CS 321: Theory of Computation

Instructor: Dr. Mike Rosulek <`rosulekm@eecs.oregonstate.edu`>, office in KEC 3063

Meets: MWF 12, in WITH 109

Website: http://eecs.oregonstate.edu/~rosulekm/cs321
Please check often for announcements, assignments, resources, etc.

Disclaimer: I am teaching two sections of CS321 this quarter, with different structure, different homeworks, different requirements. Make sure you visit the correct website!

Textbook: There is no required text. Lecture notes from various sources and in-class slides will be posted on the course website. If you prefer killing trees, then one of my favorite books of all time is *Automata & Computability* by Dexter Kozen (at the campus bookstore).

What Does it Mean to Study Theory of Computation?

Theory of computation is about **understanding the limits of what computers can do.**
In order to do that, we must do some things that are often a challenge for students:

► We want to understand computation at a fundamental level, not just specific technologies. In order to do that, we can only discuss *highly abstract models of computation.* These models may not bear an obvious resemblance to the kinds of computations you're used to. These models describe computations at a low level to make *reasoning about computation* easier, but a side-effect is that actually "programming" in these models can be cumbersome.

► We want to be able to say things like "No computing device of this kind can solve this particular problem." In order to have certainty about this kind of statement, our discussions about computation must be *mathematically rigorous.* This means we use precise definitions and formal proofs.

Course Structure

50% **Problem sets:** Expect roughly 8 problem sets throughout the quarter. Your submissions must be **typed** (not handwritten) and submitted electronically.

50% **Exams:** Expect one midterm and one final exam, each accounting for 25% of the final grade.

Collaboration Policy

Collaborative work is held to the following requirements:

► Always make a good-faith effort to **do the work by yourself *first***, before working together. Not only is this a more effective way to learn, it will also make your collaborative time more effective.

- ► Everything you *write* for this course (reading questions, warm-up exercises, but especially final problems) must be **written entirely by you**, and reflect your personal understanding of the material. Submissions from different students should never look similar.

- ► No collaboration on exams!

Accommodation for Disabilities

Accommodations for students with disabilities are determined and approved by Disability Access Services (DAS). If you, as a student, believe you are eligible for accommodations but have not obtained approval please contact DAS immediately at 541-737-4098 or at http://ds.oregonstate.edu. DAS notifies students and faculty members of approved academic accommodations and coordinates implementation of those accommodations. While not required, students and faculty members are encouraged to discuss details of the implementation of individual accommodations.