STATISTICS 134, SPRING 2015 .

Instructor: Jim Pitman

Title: Concepts of Probability

Description: An introduction to probability, emphasizing concepts and applications. Conditional expectation, independence, laws of large numbers. Discrete and continuous random variables. Central limit theorem. Poisson process.

Prerequisite: One year of calculus. Are you ready for this course? These exercises developed by Prof Adhikari indicate the sort of mathematics taken for granted in this course. If you cannot do these exercises quickly and correctly, you must review your algebra and calculus or take another course.

Time/Place: MWF 9-10A / 2050 VALLEY LSB

CC Number: 87570

Units/Credit: 3

Final Exam Group: 4: MONDAY, MAY 11, 2015 7-10P

Text: "Probability" by Jim Pitman. SpringerLink [Amazon.com] [Cal Student Store]

Schedule: Link to Schedule with Practice Problems and Homework. Solutions will be posted on BCourses

Grading: Your overall score will be the maximum of {10% homework, 15% quiz, 25% midterm, 50% final} and {10% homework, 15% quiz, 75% final}. No individual letter grades will be given for the homework, quizzes, midterm, or final. Your letter grade for the class will be based on your overall score.

Sections: Listed Here

Homework: Is due weekly at the *beginning* of Section. Homework should not be done in Section. No late homeworks will be accepted. Your two lowest homework scores will be dropped in the calculation of your overall homework score.

Quizzes and Exams: All quizzes and exams will be closed book and closed notes; no calculators or similar devices will be needed or allowed. There will be one midterm and one final exam. If you cannot take the final at the date and time given below, you cannot take this class. There will be no late, early, or repeat exams.

Midterm Exam: In lecture, Friday March 6.

Quizzes: There will be four quizzes during the term, in section. Dates are in the Schedule. Your lowest quiz score will be dropped in the computation of your overall quiz score.

Instructor Office hours:

Tuesday 12-1, Wed 11:30-12:30. Student Learning Center, Cezar Chavez Atrium.

GSI Office hours: Jin Rou: Monday 11am-12pm and 4-5pm in 444 Evans.
Hye Soo: Monday 4-7 446 Evans
Courtney Schiffman: Monday 1-2, Wed 2-4 Student Learning Center, Cezar Chavez Atrium:
Alex Dombrowski: Monday 3-4, Tuesday 9-10, Wed 1-2 Student Learning Center, Cezar Chavez Atrium:

Further Resources: Student Learning Center Adjunct Course: Stat 198 for Stat 134
FAQ Page by Prof. Adhikari
Reading Guide by Prof. Adhikari
Errata to the text maintained by Mike Leong at the Student Learning Center
Glossary
Spring 2009 Stat 134 Website with copies of past midterm and final exams Fall 2014 Website Stat 134 by Prof. Adhikari
List of Statistics Courses

STAT 134, Spring 2015. Schedule, practice problems and homework. J. Pitman

This page contains a weekly list of practice problems, including the subset which must be turned in to be graded as homework. These lists also indicate the material to be covered in lecture each week.

Recommended strategy:
Step 1. Go through your lecture notes carefully. This is important - lecture is usually more succint than the text and will always contain examples.
Step 2. Skim the text following this Reading Guide prepared by Prof. Adhikari. Note what the main ideas are and what techniques are being used in the examples.
Step 3. Try a problem.
Step 4. If you get stuck, return to Step 1.

Iterate a couple of times, reading more carefully each time and trying the same problem. Most likely you'll be able to solve it. If you still can't, ***only then:***
Step 5. Move to another problem and seek help with the one that is giving trouble.

Students often start with Step 3 and, once they get stuck, proceed immediately to Step 5. This method is inefficient and results in very little learning. Before you come to me or to the GSIs or to the Student Learning Center, ***do the reading first!*** You may not need to make the trip at all.

Notation: Exercise $x.y.n$ is Problem n in the Exercises at the end of Section $x.y$. Exercise $x.rev.n$ is Problem n in the Review Exercises at the end of Chapter x.

