CS 5050 Advanced Algorithms

Fall Semester, 2017

SYLLABUS

Class Meets: 8:30—9:20 a.m., MWF, 108 ENGR

Instructor: Dr. Haitao Wang

Office and Phone: 402F Old Main, 797-2416

E-mail: haitao.wang@usu.edu

Office Hours: 9:30—10:30 a.m. MWF, or by appointment

Graduate Teaching Assistant: Mr. Kuan Huang

Office: 422 Old Main

E-mail: kuan.huang@aggiemail.usu.edu

Office Hours: 10:00—11:00 a.m. Wednesday, or by appointment

Prerequisites: CS 2420 (Algorithms and Data Structures); you are expected to already know the following topics: mathematical induction, arrays, linked lists, stacks, queues, heaps, binary search trees, AVL trees, hash tables, sorting algorithms, and basic graph algorithms, e.g., breadth-first-search and depth-first-search.

Topics to be Covered (subject to change): algorithm **analysis** techniques including asymptotic notation, solving recurrences, amortized analysis; algorithm **design** techniques including divided-and-conquer, prune-and-search, augmenting data structures, dynamic programming, greedy, graph algorithms, etc; basic computational complexity topics including the concepts such as P, NP, NP-hard, NP-completeness.

Textbook (recommended but not required):

T.H. Cormen, C.E. Leiserson, R.L. Rivest, and C. Stein, *Introduction to Algorithms*, 3nd Edition, the MIT Press, Cambridge Massachusetts, 2009.

Course Work and Grading:

Homework: 50% (7–8 problem sets)

Mid-term: 20% (in class, Wednesday, October 18)

Final: 30% (7:30–9:20 a.m., Monday, December 11)

Note: September 18 (5:00 pm) is the last day to drop classes without notation on transcripts.

Homework Guidelines

Every student is required to abide by the principles and procedures set forth by the University in the **Code of Conduct**. In addition, we have the following guidelines for doing homework assignments of this course.

1. In general, no late homework will be accepted.

2. Everyone should do his/her own work for the assignments.

3. Discussions of homework problems are allowed only if all parties involved do not know the answers.

4. If during the discussion of a problem among a group of people, the solution for that problem is found, then the names of the people in the group must be listed in the submitted papers together with the answer to that problem.

5. If a person already has the solution for a problem, then that person should not give out ideas (such as the right approach or method) for that problem to other students.

6. A person who already knows the answer for a problem can help another person who is seeking the answer only by giving "negative information". For example, one may say that "your approach is not correct, because here is a counterexample". But telling another person the right approach is not allowed.

7. Before the assignments are submitted, no one (including those who already have the answers) should read another's written solutions.

8. If information related to the solutions is from certain written sources (e.g., published papers, books, journals, websites, etc) other than the textbooks and lecture notes, then references of those sources must be given in the submitted papers. Depending on the situations, it is possible that only partial credits are given for a solution obtained from such written sources.