CS 3510A: Design and Analysis of Algorithms
Course Information and Syllabus

1 Basic Information

Instructor:	Prof. Chris Peikert, cpeikert@cc.gatech.edu, Klaus 3146
TA:	Abhishek Banerjee, abhishek.banerjee@cc.gatech.edu, Klaus 2116
TA:	Juyuan Yang, juyuan@gatech.edu
TA:	Kyle Zimmerman, zimmermankz@gatech.edu
Class meetings:	MWF 11:05-11:55am, Klaus 2443
Office hours:	(Chris) Wednesdays and Fridays 12-1pm, or by appointment
	(Abhishek) Tuesdays and Thursdays, 4-5pm
Textbook:	Cormen, Leiserson, Rivest and Stein ("CLRS"), *Introduction to Algorithms* (3rd edition)
Optional texts:	Kleinberg and Tardos, *Algorithm Design*
	Dasgupta, Papadimitriou and Vazirani, *Algorithms*
Course website:	https://t-square.gatech.edu/portal/site/gtc-38a2-fbae-53be-a4c3-ed17c8234e2a
Piazza website:	https://piazza.com/gatech/spring2014/cs3510a/home

2 Course Description

This course provides a one-semester introduction to the design of algorithms for many important problems in computing, and the rigorous analysis of their behavior, e.g., runtime, space usage, practical performance. The course will be focused around the following main concepts and techniques:

- *Divide and conquer*
- *Dynamic programming*
- *Data structures*
- *Randomization*

Specific topic areas will include:

- *Sorting and searching*
- *Graph algorithms*
- *NP-completeness*
- *Approximation algorithms*
- *Special topics* (e.g., string matching, Fast Fourier Transform, number theory and cryptography)

3 Assignments and Grading

Homework. There will be 5–6 homeworks, which are due at the start of class, either in person or via T-Square. ***Do not email your homework to the course staff***; upload it to T-Square so the entire staff can access it in one place. ***Late homeworks will not be accepted*** because we may discuss the solutions in class, and solutions need to be posted promptly. Make sure your work is well-organized, clear, and legible (typed solutions are preferred, but not required).

Collaboration with other students who are taking the class is both allowed and encouraged! However, as part of the course's academic honesty policy you must abide by the following:

- Try the problems by yourself first.
- Write up your solutions from scratch, in your own words.
- List at the top of your homework everyone whom you collaborated with.
- Do not consult any sources (e.g., web sites, students who've already taken the class, or their notes) other than those described above.

Note that homeworks are worth a small percentage of your final grade (10%). They are primarily intended to help you reinforce the material from class. There is another reason to do the homeworks: certain problems may reappear on exams!

Exams. There will be 5 in-class exams and a final exam. During each exam, you may use *one 8.5-by-11" (double-sided) study sheet, prepared by you in advance*. Each quiz will cover the most recent material only, while the final exam will be comprehensive. The exams are *tentatively* scheduled as follows:

- In-class (all Fridays): Jan 24, Feb 14, Mar 7, Apr 4, Apr 18
- Final: Apr 28 (Monday), 8-10:50am

Any changes to this schedule will be announced in advance.

Grading. Final grades will be determined as follows:

- Homeworks: 10%
- In-class exams: 65%
- Final exam: 25%

Academic Honesty. I recognize and fully support the Georgia Tech Academic Honor Code as defined for the GT community. A copy of the Honor Code can be found at the Georgia Tech web site. All students are expected to maintain high standards of academic integrity. Unless otherwise stated, all work is to be done individually.

Violations of the academic honesty policy may lead to a zero score on the assignment in question for the first violation, and a penalty up to and including a failing grade for the course for a second violation. All violations will be reported to the Office of Student Integrity.

Other Important Dates

- Jan 20 (Monday): no class (school holiday)
- Feb 28 (Friday): last day to withdraw with "W" grade
- Mar 17–21: no classes (spring break)
- Apr 25 (Friday): last day of class
- Apr 28 (Monday), 8-10:50am: final exam