Course Information

Lectures

TR 1:40–3:00 in 1120 Bainer. The CRN for this class is 78373.

Instructor

Phillip Rogaway
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Office hours: Wednesday 1:10-3:00 (doubling up with UG advising hours) or on a drop-in basis or by appointment.

Summary

This is a graduate-level treatment of the Theory of Computation, with an emphasis on complexity theory. Time and space complexity classes; reductions; completeness; the role of randomness; undecidability. We'll treat some "modern" topics, like Probabilistically Checkable Proofs, the unapproximability of CLIQUE, and Shamir's result that all languages in PSPACE admit interactive proofs. I'll try to follow students' interest.

Grading will be based on problem sets. I'll aim for 20-25 problems. Some of them may be hard. Do as many as you can (all is nice, but it is not essential). Spend time on your writeups. Any problem you write up should be a good example of correct, insightful, articulate exposition.

The last problem set will forbid collaboration and will be more comprehensive. On other problem sets you can talk with one another. On each problem indicate the name of anyone from whom you got ideas. There is no final or midterm.

Lecture material will be taken from a variety of sources. I'll try to finish most of the material in Sipser's book with time to spare for several other topics. When I lecture on material not in Sipser's book I will give you a photocopy of a source for that material.

Relax, think, and have fun!

—Phil