all** cases, **the student is responsible** for knowing all prerequisite material.

Exams, Quizzes, Assignments and Grading Policy:

There will be two in-class midterms and a final. Homeworks will primarily consist of working online materials, as will be discussed in class.

This is in large part a programming course, and programming projects count for 40-45% of your grade. You are expected to produce programs which are (1) readable, (2) well designed, and (3) correct.

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 generate the correct answer and be written with good documentation style. Projects

will also be graded in part on design and organization quality, and in part on efficiency. You should certainly pay attention when the instructor or a TA discusses issues related to "good" and "poor" design choices for the projects. These issues directly affect your grade.

Typical project specifications for the course will not explicitly state requirements for efficiency or design generality. Your ability to make good decisions on this issues is part of what you are being tested for by these assignments. Particular issues that you should be sensitive to when you do project design include:

- All aspects of the program should be "efficient" in the sense of asymptotic cost. So for example, you should expect to receive a penalty if an operation could be done in $\Theta(\log n)$ time but your implementation requires $\Theta(n)$ time.
- Container classes should be designed to be as general-purpose as is practical for the situation. So for example, a search tree implementation should support storing arbitrary record types using one of the various mechanisms discussed in class, rather than be implemented to support only the specific records used in that project.

Solutions to written homework assignments must be typeset either using a word processor or in plain ASCII text. No handwritten work (including scanned documents) will be accepted. You may include "hand-sketched" electronic illustrations if appropriate.

All assignments will have a stated due date. Every student has a bank of 3 late days that may be used over the course of the semester. On any given assignment, you may use zero, one, or more of the late days in your bank. No assignments may be turned in late aside from using days from your bank unless you receive explicit permission from the course instructor. There will be a number of non-programming assignments, some done in class and some out of class. Homework assignments may use "bank" days. In-class assignments are due at the date and time specified.

All projects and out-of-class homework assignments will be submitted electronically to Web-CAT. Web-CAT will provide the official timestamp used to determine whether an assignment is on time. Assignments that arrive "a few minutes late" are subject to a late penalty. **Be warned** – the "few minutes late" penalty is automatic, and there will be no exceptions or mitigating circumstances. **Don't push deadlines.**

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

Equipment and Programming Language:

Programming for this course will be in Java. Program correctness will be assessed by Web-CAT upon submission. It is the responsibility of the student to submit a program that will successfully compile and execute under Web-CAT. Test data files will be provided via the course website.

Class Website and Forum

The class website can be reached through `http://courses.cs.vt.edu/~cs3114`. The class website is the source for all official announcements related to due dates, tests, etc. The class Piazza forum will contain announcements and discussion. This forum will be the source for all official announcements related to changes to, and interpretation of, the project requirements and similar course management issues. We might remember to announce a test, assignment, or change to spec or due date in class, but there is no guarantee or promise that we will. The class website and forum are the **only** official, reliable sources for announcements, changes, etc for this course. If something an instructor or TA says in class or in one-on-one conversation conflicts with information posted at the forum or class website, then **the website and forum take precedence**. Verbal instructions are easily mis-interpreted, nor do they leave a paper trail. The excuse "my instructor/GA said something else" will not be accepted. You are expected to check the website and forum daily.