

MCS 441 – Theory of Computation I

Syllabus

Lev Reyzin

Spring 2013

Time and Location: M-W-F, 12:00-12:50pm, Taft Hall (TH) 320

Instructor: Lev Reyzin, SEO 713, (312)-413-9576, lreyzin@math.uic.edu

Prerequisites: MATH 215. See instructor with any concerns.

Office Hours: to be announced

Website: http://homepages.math.uic.edu/~lreyzin/s13_mcs441/

Textbook: M. Sipser: *Introduction to the Theory of Computation*, 3rd edition

Topics: This course will cover basic computability and complexity theory. We will examine the central questions “What is computable *in principle*?” and “What is *efficiently* computable?” Covered material will likely include, but not be limited to:

- automata, regular languages, and nondeterminism
- context-free languages and pushdown automata
- Turing machines and the Church-Turing thesis
- decidability and the halting problem
- time complexity, P vs. NP, the Cook-Levin theorem, and reductions
- time permitting: PSPACE, L, NL, or other advanced topics

Grading: problem sets: 20%, two in-class midterms: 20%+20% (dates TBD), final exam: 40%. All material covered in lecture, assigned in the readings, or included in the problem sets is “fair game” for the exams. Graduate students may be assigned different problems from undergraduates on some assignments.

Attendance and Participation: A student’s grade might be adjusted slightly upward for positive contributions through class participation or downward for repeated absences. Moreover, students are responsible for all material covered and problem sets and readings assigned in lecture.

Problem Set Collaboration Policy: Unless otherwise specified on an assignment, students may discuss problem sets with one another, but they must afterward write the solutions on their own. No notes may be taken during discussions. Discussing the problems with others is encouraged. Copying from each other’s writing, however, is forbidden.

Collaborators (people you speak to about an assignment) must be named at the top of the assignment – as long as all collaborators are listed, no points are deducted for collaborating in the manner outlined above.

Consulting any online sources, including websites, blogs, forums, mailing lists, etc. to seek answers to the problems is forbidden.

Of course, no collaboration will be allowed on midterm and final exams.

Late Work Policy: All students have 3 “late days” which they can use to turn in problem sets past deadline without penalty. Each day an assignment is late uses up 1 day from the budget (Friday to Monday counts as 1 day). Because of the flexibility above, when a student runs out of late days, all of the student’s subsequent late assignments are given a grade of 0 unless seriously exceptional circumstances arise.

Problem sets are to be turned in by noon the day they are due, either in class or via my mailbox (on the 3rd floor of SEO). For purposes of counting late-days, a problem set counts as being submitted on a given day if it is submitted by noon on that day. Late work should have the date and time it is submitted written atop the assignment.

Disability Policy: Students with disabilities who require accommodations for access and participation in this course must be registered with the Office of Disability Services (ODS). Please contact ODS a 312/413/-2183 (voice) or 312/413-0123 (TTY).