W4105: PROBABILITY
Department of Statistics, Columbia University
Autumn 2003

Instructor: Regina Dolgoarshinnykh **Office:** 602 Math (212-854-4340)

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Lecture Time: Tue and Thu 6:10 - 7:25pm, 420 Pupin

Class Webpage: http://www.stat.columbia.edu/~regina/W4105A03

Teaching Assistant: Mengling Liu (liuml@stat.columbia.edu)

Prerequisite: A working knowledge of calculus or consent of the instructor.

Description: This course will cover probability theory including the following:

1. Combinatorial analysis, axioms of probability, conditional probability etc.
2. Discrete probability models: discrete random variables and distributions, expectation, variance, moments.
3. Continuous probability models.
4. Jointly distributed random variables.
5. Conditional expectations, moment generating functions and their applications.
6. Large sample approximations (time permitting): convergence in probability, convergence in distribution; weak law of large numbers, central limit theorem.

Textbook: *A First Course in Probability*, Ross, 6th edition, Prentice Hall

Reference text: *Probability*, J. Pitman, Springer-Verlag

Grading: Homework 30%; Midterm 35%; Final 35%

Homework: Problem sets will be assigned about once a fortnight and will be collected in class.

Approximate Lecture Schedule:
The lectures will follow the sequence in the text, roughly a chapter a fortnight. Lecture outline:

(9/2/03)	Introduction; 1.1, 1.2	(10/21/03)	5.4 - 5.6
(9/4/03)	1.3 - 1.5	(10/23/03)	5.6, 5.7
(9/9/03)	1.6, 2.1, 2.2	(10/28/03)	6.1, 6.2
(9/11/03)	2.3, 2.4	(10/30/03)	6.3 - 6.5
(9/16/03)	2.5	(11/4/03)	Election Day
(9/18/03)	3.1 - 3.3	(11/6/03)	6.6, 6.7
(9/23/03)	3.3, 3.4	(11/11/03)	7.1, 7.2
(9/25/03)	3.4, 3.5	(11/13/03)	7.3
(9/30/03)	4.1 - 4.3	(11/18/03)	7.4, 7.5
(10/2/03)	4.4 - 4.6	(11/20/03)	7.6, 7.7
(10/7/03)	4.6 - 4.8	(11/25/03)	8.1 - 8.3
(10/9/03)	4.8, 4.9, 5.1	(11/27/03)	Thanksgiving
(10/14/03)	5.2 - 5.4	(12/2/03)	8.4, 8.5
(10/16/03)	Midterm	(12/4/03)	Review

Other information

- Late homework will not be accepted under any circumstances.
- The process of getting the answer to a problem is as important as getting the answer correct. Your solutions (to the homework and examination questions) should include appropriate explanation/working so that someone else can easily understand your work. Full credit will not be given to solutions without proper working.
- You may work together, or discuss the more difficult problems of a homework assignment, but you must write-up the solutions on your own. No copying!
- No make-up midterm or final will be given. If there is a valid reason for missing an examination (with documentary proof), attendance is regular, and all homework is handed in, a 70% weighting will be given to the other examination. However, the instructor must be informed **before** the examination. No such consideration will be given if the instructor is informed only after the examination.
- Severe penalties will be given if there is any evidence of cheating.
- If you need disability services, e.g. 1.5 time, you must inform the instructor within 2 weeks of the course (paperwork such as letters can be provided later). The examinations will then be proctored by the disability services office.
- There may be quizzes given during class time. These may be surprise quizzes. Each quiz will be given the same weight as one homework.
- Please send an email to regina@stat.columbia.edu so that a class email list can be set up. Indicate which course you are enrolled in.