MCS 541 – Computational Complexity

Syllabus

Lev Reyzin

Spring 2023

Time and location: M-W-F, 1:00-1:50pm, Addams Hall (AH) 302

Instructor: Lev Reyzin, `lreyzin@uic.edu` (SEO 417)

Prerequisite background: MCS 441 or equivalent

Office hours: TBD

Website: `http://homepages.math.uic.edu/~lreyzin/s23_mcs541/`

Required textbook: S. Arora and B. Barak, *Computational Complexity: A Modern Approach*

Topics: This course will introduce students to the fundamental ideas underlying modern computational complexity. We will cover different computing models, time and space complexity of computations, and the classification of problems according to their computational complexity. Topics to be covered include completeness, the power of randomness, cryptography and one-way functions, interactive proof systems, relativization, and more.

Grading: Course grades will be determined according to the following breakdown:

- 40% take-home problem sets

- 25% midterm exam

- 35% final exam

The exams will either be in-class or take-home, at the instructor's discretion. Grades may also be adjusted depending on class participation.

Problem set collaboration policy: Unless otherwise specified on an assignment, students may discuss problem sets with one another, but they *must write the solutions on their own.* Collaborators (people you speak to about an assignment) must be named at the top of the assignment. No collaboration is allowed on the exams.

Late work policy: In general, late work will not be accepted. Problem sets are to be turned in via Gradescope by 1:00 pm the day they are due. Any exceptions will be handled 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).