Introduction to Probability

Math 30530 Section 01

Fall 2009

Please note: I have tried to make this information as accurate as possible, but it is subject to change.

General Arrangements

- **Instructor**: David Galvin, 248 Hayes-Healy, `dgalvin1@nd.edu`. Feel free to email me anytime. I try to respond quickly to any question or comments, the one caveat being that I tend not to be email-active in the late evening or early morning.

- **Office hours**: Initially, Monday mornings 9.45-11.00 and Thursday afternoons 3.00-4.15, but this may change if these turn out not to be good times. Also, meeting times outside these set hours can be arranged by emailing me.

- **Lectures**: MWF 1.55-2.45, Hayes-Healy 231, August 26—December 9.

- **Text**: *Fundamentals of Probability with stochastic processes* (3th ed) by Ghahramani, Pearson Prentice Hall, ISBN-10: 0131453408.

- **Concourse**: `http://concourse.nd.edu/`. This is where homework, handouts and grades will be posted.

- **Course website**: `http://www.nd.edu/~dgalvin1/30530/`. This will mostly be used just to archive course material.

About the course

- **Official course description**: An introduction to the theory of probability, with applications to the physical sciences and engineering. Topics include discrete and continuous random variables, conditional probability and independent events, generating functions, special discrete and continuous random variables, laws of large numbers and the central limit theorem. The course emphasizes computations with the standard distributions of probability theory and classical applications of them.

- **Course content**: Roughly chapters 1–7 and 10–11 of the textbook.

- **Objectives**: At the end of the semester, you will be able to

    - Define and distinguish between the basic objects of probability theory;
    - Compute the probability of an events, given appropriate probability distributions;
    - Model the occurrence of events using appropriate probability distributions;

- Apply the Central Limit Theorem when estimating probability distributions and determining sample size;

- Prove facts from probability requiring techniques from calculus (i.e. series convergence and integration).

More generally, this course will prepare you for basic applications of probability theory including mathematical statistics and notions of randomness.

Course work

- **Homework**: Homework assignments will be announced most Fridays and posted on concourse. They will be due at the beginning of class the following Friday. Each assignment will involve some reading and some problems, possibly on an area not yet covered in lectures. Presented assignments should be neat and legible, and contain a cover page with your name, the course number, the assignment number and the due date. The grader reserves the right to leave ungraded any assignment that is disorganized, untidy or incoherent. After your lowest mark is dropped, your assignments count (equally weighted) for 100 out of 450 points of your final mark. No late assignments will be accepted. It is permissible (and encouraged) to discuss the assignments with your colleagues; but the writing of each assignment must be done on your own.

- **Exams**: There will be two in-class midterm exams (tentatively set for October 5 and November 16) and a (cumulative) final exam on Monday, December 14, from 8.00am to 10.00am. Specific exam policies (such as format, which sections will be covered, . . .) will be announced in class closer to the time. Each midterm exam will count for 100 out of 450 points of your final mark, and the final will count for 150 out of 450 points.

- **Final grade**: A 90% average will earn you an A overall; an 80% average a B; and a 65% average a C.

- **Grading disputes**: If you have any issue with the grading of your weekly assignments or with your midterm exams, you must let me know (in writing; email is fine) within seven days of receiving the work back; otherwise I can't promise that I can consider the issue.

Conduct

- **Honour code**: You have all taken the Honor Code pledge, to not participate in or tolerate academic dishonesty. For this course, that means that although you may (and should) discuss assignments with your colleagues, you must write the final version of each of your assignments on your own; if you use any external sources to assist you (such as other textbooks, computer programmes, etc.), you should cite them clearly; your work on mid-semester exams and the final exam should be your own; and you will adhere to all announced exam policies.

- **Class conduct**: The lecture room should be a place where you should feel free to engage in lively discussion about the course topic; don't be shy! But non course related interruptions should be kept to a minimum. In particular, you should turn off or switch to silent all cell phones, etc., before the start of class. If for some good reason you need to have your phone on during class, please mention it to me in advance.