

CMSC 221 Data Structures Syllabus

Fall 2018

Course Information

Instructor Information

Instructor: Jory Denny
Email: jdenny@richmond.edu
url: <http://www.mathcs.richmond.edu/~jdenny>
Office: Jepson Hall 226
Office Hours: M 1:00pm-4:00pm; T 5:00pm-7:00pm; Other times by appointment
I am happy to meet over lunch any day with individual or groups of students between 12:00pm and 1:00pm, simply schedule it with me.
Brief Teaching Philosophy: I believe in learning real world skills and attempting to solve challenging real world problems. However, I do not believe in ruining someone's grade because they did not succeed 100%.

Section Information

CMSC 221-02

Lecture:	TR	9:00am-10:15am	Media Resources Center LL1
Lab:	W	9:00am-11:00am	Media Resources Center LL1
Final:	R Dec 13	2:00pm-5:00pm	Media Resources Center LL1

Requirements

Prerequisite: CMSC 150 Introduction to Computing, or equivalent
Corequisite (Recommended): CMSC 222 Discrete Structures for Computing

Textbook

Required: *Data Structures and Algorithms in Java*, Michael T. Goodrich, Roberto Tamassia, and Michael H. Goldwasser, Wiley, Sixth Edition, 2014.
Additional Resources: <http://www.wiley.com/college/goodrich>

Course Website

<http://www.mathcs.richmond.edu/~jdenny/Courses/221>

Course Outcomes

After taking this course a student will be able to:

- Define, implement, and analyze the complexities of the following abstract data types:
 - Linear data structures: Stacks, Queues, Lists, Priority Queues
 - Trees
 - Maps, Dictionaries, Hashing, Search Trees
 - Graphs
- Define, implement, and analyze the complexity of common algorithms involving searching, sorting, and selection.
- Understand the uses and trade-offs of various algorithms and data structures.

Course Content and Schedule

During the semester we will discuss the following topics:

Week	Topic	Reading
1	Introduction, Objects, Fundamental Data Structures	Ch 1, 3
2	Big-Oh Analysis	Ch 4
2, 3	Stacks, Queues, Deques	Ch 6
4	Lists and Iterators	Ch 7
5	Trees	Ch 8
6	Midterm 1	
7	Priority Queues	Ch 9
8, 9	Maps, Dictionaries, and Hashing	Ch 10
10, 11	Search Trees	Ch 11
12	Midterm 2	
13	Sorting and Selection	Ch 12
14, 15	Graphs	Ch 14

Note: Schedule is subject to change.

Assignments and Grading

All assignments will be announced in class and details will be posted on the course web page. If you miss class for any reason, it is *your* responsibility to find out what you missed.

Your grade will be based on five components:

1. **Quizzes** — **10%** — There will be in-class quizzes over reading material for the course.
2. **Homework Assignments** — **25%** — There will be ten out-of-class homework assignments. These will be turned in through hard copy.
3. **Programming Assignments** — **25%** — There will be ten out-of-class programming assignments. These will be turned in through a hard and soft copy.
4. **Exams** — **30%** — There will be three exams (10% each between two midterms and one final).
5. **Culture Assignment** — **10%** — Each student is to complete two culture assignments this semester. This is to give the student the opportunity to explore extra topics and computing interests.

Final grades will be assigned according to the following scale:

Final Grade	Percentage (x)
A ⁺	$96.5\% \leq x$
A	$92.5\% \leq x < 96.5\%$
A ⁻	$89.5\% \leq x < 92.5\%$
B ⁺	$86.5\% \leq x < 89.5\%$
B	$82.5\% \leq x < 86.5\%$
B ⁻	$79.5\% \leq x < 82.5\%$
C ⁺	$76.5\% \leq x < 79.5\%$
C	$72.5\% \leq x < 76.5\%$
C ⁻	$69.5\% \leq x < 72.5\%$
D ⁺	$66.5\% \leq x < 69.5\%$
D	$62.5\% \leq x < 66.5\%$
D ⁻	$59.5\% \leq x < 62.5\%$
F	$x < 59.5\%$

Note: The number of hours per week put in the course is not part of the grading equation.

