Syllabus
CPSC689 Randomized Algorithms
Spring 2006

Instructor	Dr. Andreas Klappenecker
Office	HRBB 509B
Office hours	TBD
Course homepage	http://faculty.cs.tamu.edu/klappi/random/random.html

Learning Objectives. At the end of this course you should

- know the fundamentals of discrete probability theory;
- know the basic randomized algorithms discussed in this course;
- be able to analyze selected randomized algorithms;
- know the theory of Markov chains;
- are knowledgeable about selected randomized data structures;
- be familiar with the probabilistic method.

Prerequisites. Graduate standing or approval by instructor.

Course materials. The **required textbook** for this course is

> M. Mitzenmacher, E. Upfal: *Probability and Computing – Randomized Algorithms and Probabilistic Analysis*, Cambridge University Press, 2005.

Another recommended book is R. Motwani, P. Raghavan: *Randomized Algorithms*, Cambridge University Press, 1995. A useful reference for probability theory is the book *Probability and Random Processes* by G. Grimmett and D. Stirzaker, 3rd edition, Oxford University Press, 2001. For selected topics, we will use the book *The Probabilistic Method* by N. Alon and J. Spencer, 2nd edition, Wiley-Interscience, 2000. Lecture notes will be provided to supplement these materials.

Grading. The course has one midterm exam, a final project, and homework assignments. The grade will be calculated as follows:

> **Midterm exam** 25%, **Project** 30%, **Assignments** 45%

The dates of all major examinations will be announced in class. The course grades will be assigned according to the scale **A** for 90%-100% of total points, **B** for 80%–89%, **C** for 70–79%, **D** for 60%–69%, and **F** otherwise. A curve might be applied if the class average is lower than expected.

Scholastic Dishonesty. Scholastic dishonesty will not be tolerated. Examinations are meant to measure the knowledge or skill of each individual, so giving or receiving unauthorized assistance is cheating. It is assumed that college students know what is honest and what is not. Any identified instances of scholastic dishonesty will be dealt with in accordance with the procedures outlined in the University Student Rules.

Students with Disabilities. The Americans with Disabilities Act is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact the Department of Student Life, Services for Students with disabilities in room 126, Koldus, or call 845-1637

Course Contents. The first half of the course will cover the fundamentals of probability relevant to randomized algorithms. The second part of the course will discuss selected randomized algorithms and randomized data structures.