CPSC395A: Analysis of Algorithms

Spring 2017

MWF: 2:20-3:20pm in Trexler 363

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Office Hours: MW 1:00-2:00pm; Th 2:00-4:00pm and by appointment.

Syllabus

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Course Synopsis

This course provides an introduction to advanced data structures and the design and analysis of algorithms. Topics include various techniques for the design of algorithms, analysis of these algorithms for computational complexity, and intractability. Any programming activities will be done in C++ on a Linux platform.

Required Texts

1. *Introduction to Algorithms, 3rd edition*, by Cormen, Leiserson, Rivest and Stein.

Prerequisites

CPSC 250 and MATH 131. Familiarity with C++ and Unix/Linux is assumed.

Intended Learning Outcomes

At the end of this course successful students will be able to:

1. design algorithms for various problem types,
2. analyse the efficiency of algorithms, and
3. analyse the computational complexity of problems.

Class Attendance

Regular attendance in class and the lab sessions is highly recommended. Regardless of attendance, students are responsible for all material covered or assigned in class.

Mechanics

The course will meet in class for three hours during the week. There will be three tests (on **Friday, February 10, Friday, March 17, and Friday, April 14**) in class during the semester. The final exam is scheduled for **Tuesday, May 2: 2:00pm - 5:00pm**.

Make-up tests will be available *by pre-arrangement only* in case of scheduling conflicts. After the test, make-ups will be available only in case of documented medical emegrencies.

Besides the exams, there will be quizzes in class, regular homework assignments, and a co-curricular requirement.

Quizzes: Quizzes will be in class and will be announced one class period before the quiz.

Co-curricular Requirement: The Mathematics, Computer Science and Physics department o ers a series of discussions that appeal to a broad range of interests related to these fields of study. These co-curricular sessions will engage the community to think about ongoing research, novel applications and other issues that face these disciplines. Each student is required to attend at least *three* of these sessions, and turn in a short paper describing the contents of the session, and his/her *critical reflections* about the topic and content. These papers are due in class within a week of the session. A paper submitted beyond a week from the event being discussed in the paper will not be accepted.

Grading

The final grade will be computed based on the grades in the tests, the final exam, home works and programming projects according to the following weights.

Component	Weight	
Co-curricular	4%	
Home works	15%	
Quizzes	15%	
Tests (3)	36%	(12% each)
Final Exam	30%	

The final course grade will be calculated as follows:

< 60	60-62	63-65	66-69	70-72	73-75	76-79	80-82	83-85	86-89	90-92	> 92
F	D-	D	D+	C-	C	C+	B-	B	B+	A-	A

Class Attendance and Policies

Regular attendance in class and the lab sessions is highly recommended. Regardless of attendance, students are responsible for all material covered or assigned in class.

Cell phones should be kept in your backpacks or pockets (essentially, out of sight), and turned to the silent mode throughout the duration of the class and lab periods. Please do not remove your cell phones until you are outside the classroom/lab. Similarly, during office consultations or consultations in the lab (even when it is not during regular class or lab time), your cell phones should be out of sight and in the silent mode.

If you use an electronic device such as a tablet or a laptop for note-taking or to read the textbook, the content that is open on the screen should be strictly restricted to documents and pages of relevance to the class. For example, you should not have any social media websites open in your browser window, even if it is in a tab that is not currently in focus.

Academic Integrity

Students are expected to adhere to the Academic Integrity policies of Roanoke College. All work submitted for a grade is to be strictly the work of the student unless otherwise specified by the instruct.o Tr he policies as outlined in the Academic Integrity handbook will be enfocred in the course.

Graded programs are subject to the Roanoke CollegeA cademic Integrity policies. Copying a program or a portion of a program (even a single line) or reading another person's program to obtain ideas for solving a problem is plagiarism. Other examples of integrity violation include writing code for some else, using code written by someone else, telling someone else how to solve a problem or having someone tell you how to solve a problem (and using their method). These cases apply to any work that is handed in for a grade under the instructor's assumption that the work is your own. Unless specified otherwise by the instruct,o driscussion among students should be limited to general discussion of concepts and language details, not specific aspects of a solution to the assigned problem.