CS443 Probabilistic Algorithms, Spring 2012

Instructor: W. Steiger  Hill 417  x2083  steiger@cs.rutgers.edu
TA: Mudassir Shabbir  Hill 206  x9707  mudassir@cs

- **Office Hours:** Monday and Thursday 3-4
- **Course Webpage:** http://www.cs.rutgers.edu/~steiger/443.html
- **OBJECTIVES:** To see how notions and techniques from discrete probability can play interesting and important roles in the design and analysis of algorithms and systems in Computer Science. Specific applications taken from load balancing in distributed systems, randomized routing on arrays, randomized algorithms for graph problems and problems in computational geometry, fingerprinting, universal hash functions, zero knowledge proofs, the probabilistic method, primality testing, random number generation.
- **Prerequisites:** CS206 (or equiv.) and CS344 (or equiv)
- **Expected Work:** regular written homework and 2 tests. A recitation (optional) is available as help for homework and lecture material.
- **References:** No text seems to cover all the intended material, and at the right level. Some course notes will be distributed. The following texts will be useful references for various parts of the course.

  - “Randomized Algorithms”, R. Motwani and P. Raghavan, Cambridge, 1995 (Overlaps large fraction of the course and has much more for later study).
  - “The Probabilistic Method (Lecture Notes)”, J. Matoušek. These excellent notes may be more accessible and more convenient to use than the Alon-Spencer text, above. Just access [http://kam.mff.cuni.cz/matousek/lectnotes.html](http://kam.mff.cuni.cz/matousek/lectnotes.html).

NO RECITATION FIRST WEEK