Introduction to Probability

Math 30530 Section 01

Fall 2012

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.

- **Office hours**: Initially Wednesdays, 4pm-5pm. Also, meeting times outside my office hours can be arranged by emailing me – I have free hours most days (except Thursdays) of most weeks.

- **Lectures**: MWF 1.55-2.45, 114 Pasquerilla Center, August 22 – December 5.

- **Text**: *A Student-Friendly Introduction to Probability* by Mark Daniel Ward and Ellen Gundlach. This book will be published by W. H. Freeman in 2013. We will be using advance copies that Freeman will be providing us free of charge; I will distribute them at the beginning of the semester. In exchange for the free texts, all that Freeman asks is that we fill out a short feedback questionnaire about the book towards the end of the semester.

- **Course website**: `http://www.nd.edu/~dgalvin1/30530/30530_F12/index.html`. This is where where homework, handouts and quiz and exam solutions will be posted. (NB - when following this link straight from a pdf file of the general arrangements, the tilde in front of `dgalvin1` sometimes causes a problem; if so just enter it manually)

- **Sakai**: `http://sakai.nd.edu/`. This is where grades will be posted.

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**: We will go through most of the course 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 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 will be announced most Fridays and posted on the course website. It 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. At the top of the first page, you should write your name, the course number, the assignment number and the due date. If you use more than one page, you should staple all your pages together. The grader reserves the right to leave ungraded any assignment that is disorganized, untidy or incoherent. Your homework assignments count (equally weighted) for 100 out of 550 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.

- **Quizzes**: Roughly every second Wednesday there will be a quiz in class, on material covered in the previous three lectures. Your quizzes count (equally weighted) for 100 points out of 550.

- **Exams**: There will be two in-class midterms (tentatively on October 3 and November 14) and a (cumulative) final on Tuesday, December 11, from 1.45pm to 3.45pm. Specific exam policies (such as format, which sections will be covered, . . .) will be announced in class closer to the time. Each midterm will count for 100 points out of 550, and the final will count for 150 points out of 550.

- **Final grade**: A 92% 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.

- **Math for Everyone**: The department runs a series of "Math for Everyone" talks, which I can highly recommend (see

    `math.nd.edu/undergraduate-program/math-for-everyone-series/`).

Write a short report on your reaction to one of these talks during the semester for 4 points extra credit (more details closer to the date of the first talk, September 13).

Conduct

- **Honor 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 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.