COMP 482 Fall 2017
Algorithm Design and Analysis
Class Section Numbers: 19937 (12:30 pm); 19938 (3:30 pm)

INSTRUCTOR: Diane Schwartz
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OFFICE HOURS: TTH 2:00 – 3:00

PREREQUISITES: Comp 256/L and Comp 282 with C- or better

COURSE DESCRIPTION: Analyze algorithms in terms of time and space complexity for best/average/worst case execution times using asymptotic notation; apply standard algorithmic approaches, including greedy, divide and conquer and dynamic programming, to algorithmic design. Review classical algorithms, including searching, sorting and graph algorithms.

REQUIRED TEXTBOOK: Algorithm Design and Applications by Goodrich and Tamassia

GRADING: The following weights will be applied to calculate your final grade:

Midterm Exams (2)	40% (20 % each)
Final Exam	25%
Programming Projects (in Java)	20%
Homework and Quizzes	10%
Attendance	5%

Plus and minus grading will be used. Your final percentage score will be mapped onto a letter grade as follows: 90 – 100% (A-, A); 80-89% (B-,B,B+); 65-79% (C-, C ,C+); 55-64% (D); Below 55% (F).

Class attendance counts for 25 points and will be weighted as 5% of your grade. You will get the full 25 points if you miss no more than 3 class meetings. Absences beyond 3 class meetings, will cause you to lose 5 of the 25 points per missed class. If you miss 8 or more classes you will get 0 points for attendance. To be counted as attending class you need to sign the attendance sheet at the beginning of class, participate in the classroom activities and remain in class until the end of class.

COURSE OBJECTIVES

A successful student will be able to:

1. Define the time and space complexity of algorithms, using asymptotic notation.
2. Appropriately apply algorithmic strategies, including brute-force, greedy, divide and conquer and dynamic programming to solve problems.
3. Identify and use well-known graph algorithms, including network flow, shortest-path and minimum spanning tree algorithms.
4. Discuss classic algorithms for problems such as searching and sorting.
5. Be able to apply a variety of algorithmic problem solving strategies and analysis to real world problems.

Academic Integrity

Students are expected to read and abide by the University's Academic Honesty statement printed in the current catalog. Academic dishonesty will result in a zero on the assignment and can result in class failure.

Class Etiquette

1. No use of cell phones, lap tops or other communication/computer devices is allowed except for taking notes in class. You should have your full attention on the class.

2. Please do not eat in class. Don't bring in breakfast, lunch, dinner or snacks to eat in class. Bottles of water, small sodas or cups of coffee or tea are ok.

3. Come to class on time and do not leave early. The attendance sign-up sheet will be available only at the beginning of class.

4. Full participation in class activities is expected.

COURSE OUTLINE (Approx))

Week of	**Lecture Topics**	**Text Reading**
Aug 29 -31	Algorithm Analysis and Asymptotic Notation	Chap 1
Sep 5 - 7	Sort Algorithms and Recurrence Equations	Chap 8
Sep 12 - 14	Sort Algorithms	Chap 9
Sep 19 21	Greedy Algorithms	Chap 10
Sep 26 - 28	Greedy Algorithms	Chap 10
Oct 3 - 5	Divide and Conquer	Chap 11
Oct 10 - 12	Dynamic Programming	Chap 12
Oct 17 -19	Dynamic Programming	Chap 12
Oct 24 - 26	Graph Algorithms	Chap 13
Oct 3- - Nov 2	Graph Algorithms: Traversal	Chap 13
Nov 7 - 9	Graph Algorithms: Shortest Paths and MST	Chap 14
Nov 14 - 16	Network Flow	Chap 15
Nov 21	Network Flow	Chap 15
Nov 28 - 30	NP Completeness	Chap 17
Dec 5 - 7	Other topics, time permitting	
Final Exams	**12:30 pm class: Thurs Dec 14 12:45- 2:45 pm** **3:30 pm class: Tues Dec 12 3-5 pm**	

See course Canvas site for programming projects and homework assignments and other information.