

West Virginia University
Computer Science and
Electrical Engineering
Spring 2015

CS 221 Analysis of Algorithms
Section 1, 3 credit hours
TR 3:30pm – 4:45pm, ESB-E 207
Prerequisite: CS 220 – Discrete Mathematics

Instructor Gianfranco Doretto 947 Engineering Sciences Building
gidoretto@mix.wvu.edu 293-9133
Office hours: Thursdays 2:30pm-3:30pm or by appointment (send email)

Required Texts

Introduction to Algorithms, Third Edition

Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest and Clifford Stein
The MIT Press, ISBN 0-262-03384-4, September 2009

Communication and Supplementary Materials

Course announcements, homework, study aids, and supplementary reading will be posted on eCampus. Students should regularly check the eCampus course page, and their MIX email.

For class discussion we will be using Piazza. The system is highly catered to getting you help fast and efficiently from classmates, the TA, and myself. Rather than emailing questions to the teaching staff, I encourage you to post your questions on Piazza. If you have any problems or feedback for the developers, email team@piazza.com.

Find our class page at: <https://piazza.com/wvu/secondsemester2015/cs221/home>

Course Content

This course will cover basic combinatorial algorithm design techniques including divide and conquer, and dynamic programming. Problem domains will include searching, sorting, and graph algorithms. We will cover the basic techniques for analyzing the time and space efficiency of algorithms. If time permits, the course will include a brief introduction to the theory of computational complexity.

Evaluation 4 Quizzes (12% each), 1 Midterm (26%), Final (26%).

Grading

85% - 100%	A
75% - 84.99%	B
65% - 74.99%	C
50% - 64.99%	D
< 50%	F

Homework Policy

Homework problems will be distributed to the class on a regular basis. You may discuss homework with other students, but each student is very strongly encouraged to write up solutions in their own words, and without assistance from anyone. Although homework problems will not be graded, being able to solve homework problems and write appropriate solutions is extremely important for training the student on solving problems of the same type of those presented in class, during quizzes, midterm and final.

Attendance

You must attend class promptly and regularly. *Any unexcused absence forfeits the right of the student to make up the work missed.* You are responsible for all material presented in class, including announcements about course procedures. In addition to text material, tests will include

material presented only in class, so performance will indirectly reflect attendance. There is much evidence to support the claim that you will do better in the class if you attend regularly.

Tentative Topics

- growth rate of functions
- polynomial time verses exponential time
- asymptotic notation
- time analysis of algorithms
- divide and conquer technique
- time analysis of recursive algorithms
- recurrences
- priority queues (heaps)
- sorting techniques
- linear time sorting
- breadth first search
- depth first search
- dynamic programming introduction
- minimum spanning trees
- shortest paths

Adverse Weather Commitment

In the event of inclement or threatening weather, everyone should use his or her best judgment regarding travel to and from campus. Safety should be the main concern. If you cannot get to class because of adverse weather conditions, you should contact me as soon as possible. Similarly, if I am unable to reach our class location, I will notify you of any cancellation or change as soon as possible (by one hour before class starts, using MIX and eCampus) to prevent you from embarking on any unnecessary travel. If you cannot get to class because of weather conditions, I will make allowances relative to required attendance policies, as well as any scheduled tests, quizzes, or other assessments.

Inclusivity Statement

The West Virginia University community is committed to creating and fostering a positive learning and working environment based on open communication, mutual respect, and inclusion.

If you are a person with a disability and anticipate needing any type of accommodation in order to participate in this class, please advise me and make appropriate arrangements with the Office of Disability Services (293-6700). For more information on West Virginia University's Diversity, Equity, and Inclusion initiatives, please see <http://diversity.wvu.edu>.

Integrity Statement

The integrity of the classes offered by any academic institution solidifies the foundation of its mission and cannot be sacrificed to expediency, ignorance, or blatant fraud. Therefore, I will enforce rigorous standards of academic integrity in all aspects and assignments of this course. For the detailed policy of West Virginia University regarding the definitions of acts considered to fall under academic dishonesty and possible ensuing sanctions, please see the Student Conduct Code at <http://www.arc.wvu.edu/admissions/integrity.html>. Should you have any questions about possibly improper research citations or references, or any other activity that may be interpreted as an attempt at academic dishonesty, please see me before the assignment is due to discuss the matter.