In other words, an A is about content mastery, not about working hard. A B is about content understanding. A C is generally earned when content is misunderstood. So you can work really hard and still receive a C.

Policies

Course Conduct

The student will be respectful to the instructor, lab assistants, and other students. Misconduct will not be tolerated. This includes, but is not limited to, excessive phone usage, napping, rude commentary, etc.

Attendance and Late/Missed Assignments

Attendance at all lecture and lab sessions is advised.

No late assignments will be accepted unless permission from the instructor is sought *in advance*, when possible. Exceptions are typically only given for medical reasons. “Late” is defined as one second past the start of the class period. Printer errors are not a valid excuse.

There will be no makeup options for quizzes or exams. Depending on the circumstance, either a 0 will be given, or the next quiz/exam will count twice. Discuss with the instructor accordingly.

Academic Integrity

All students are expected to be in accordance with the student honor code. <http://studentdevelopment.richmond.edu/student-handbook/honor/the-honor-code.html>. Note, cheating, lying, plagiarism, academic theft, etc. are not tolerated. If you know another student is breaking the code it is your responsibility to report them to me and the university.

Collaboration and Using Resources

For the assignments in this class, white-board/verbal discussion of concepts with others is allowed and encouraged, however the writeup must be in your own words.

Plagiarism is strictly forbidden. Reference every source you use, whether it is a person, a book, a paper, a solution set, a web page, etc. Do not cite the instructor or the course textbook, those are assumed.

Specifically to cite sources – on assignment coverpages list the general sources used, e.g., stackoverflow.com. In the assignment body (code or paper) cite sources in APA format, e.g., the specific stack overflow post. In source code this information can be placed in a comment line/block. For homework and culture assignments, use proper quotation and cite sources at the end in a bibliography section.

Americans with Disabilities Act (ADA)

The Americans with Disabilities Act (ADA) is a federal antidiscrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities.

If you believe you have a disability requiring an accommodation, please follow the procedures listed on the University of Richmond Disability Services website <http://disability.richmond.edu> to begin the accommodations process as soon as possible. *Please provide the main instructor with a University of Richmond Disability Accommodation Notice (DAN) by the second week of class. No student will receive accommodations of any kind without a DAN.*

Services

If you experience difficulties in this course, do not hesitate to contact the main instructor. However, there are additional resources at the University of Richmond that can support you in various ways to meet course requirements.

Academic Skills Center

Academic Skills Center (<http://asc.richmond.edu>, 289-8626 or 289-8956) assists students in assessing their academic strengths and weaknesses; honing their academic skills through teaching effective test preparation, critical reading and thinking, information conceptualization, concentration, and related techniques; working on specific subject areas (e.g., calculus, chemistry, accounting, etc.); and encouraging campus and community involvement. Hours at the Center are: Sunday through Wednesday 3:00-9:00 p.m. and Thursday 3:00-7:00 p.m. On-call tutors are also available.

Career Services

Career Services (<http://careerservices.richmond.edu> or 289-8547) can assist you in exploring your interests and abilities, choosing a major or course of study, connecting with internships and jobs, and investigating graduate and professional school options. We encourage you to schedule an appointment with a career advisor early in your time at UR.

Counseling and Psychological Services

Counseling and Psychological Services (<http://wellness.richmond.edu/offices/caps> or 289-8119) assists currently enrolled, full-time, degree-seeking students in improving their mental health and well-being, and in handling challenges that may impede their growth and development. Services include short-term counseling and psychotherapy, crisis intervention, psychiatric consultation, and related services.

Speech Center

Speech Center (<http://speech.richmond.edu> or 289-6409) assists with preparation and practice in the pursuit of excellence in public expression. Recording, playback, coaching and critique sessions offered by teams of student consultants trained to assist in developing ideas, arranging key points for more effective organization, improving style and delivery, and handling multimedia aids for individual and group presentations.

Writing Center

Writing Center (<http://writing.richmond.edu> or 289-8263) assists writers at all levels of experience, across all majors. Students can schedule appointments with trained writing consultants who offer friendly critiques of written work.