Course Syllabus

IEOR 172: Probability and Risk Analysis for Engineers – Course Syllabus

Administrative Information

Instructor: Rhonda Righter **Office:** 4187 Etcheverry

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Office Hours: Tu/Th 12:30 (priority to 263A students) and Tu/Th 3:30 (priority to 172 students) and by appointment.

GSIs: Vivian Min Zhao **e-mail:** vivianmzhao@gmail.com

Office Hours: W 3-5, F 2-3 and 4-5, and by appointment **Office:** 4176 Etcheverry

Reader: Riley Murray **e-mail:** rjmurray@berkeley.edu

Office Hours: Tu/Th 9:40-11, W 2:10-3, and by appointment **Office:** 1173 Etcheverry

Course Web Page: https://bcourses.berkeley.edu/ help: http://guides.instructure.com (Links to an external site.)

Text: *A First Course in Probability* 8th Ed, 2009 S.M. Ross

Earlier or later editions ok, but you're responsible for doing the right homework problems.

Prerequisites: Mathematics 1A-1B or 16A-16B

No credit will be given for this class if you have taken STAT 134.

Class Time and Room: TuTh 2-330 3106 Etcheverry

Discussions: F 1-2PM, 3113 Etcheverry or F 3-4PM, 3106 Etcheverry

UC Berkeley Honor Code (May 2013):

As a member of the UC Berkeley community, I act with honesty, integrity, and respect for others.

In fairness to students who put in an honest effort, cheaters will be harshly treated. Any evidence of cheating will result in a score of zero (0) on that assignment or examination. Cheating on the final exam results in an "F" for the course. Cheating includes but is not limited to bringing extra notes or electronic materials into an exam, copying off another person's exam, allowing someone to copy off of your exam, and having someone take an exam for you. Incidents of cheating will be reported to Student Judicial Affairs, which may administer additional punishment.

Grading

Problem Sets	15 points
Midterms	30 points each
Final exam	50 points
Class participation	5 points

Problem Sets

Problem sets will generally be due at the start of class on Thursday. Some of the problems are quite challenging. I encourage you to work together on problem sets in groups of three to four people, but everyone should turn in individual papers, and list on your paper who you worked with. Since doing problems is the best way to prepare for exams, be sure that you clearly understand any parts that you may have gotten help with. ***LATE PROBLEM SETS WILL NOT BE ACCEPTED.*** The lowest problem set grade will be dropped.

Exams

There will be one or two midterms and a final exam. In exceptional circumstances exams may be taken early, but not late. The final will be cumulative and comprehensive. Exams will be closed book, but you may bring one formula sheet (8 ½ by 11, both sides) for the first midterm, two for the second, and three for the final.

Midterm 1:	Thursday, September 24
Midterm 2:	Tuesday, November 3
Final Exam:	Tuesday, December 15 8-11AM

Course Description and Outline

This is an introductory probability course for students in engineering or ORMS. It focuses mostly on random variables and their applications. An important goal is to strengthen intuition about randomness and variability in the real world. Application examples may include reliability, risk analysis, inventory and logistics, computer communications, service systems, and grid computing. We'll follow the book fairly closely:

Introduction and Combinatorics	Chapter 1
	skip the proofs of the binomial theorem, example 5d, and section 1.6
Probability	Chapter 2 (skip 2.6)
Conditional Probability and Independence	Chapter 3
Discrete Random Variables	Chapter 4
Continuous Random Variables	Chapter 5 (skip 5.6.2-5.6.4)

Random Vectors	Chapter 6 (skip 6.3.2, 6.3.5, 6.6-6.8)
Properties of Expectation	Chapter 7 (skip 7.2.1-2, 7.3, 7.8-9)
Limit Theorems	Chapter 8 (skip 8.6)
Poisson Process	Chapter 9, section 1

Advice from Former IEOR 172 Students

This course is fast paced so study, practice, and study! This is no joke!!

If you have never studied probability this course can turn out to be a big challenge, especially because it takes a whole semester for you to start thinking in probability terms.

If you study a lot in the beginning of the semester, and understand the basics well, the rest of the class is not that difficult.

Attend lecture!! Definitely go to lecture.

Use lectures as primary material, and use the book more as a backup resource for formulas and examples.

Start early on homework, do extra problems for exams, save your cheat sheets!

Attend class and take good notes because they’re very helpful. And go to office hours!

Simply enjoy probability entering your daily life; the world will make more sense after IEOR 172.