Probability, MA 485/585-1E Fall 2003

Class meets on Mondays, Wednesdays, and Fridays 12:20-1:10pm in Room 124 CB15

Instructor: Dr. Nikolai Chernov
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Text: S. Ghahramani, *Fundamentals of Probability*, 2nd Ed. **Class notes** are available on my web page (see back of this flyer).

Grading policy: (One of two schedules that yields a better grade for you)

| Homework | 15~% | or 0% |
|----------------------------|------|----------|
| Midterm I (Sep 26) | 25~% | 30~% |
| Midterm II (Oct 31) | 25~% | 30~% |
| Final (Dec 10, 10:45-1:15) | 35~% | 40~% |

Homework: Problems will be assigned weekly on Mondays, unless announced otherwise. HW will be due the next Monday after assignment. Corrected and graded HW will be returned on Wednesday the same week. If you turn the HW in and the schedule #1 above gives you a better grade, it will be automatically applied. Otherwise, your HW scores (if any) will be dropped and the schedule #2 will be applied. One (lowest) HW score will be dropped in any case. Half credit is given for late homework.

All tests in this course are **open-book** and **open-notes**.

You may use a calculator, and most likely you will need one, so bring it with you.

To 585 students: You are taking this course at a *graduate* level! You will be given extra, more difficult, assignments periodically. Unlike regular homework assignments, those extra assignments are mandatory. The extra assignments will make 15% of your course grade, the rest will count for 85%. The 585 homework can be turned in any time before or on the final test (there is no other deadline). If you submit your 585 homework before the final exam, then you will have chance to correct your mistakes and resubmit it again for regrading (unlimited number of times, and without penalty). If you do correctly 80% of 585 problems, you will get full credit for this part of the course. If you do more, you'll get extra credit.

Welcome to MA 485/585 and best of luck to you all.

Syllabus

| Topics from Classnotes | Sections in Textbook | Dates |
|------------------------------------|-----------------------------|------------------|
| 1. Combinatorial probabilities | 2.2 + 2.3 + 2.4 | Aug 20-22 |
| 2. Probability space | 1.2 + 1.3 + 1.4 + 1.7 | Aug 25 - Sep 3 |
| 3. Conditional prob., independence | 3.1 + 3.2 + 3.3 + 3.4 + 3.5 | Sep $5-12$ |
| 4. Discrete random variables | 4.1 + 4.3 + 5.1 + 5.2 + 5.3 | Sep $15-19$ |
| 5. Continuous random variables | 4.2 + 6.1 + 7.1 | Sep 22-29 |
| 6. Exponential random variables | 7.3 | Oct 1-3 |
| 7. Functions of random variables | 6.2 | Oct 3-6 |
| 8. Normal random variables | 7.2 | Oct 8-10 |
| 9. Joint distributions | 8.1 + 8.2 + 8.4 + 8.5 | Oct 13-17 |
| 10. Mean value | 4.4 + 6.3 + 9.1 | Oct 20-22 |
| 11. Variance | 4.5 + 6.3 | Oct 24-27 |
| 12. Moment generating function | 10.1 + 10.2 | Oct 29 - Nov 3 |
| 13. Covariance and correlation | 9.2 + 9.3 | Nov 5-7 |
| 14. Law of large numbers | 10.3 + 10.4 | Nov 10-12 |
| 15. Central limit theorem | 7.2 + 10.5 | Nov 14-19 |
| 16. Random walks (gambler's ruin) | from 3.3 | Nov 24 - Dec 1 |
| 17. Poisson process | from 5.2 | Dec $3-5$ |
| | | |

The syllabus is tentative, some changes may occur.

Regular class attendance is very important and strongly encouraged. The instructor may cover material that is not in the book.

Class notes containing the lecture material are available on my web site (91 pages). Also, homework assignments, past year tests (some with answers), and more are posted on my web page:

www.math.uab.edu/chernov/teach.html

(or just go to www.math.uab.edu, click on "people", then "chernov", then "teaching"). You will need an Acrobat Reader (it is free) to view/print the class notes and other material. Instructions for obtaining Acrobat Reader are provided on my web page.