CSE 200, Computability and Complexity, Spring 2013

Professor Shachar Lovett

Email: slovett@cse.ucsd.edu
Office hours: Tuesday 1:00-2:00pm, Computer Science Building (EBU3b), room 4234

TA: Dongcai Shen
Email: doshen@cs.ucsd.edu
Office hours: Monday 2:00-3:00pm, Computer Science Building (EBU3b), room 3109

Class times: M 12:30-13:50, W 2:00-3:20, Computer Science Building, room 2154
Class website: http://cseweb.ucsd.edu/classes/sp13/cse200-a


Topics:

1. Models of computation: Turing Machines and variants, RAM model, Boolean circuits. Simulating one machine model with another. The Church-Turing thesis and versions for efficient computation (Chapters 1, 3, and 6)


3. NP-completeness and the P vs NP question. Consequences of P = NP. The polynomial-time hierarchy. (Chapters 2 and 5)

4. Space Complexity (Chapter 4)

5. Randomized computing (Chapter 7)

6. Time permitting: Interactive proofs (Chapter 8), Quantum computation (Chapter 10)
Grading:  3 homework sets (50%). Take-home final exam (50%).

Homework rules: Homework can be done in groups of up to 4 students. Each student must submit her/his own solution which she/he wrote by themselves, potentially after discussion of the problem in the group. All group members with whom you consulted must be cited in the solution, as well as any external material used. Homework due dates must be respected (typically two weeks).

Take-home final exam rules: The final exam is individual. It is not allowed to consult with any other students or any other person for that matter, except for the professor or the TA.