
M362K (57055)
Probability I, Spring 2010
MWF 12-1pm, RLM 7.120

Instructor: Ravi Srinivasan
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Class website: <http://www.ma.utexas.edu/users/rav/M362K/>

Text: ``Probability,`` by Jim Pitman (ISBN 0387979743)
Topics: See <http://www.ma.utexas.edu/academics/courses/syllabi/M362K.php>

Prerequisites and degree relevance:

M408D with a grade of at least C. A student may not receive credit for M316 after completing M362K with a grade of C or better.

Course description:

This is an introductory course in the mathematical theory of probability, thus it is fundamental to further work in probability and statistics. Principles of set theory and a set of axioms for probability are used to derive some probability density and/or distribution functions. Special counting techniques are developed to handle some problems. Properties associated with a random variable are developed for the usual elementary distributions. Both theorem proving and problem solving are required.

Course content:

Basic concepts: Sample spaces, events, basic axioms and theorems of probability, finite sample spaces with equally likely probabilities, essentials of combinatorics and counting. Conditional probability: Reduced sample space, independence, Bayes' Theorem. Random variables: Discrete and continuous random variables, discrete probability functions and continuous probability density functions, distribution functions, expectation, variance, functions of random variables. Special distributions: Bernoulli, Binomial, Poisson, and Geometric discrete random variables. Uniform, Normal, and Exponential continuous random variables. Approximation of Binomial by Poisson or Normal. Jointly distributed random variables: Joint distribution functions, independence, conditional distributions, expectation, covariance Sums of independent random variables: expectation, variance. Inequalities and Limit theorems: Markov's and Chebyshev's inequalities, Weak and Strong Law of Large Numbers, Central Limit Theorem.

Notice:

The University of Texas provides appropriate academic accommodations for qualified students with disabilities. For more information, contact the Office of the Dean of Students at 471-6259, 471-6441 TTY. If you plan on using accommodations, you need to notify your Instructors early in the semester.

Important dates:

Wed., Feb. 05, 2010 -- Last day to drop a course for possible refund

Mon., Feb. 15, 2010 -- Last day to drop a class without possible academic penalty

Mon., Mar. 29, 2010 -- Last day to withdraw/drop a class with Dean's approval

Grading:

1. Homework (HW): 100 pts.

At least 10 homework assignments will be given (likely 12 assignments), assigned on Mondays and due the following Monday. HW will be posted on the class website. You are encouraged to discuss and work together on problems, but your write-up should be your own. Homework must be neatly written, and stapled if it is more than one page. Late homework *will not* be accepted. Only your top 10 homework grades will be counted and the rest will be dropped. (Specifics about how HW is graded will be given when first HW is assigned.)

2. In-class exams: 200 points

There will be two in-class, 50-minute exams on the following dates.

2a. In-class exam #1: 100 points

Friday, March 26, 2010

2b. In-class exam #2 (not comprehensive): 100 points

Friday, May 7, 2010

Grade distributions at the end of exam #2 will be as follows (that is, HW = 33%, in-class exam #1 = 33%, in-class exam #2 = 33%):

A: > 255 (> 85%)

B: 225-255 (75-85%)

C: 180-225 (60-75%)

Must take final: < 180 (< 60%)

3. Final exam (comprehensive): 200 points

Saturday, May 15, 2-5pm (officially assigned date/time), location TBA

The final is optional for those with a cumulative score greater than 180. If taken, the final exam score will be added to your accumulated grades from the in-class exams and homework (that is, HW = 20%, in-class exam #1 = 20%, in-class exam #2 = 20%, final exam = 40%). In this case, the grade distribution is

A: > 400 (> 80%)

B: 350-400 (70-80%)

C: 275-350 (55-70%)

D: 225-275 (45-55%)

F: < 225 (< 45%)

Make-up exam policy:

Make-up exams will not be given, so please save the appropriate exam dates. In the event of illness or extraordinary circumstances, the final exam score will be counted for 60% of the total grade to compensate for a missing in-class exam. This requires the instructor's approval in advance, in addition to proper documentation (such as a doctor's note).

Tentative course calendar:

--Week 01--

01/20

01/22

--Week 02--

01/25 HW1 assigned

01/27

01/29

--Week 03--

02/01 HW1 due/HW2 assigned

02/03 **Last day to drop a course for possible refund**

02/05

--Week 04--

02/08 HW2 due/HW3 assigned

02/10

02/12

--Week 05--

02/15 HW3 due/HW4 assigned

Last day to drop a class without possible academic penalty

02/17

02/19

--Week 06--

02/22 HW4 due/HW5 assigned

02/24

02/26

--Week 07--

03/01 HW5 due/HW6 assigned

03/03

03/05

--Week 08--

03/08 HW6 due/HW7 assigned

03/10

03/12

--SPRING BREAK--

--Week 09--

03/22 HW7 due

03/24

03/26 In-class exam #1

--Week 10--

03/29 HW8 assigned

Last day to withdraw/drop a class with Dean's approval

03/31

04/02

--Week 11--

04/05 HW8 due/HW9 assigned

04/07

04/09

--Week 12--

04/12 HW9 due/HW10 assigned

04/14

04/16

--Week 13--

04/19 HW10 due/HW11 assigned

04/21

04/23

--Week 14--

04/26 HW11 due/HW12 assigned

04/28

04/30

--Week 15--

05/03 HW12 due

05/05

05/07 In-class exam #2

--FINALS WEEK--

05/15 Final exam