Homework Grading: Papers will be graded on a 1/0

scale. Each assignment will consist of 8 problems. A good attempt at 6 or more problems will receive the score of 1; anything else will get 0. I get to define "good attempt." I will be looking for your reasoning and detailed work shown – it is assumed that you will show work whether or not the question asks for it. Please **do not copy other people's solutions.** Even if you feel you understand someone else's correct answer, copying creates an illusion of being able to do related problems without help; that might be cruelly shattered by exams.

WEEK 1. 1/21 1/23
Minimal practice: 1.1.7 (Example 2 will help), 1.3.3, 1.3.5, 1.3.7, 1.4.3, 1.4.5, 1.5.1, 1.5.5, 1.6.1, 1.6.5, 1.6.7a, 1.rev.7 (part d is on the next page).
Highly recommended: 1.1.8, 1.3.6, 1.3.10, 1.3.11, 1.3.12, 1.6.8, 1.rev.11, 1.rev.15, 1.rev.19, 1.rev.14a, 1.rev.12, 1.rev.16,
Homework 1 (due Thu 1/29): 1.3.13, 1.4.6, 1.4.10, 1.5.2, 1.5.4, 1.5.6, 1.rev.8, 1.6.6

WEEK 2. 1/26 1/28 1/30
Minimal practice: 2.1.1, 2.1.3, 2.1.5
Highly recommended: 2.1.2, 2.1.7, 2.1.11, 2.rev.8, 2.2.2, 2.2.3, 2.2.4, 2.2.8, 2.2.12,
Homework 2 (due Thu 2/5): 2.1.4, 2.1.6, 2.1.8, 2.1.12, 2.rev.24 (be careful in part b) 2.2.6, 2.2.10, 2.2.14,

WEEK 3. 2/2 2/4 2/6
Minimal practice: 2.4.1a 2.4.1d, 2.5.1, 2.5.7, 2.rev.15, 3.1.3, 3.1.9, 3.1.15 (connect this with Example 3 of Section 1.1 and Exercise 1.1.8),
Highly recommended: 2.4.2, 2.4.9, 2.5.2, 2.5.3, 2.5.4, 2.5.5, 2.5.9, 2.5.13, 2.5.12e, 2.rev.12, 2.rev.14, 2.rev.16, 2.rev.18, 2.rev.28, 3.1.2, 3.1.10, 3.1.13, 2.rev.10, 2.rev.22,
Homework 3 (due Thu 2/12): 2.4.6, 2.4.8, 2.5.6, 2.5.8, 2.5.12c, 3.1.8, 3.1.12, 3.1.14
QUIZ 1 (on Chapters 1 and 2) Thursday 2/5

WEEK 4. 2/9 2/11 2/13

Minimal practice: 3.2.1, 3.2.3, 3.2.5, 3.2.7, 3.2.11
Highly recommended: 3.2.9, 3.2.13, 3.2.17, 3.2.19, 3.rev.26
Homework 4 (due Thu 2/19): 3.2.4, 3.2.6, 3.2.14, 3.2.16a 3.2.16b, 3.2.20, 3.rev.8, 3.rev.10,

WEEK 5. 2/18 2/20
Minimal practice: 3.3.1, 3.3.3, 3.3.13, 3.3.19, 3.4.1, 3.4.3, 3.4.5, 3.rev.15
Highly recommended: 3.3.5, 3.3.7, 3.3.9, 3.3.15, 3.3.23, 3.4.2, 3.4.11, 3.rev.26
Homework 5 (due Thu 2/26): 3.3.6, 3.3.8, 3.3.12, 3.3.16, 3.4.10, 3.4.12, 3.4.14, 3.rev.2

QUIZ 2 (on 3.1 3.2 and 3.3) Thursday 2/19

WEEK 6. 2/23 2/25 2/27
Minimal practice: 3.5.1, 3.5.5, 3.5.11, 3.6.1, 3.6.7,
Highly recommended: 3.5.2, 3.5.7, 3.5.9,
Homework 6 (due Thu 3/5): 3.5.4 (state your assumptions), 3.5.10, 3.5.12, 3.6.2 (turn the page for part d), 3.6.5, 3.6.6, 3.6.8, 3.6.9

WEEK 7. 3/2 3/4 3/6. Midterm review and Exam
MIDTERM EXAM in Class Friday 3/6
Homework 7: No homework is assigned for this week.

