MCS 441 – Theory of Computation I
Syllabus

Lev Reyzin

Spring 2014

Time and Location: M-W-F, 12:00-12:50pm, Taft Hall (TH) 219

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/s14_mcs441/`

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

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
- Kolmogorov complexity
- 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, *no collaboration is allowed on problem sets.* Consulting any online sources, including websites, blogs, forums, mailing lists, etc. to seek answers to the problems is also forbidden. If you have questions or need help, please come to office hours.

Late Work Policy: 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). In general, late work will not be accepted. Exceptions must be asked for in advance of the due date and will be made on a case-by-case basis.

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).