Course: COMP 487/587
Term: Fall 2017
Hours: MWF 9AM-9:50AM

Instructor Contact Information

Instructor: Dror Fried
Office: Duncan Hall 3054
Email: dror.fried@rice.edu
Office Hours: Monday 10AM-11AM, Friday 10AM-11AM

Course Objectives and Learning Outcomes

In computational complexity we study the computational resources (time, space, communication, etc.) that are required to solve computational problems via various computational models. Specifically, we are interested in classifying computational problems with classes of other problems that require similar amount of resources to solve.

Required Texts and Materials

The course roughly follows the textbook: "Computational Complexity: A Modern Approach" by S.Arora and B.Barak (http://theory.cs.princeton.edu/complexity/).

In the first part of the course we will obtain a thorough grasp on the basic and standard material of time and space complexity and standard computational models such as deterministic/non-deterministic Turing machine, P, NP, Cook-Levin Theorem, hierarchy theorems, PSPACE and so on . In the second part, we will learn about approximation algorithms, the polynomial hierarchy, randomized complexity classes and counting complexity classes. In the third part, as time permits, we will learn topics such as Boolean circuit complexity, interactive proofs, and probabilistically checkable proofs (PCP).

Exams and Papers

There are two scheduled exams:

- A midterm: **TBD**
- A final exam: Scheduled by the registrar's office (3 hours)

There is a set of 6-7 homework assignments.

Grade Policies

- Midterm: 30%
- Final: 30%
- Homework assignments: 40%

Assignment of letter grades will be no stricter than the following:

- A: final grade ≥90
- B: 80 ≤ final grade < 90
- C: 70 ≤ final grade < 80
- D: 55 ≤ final grade < 70
- F: final grade < 55

Absence Policies

Attendance will be taken on randomly selected days. It is the student's responsibility to inform the instructor, ahead of time if possible, about absences.

Rice Honor Code

In this course, all students will be held to the standards of the Rice Honor Code, a code that you pledged to honor when you matriculated at this institution. If you are unfamiliar with the details of this code and how it is administered, you should consult the Honor System Handbook at http://honor.rice.edu/honor-system-handbook/. This handbook outlines the University's expectations for the integrity of your academic work, the procedures for resolving alleged violations of those expectations, and the rights and responsibilities of students and faculty members throughout the process.

Additional policies that are specific to COMP487/COMP587 include, but are not limited to:

- While collaboration is allowed, all submitted work (homework and exams) must be your own and written in your own words.
- You may not search for solutions to homework questions.
- You may not access solutions to homework assignments; no matter what the source is (you must not obtain solutions from students who took the course in previous semesters, search for them online, etc.).
- You may not post your solutions in the public domain (e.g., if you choose to store your work on sites such as github, you must do so by creating a private, password-protected account, and storing your work in it).
- You may not give access to your own solutions to other students.
- You may not use online forums (except for the COMP487/COMP587 forum) to ask questions about homework material or ask for help.

Disability Support Services

If you have a documented disability or other condition that may affect academic performance you should: 1) make sure this documentation is on file with Disability Support Services (Allen Center, Room 111 / adarice@rice.edu / x5841) to determine the accommodations you need; and 2) talk with me to discuss your accommodation needs.

Syllabus Change Policy

This syllabus is only a guide for the course and is subject to change with advanced notice.

Additional Information

The course website is: **TBD**