WEEK 8. 3/9 3/11 3/13
Minimal practice: 4.1.1, 4.1.3 (parts d and e are on the next page), 4.1.9, 4.2.1, 4.2.5, 4.rev.3, 4.rev.13
Highly recommended: 4.1.2, 4.1.5, 4.1.10, 4.1.11, 4.2.6, 4.rev.4, 4.rev.12
Homework 8 (due Thu 3/19): 4.1.4, 4.1.7, 4.1.8, 4.1.12, 4.2.4, 4.2.8 (be careful about the variance: the mean of the mixture is the mixture of the means, and this is true too for mean squares, but not for variances), 4.rev.2, 4.rev.14 (part c is on the next page)

WEEK 9. 3/16 3/18 3/20
Minimal practice: 4.4.1, 4.4.3, 4.4.7, 4.5.3, 4.5.5, 4.6.1, 4.6.5a, 4.rev.5, 4.rev.11 (do not crank them out by

calculus; use what you know gamma and beta densities), 4.rev.18, 4.rev.21
Highly recommended: 4.4.4, 4.4.5, 4.6.3abcd, 4.rev.22, 4.rev.23
Homework 9 (due Thu 4/2): 4.4.2, 4.4.6, 4.4.10, 4.5.2, 4.5.6, 4.6.2, 4.rev.6, 4.rev.16
QUIZ 3 (on Chapter 4) Thursday 3/19

SPRING RECESS 2/23 -- 2/27

WEEK 10. 3/30 4/1 4/3
Minimal practice: 5.1.1, 5.1.7, 5.2.1, 5.2.3, 5.2.5, 5.2.11
Highly recommended: 5.1.2, 5.1.3, 5.2.4, 5.2.9, 5.2.10, 5.2.13
Homework 10 (due Th 4/9): 5.1.4, 5.1.6, 5.1.9 (let the stick have length 1; try drawing the right region), 5.2.6, 5.2.8, 5.2.12, 5.2.14, 5.2.16

WEEK 11. 4/6 4/8 4/10
Minimal practice: 5.3.1, 5.3.3, 5.3.7 (turn page for more parts), 5.3.9, 5.3.11, 5.4.1, 5.4.3,
Highly recommended: 5.3.1, 5.3.6 (it is helpful to draw figures as in 5.3.1), 5.3.4, 5.4.4, 5.rev.2, 6.1.5 (midterm problem), 6.2.7
Homework 11 (due Thu 4/16): 5.3.8, 5.3.12, 5.4.5, 5.4.13, 5.rev.5, 6.1.2, 6.2.4 (for part (b), look at page 487 where you will find the variance of a useful uniform variable), 6.2.10
QUIZ 4 (on Chapter 5) Thursday 4/9

WEEK 12. 4/13 4/15 4/17
Minimal practice: 6.1.1, 6.1.3, 6.2.1, 6.2.3, 6.2.11, 6.3.1,
Highly recommended: 6.3.4, 6.3.10, 6.rev.21, 6.4.8, 6.4.15a-c (don't redo (a) to prove (b) - use (a) to prove (b)!),
Homework 12 (due Thu 4/23): 6.1.4, 6.2.2, 6.3.2 6.3.4 , 6.3.7, 6.3.8, 6.3.10, 6.3.12

WEEK 13. 4/20 4/22 4/24

Minimal practice: 6.4.3, 6.4.5, 6.4.9, 6.4.11, 6.4.19, 6.4.21, 6.5.1,
Highly recommended: 6.4.22, 6.5.2, 6.5.5, 6.5.6
Homework 13 (due Thu 4/30): 6.4.4 6.4.8 6.4.10, 6.5.2, 6.5.3, 6.5.4 6.5.6 6.5.12