

MCS 590 – Advanced Topics in Computer Science:
Mathematical Foundations of Data Science
Syllabus

Lev Reyzin

Fall 2017

Time and location: M-W-F, 11:00am-11:50am, Stevenson Hall (SH) 212

Instructor: Lev Reyzin, SEO 418, (312)-413-3745, lreyzin@math.uic.edu

Prerequisite background: Familiarity with the design and analysis of algorithms, computability and basic computational complexity theory, and mathematical maturity.

Office hours: to be announced

Website: http://homepages.math.uic.edu/~lreyzin/s17_mcs590/

Online textbook: Avrim Blum, John Hopcroft, and Ravindran Kannan.
Foundations of Data Science

Topics: MCS 590 covers advanced topics in computer science, possibly changing topics each time it is offered. This semester, the topic is “foundations of data science.” The course will cover topics such as: random graphs, small world phenomena, random walks, markov chains, streaming algorithms, clustering, graphical models, and belief propagation.

Grading:

- 60% take-home problem sets
- 30% in-class presentation – each student will present a research paper approved by the class instructor

- 10% class participation

Problem set collaboration policy: Unless otherwise specified on an assignment, students may discuss problem sets with one another, but they should afterward 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 will be allowed on exams.

Late work policy: In general, late work will not be accepted. Problem sets are to be turned in by 11am the day they are due, either in class or via my mailbox (on the 3rd floor of SEO). 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).