SYLLABUS: STAT 5571, PROBABILITY, FALL '11

INSTRUCTOR: Barry James      E-MAIL: bjames      PHONE: 726-7998

LECTURES: MWF 1:00 - 1:50, Cina 202

OFFICE: Solon Campus Center 166

OFFICE HOURS: MW 2:10-4:00; Th 2:05-2:50; F 2:10-3:00; or by appointment.


PREREQUISITES: Calculus of several variables and an introduction to probability (Math 3298 and Stat 3611). This is a standard intermediate-level course in what is frequently called the Calculus of Probabilities.

COURSE TOPICS: Chapters 1-8 of the textbook will be covered, although we will omit a substantial part of Chapters 7 and 8. Here are some of the basic topics:

(1) Basic probability: sample space, events, properties of probability, conditional probability, independence.
(2) Random variables and their distributions: discrete and continuous (and mixed) random variables, expected values, variance, moment generating functions.
(3) Special probability distributions: discrete distributions (Bernoulli, binomial, hyper-geometric, geometric, negative binomial, Poisson, discrete uniform), continuous distributions (uniform, gamma, exponential, normal).
(4) Joint distributions: multinomial distribution, joint and marginal densities, joint cumulative distributions, independent random variables, conditional distribution.
(5) Properties of random variables: means and variances of sums of random variables, covariance and correlation, conditional expectation, bivariate normals.
(6) Functions of random variables: distributions of functions of random variables (cumulative distribution function technique, the Jacobian method), distributions of sums (convolutions, the moment generating function method).
(8) Statistics and sampling distributions: the chi-square, t, F, and beta distributions.

GRADING: Hour tests (3) Final exam Problem sets Simulation problems
42% (18% best two, 6% worst) 28% 20% 10%

The course will be graded on an undergraduate basis: Grade thresholds for each course component will be based on undergraduate performance. Graduate students will usually be assigned extra work on homework and simulations, but the course grade will be decided by the undergrad cutoffs. Scores will be posted on eGradebook in as timely a manner as possible.

EXAMS: The hour tests are tentatively scheduled for Friday, October 7; Friday, November 4; and Friday, December 9, during the regular class period. The final exam is scheduled for Thursday, December 22, at 8:00-9:55 in the regular classroom. If you must miss an hour test or the final exam, please make arrangements in advance (!!!).

PROBLEM SETS: Problems will be assigned in most classes, to hand in about every other week. There will be some problems to hand in and some suggested problems that you need to understand for the exams. You must follow the department's minimum standards for homework (basic guidelines: be neat!), but you do not need to copy the problems, and you may write on both sides of the paper. You are encouraged to discuss the problems among yourselves, but you should write the problem solutions in your own words; identical homework solutions are subject to discounts. In addition to homework sets, there will be simulation problem assignments, where the same criteria apply. Unexcused late homework sets or simulation problems will only be accepted with a valid reason and will receive a discounted grade.

MAKE-UP CLASSES: If I need to miss class because of travel or illness, arrangements will be made for make-ups. The same will hold for “snow days,” which will be made up to the extent possible.
SPECIAL NEEDS: It is the policy and practice of the University of Minnesota Duluth to create inclusive learning environments for all students, including students with disabilities. If there are aspects of this course that result in barriers to your inclusion or your ability to meet course requirements – such as time limited exams, inaccessible web content, or the use of non-captioned videos – please notify the instructor as soon as possible. You are also encouraged to contact the Office of Disability Resources to discuss and arrange reasonable accommodations. Please call 218-726-6130 or visit the DR website at http://www.d.umn.edu/access for more information.

IMPORTANT: Check your e-mail frequently for updates, reminders, changes in office hours, and other announcements! The web site for this course is http://www.d.umn.edu/~bjames, and you will be able to find homework assignments, simulation problems, and exam study materials there soon after such items are sent out by e-mail. There will be course handouts from time to time that will not appear on the web site. You will be responsible for all material presented in class, so be sure to get notes and handouts from classes that you may need to miss.

INCOMPLETES: UMD’s policy on incompletes is given online in the grading section of the Duluth Catalog 2010-2011: http://www.d.umn.edu/catalogs/current/pol_proc/grades.html. In addition, it is my policy that for a grade of incomplete to be considered, you must have been passing the course at the point where the problem occurred.

CELL PHONES, etc.: Ringing and beeping devices disrupt class activities, and every effort should be made to minimize their use. If it is absolutely necessary that you leave your cell phone or pager on during some class, please inform me at the beginning of the class and sit as near to the door as possible. In addition, students are expected to follow the university’s Student Conduct Code (given at http://www.d.umn.edu/conduct/). Communicating devices are not allowed during exams.

ACAD. INTEGRITY: Here is the statement suggested by UMD’s Educational Policy Committee: “Academic dishonesty tarnishes UMD’s reputation and discredits the accomplishments of students. UMD is committed to providing students every possible opportunity to grow in mind and spirit. This pledge can only be redeemed in an environment of trust, honesty, and fairness. As a result, academic dishonesty is regarded as a serious offense by all members of the academic community. In keeping with this ideal, this course will adhere to UMD’s Student Academic Integrity Policy, which can be found at http://www.d.umn.edu/conduct/integrity/Academic_Integrity_Policy.htm. This policy sanctions students engaging in academic dishonesty with penalties up to and including expulsion from the university for repeat offenders.”

COUNSELING: As a student, you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student’s ability to participate in daily activities. University of Minnesota services are available to assist you with addressing these and other concerns you may be experiencing. You can learn more about the broad range of confidential mental health services available on campus via the UMD Health Service Counseling website at http://www.d.umn.edu/hitlserv/counseling/.

ROADMAP: Free, on-demand student success tips are available at http://www.d.umn.edu/roadmap. Select the Online Student Success Workshops link at the top of the page. Recommended topics include: What it Takes to be a Successful Student, Study Tips & Note-Taking, Test Anxiety, and Understanding & Avoiding Plagiarism.