

THEORY OF COMPUTING QUALIFIER SYLLABUS

The purpose of this syllabus is to delineate the material for the theory qualifying exam. You should feel free to use other sources to learn the material. Most of it is covered in at least one of CS 520, CS 577, CS 710, and CS 787. However, the material for the exam is defined by the list below and not by the latest offerings of the theory courses.

Algorithms

- Kleinberg and Tardos, *Algorithm Design*, Addison Wesley, 2006: entire book.
- Motwani and Raghavan, *Randomized Algorithms*, Cambridge University Press, 1995: Part I.

Complexity

- Sipser, *Introduction to the Theory of Computation*, 2nd edition, Thomson Course Technology, 2006: entire book.
- Arora and Barak, *Computational Complexity: A Modern Approach*, Cambridge University Press, 2009: Part I.

You are also expected to know basic mathematics, as described in the appendix of the text by Arora and Barak.