

36-225 – Introduction to Probability Theory

Fall 2012

Instructor and Teaching Assistants

	Office	Email	Office Hours
Jing Lei	BH 132C	jinglei@andrew.cmu.edu	Tu 2-4 or by appointment
Mattia Ciollaro	Wean 8106	mciollar@andrew.cmu.edu	Mo 5:30-7:30 Wean 5316
Mauricio Sadinle	Wean 8115	msadinle@andrew.cmu.edu	Tu 5-7 in FMS 320
Xiyu Li	311 South Craig. # 304	xiyul@cmu.edu	Mo 12-2 in Wean 8110

Lecture MWF 9:30 AM – 10:30 AM Doherty 2315

Required Text *Mathematical Statistics with Applications* (7th Edition)
Wackerly, Mendenhall, & Scheaffer (ISBN 978-0-495-11081-1)

Web Site <http://www.cmu.edu/blackboard>

Prerequisite 21-256 or 21-259 (but not open to those who have taken 36-217)

Introduction to Probability Theory comprises the first of a two-semester introduction to mathematical statistics. I will cover Chapters 1 – 7 of Wackerly et al., covering the basics of probability theory, discrete and continuous random variables, functions of random variables, univariate and multivariate probability distributions, and the central limit theorem. Note that this is a **concept-driven** class: any numbers that you get out of your calculators at the end of an exercise are secondary in importance to fully understanding the concepts that you applied in the exercise!

By the end of this course:

- you will understand and will be able to verbally explain fundamental concepts of probability theory;
- you will be able to apply mathematics to derive formulae within the context of probability theory;
- you will be able to apply the concepts of probability theory to effectively model random phenomena; and
- you will be able to use the statistical package R to model simple examples of random phenomena.

Administrative Remarks

Lectures

Lecture Notes. Notes in PDF format will be made available prior to lectures. A given set of notes will generally cover more than one lecture. New sets of notes will be posted as needed, no later than 5:00 PM on the day before they are needed. **It is your responsibility to print out lecture notes.** Notes will not be complete in the sense that, e.g., I will only write out solutions to exercises in class.

Textbook. The textbook is meant to supplement the lectures, and for most lectures there will be assigned reading. All material in assigned readings is fair game for exams, even if it is not explicitly covered in class, unless I specifically state otherwise.

Attendance. Class attendance is not explicitly required, though it is heavily encouraged as it is very easy to fall behind in a class such as 36-225 very quickly.

Perks of Modern Living. The use of laptops, cell phones, iPods, squeaky slide rules, etc., is not allowed during lectures. No student may record or tape any classroom activity without my express written consent (see “Disability Resources” below). Espresso is encouraged.

Software

R. In this class you may be provided the opportunity to work with **R**, a package commonly used by statisticians. It provides an interpreted language environment (like, e.g., **Python**). I will cover the basics of **R** in class and **R**-based exercises will appear on homework. It is available in the clusters, but since it is free you may want to download it from www.r-project.org.

Homework and Tests

Homework. Homework assignments will be posted on Wednesdays on the Blackboard site, and will be due one week later. You may hand them to me in Doherty 2315 at the beginning of class, or give them to me in BH 132C by 9:15 AM. (Electronic submissions will not be accepted.) They will be primarily based on problems from the textbook and as stated above may include (small) **R** programming components. **It is your responsibility to make your homework readable.** Homework assignments that are turned in late will not be graded, regardless of the reason they are late! **Your lowest homework score will be dropped.** You must bring any missing homework score to my attention within one week of the homework being graded, so check Grade Center often. Feel free to discuss homework assignments with others, but realize that the work you hand in must be your own. Simply copying someone else’s work is plagiarism; see “Cheating” below.

Tests. All tests including the final are closed book and closed notes. Calculators are allowed and a “cheat sheet” of formulae and other information will be provided. The test dates are given on the last page of the syllabus. Sufficiently ahead of each test I will inform you of the exact material that it will cover. Each in-semester test covers only that material presented since the previous exam (about five weeks of material), while the final is cumulative.

In-Semester Test Policy. If you cannot take a test at its scheduled time, please let me know at

least one week beforehand and we can attempt to come to a scheduling accommodation. If you miss a test, it cannot be made up.

Final Policy. If you cannot take the final at its scheduled time, please let me know **at least one week before the test** and we can attempt to come to a scheduling accommodation. If you miss the final, you will receive a zero for it, though if you present a **fully documented excuse** you may receive both an incomplete for the course and a future opportunity to make up the final. Please do not schedule travel before the end of finals (Tuesday, December 18) until you know when all your finals will be held!

Miscellaneous

Cheating. Cheating or plagiarism on homework or exams will be dealt with to the full extent allowed under CMU policies: <http://www.cmu.edu/policies/documents/Cheating.html>.

Disability Resources. If you require a special accommodation, such as needing more time to finish exams, please visit the Office of Disability Resources (<http://hr.web.cmu.edu/dsrg>) to obtain appropriate documentation. I will make no allowances without documentation.

Email. When sending email, please put “STAT225” “36-225” at the beginning of the subject line so that I know the message is not spam. **Also, please be advised that sending email to me or to a TA does not create a responsibility or obligation to respond to it.** Sending us email does not shift any responsibility from you to us; you are still responsible for completing your assignments. In particular, do not send complicated questions or requests via email; replies will not be given for email questions or problems requiring lengthy (more than a couple of sentences) or complicated responses. These types of communications should be done in person.

Final Grade. Your final grade will be based on a curve. The characteristics of the curve (i.e., what grade is assigned to the class average score, etc.) depends on how the class does as a whole and will be determined at the end of the semester. **Also note that you must receive a C or higher in this course to be eligible to take 36-226.**

Grading

TEST #1	20%
TEST #2	25%
FINAL	30%
HOMEWORK	25%

Important Dates

Week	Date	What's Happening
2	3 Sep (Mon)	No Class: Labor Day
5	26 Sep (Wed)	Test #1, 9:30 am, UC McConomy
8	19 Oct (Fri)	No Class: Mid-Sem Break
10	31 Oct (Wed)	Test #2, 9:30 am, UC McConomy
13	21 Nov (Wed)	No Class: Thanksgiving
13	23 Nov (Fri)	No Class: Thanksgiving