

## STAT 401: Introduction to Probability Fall 2017

Undergraduate CRN: 13617      Graduate CRN: 20466

**Lectures:** MWF 10:00 – 10:50 am, Science and Engineering South 138;

**Instructor:** Dr. Jennifer Pajda-De La O

Office: SEO 305

Office Hours: MWF 1–2; by appointment

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**Textbook:** Introduction to Mathematical Statistics, 7th edition, 2012, by R.V. Hogg, J.W. McKean, and A.T. Craig. ISBN-13: 978-0-321-79543-4

You may also use the 6th edition, but it would be your responsibility to check for the correct homework problem numbers each week.

**Prerequisites:** Grade of C or better in MATH 210.

### Course Requirements:

#### 1. Homework:

- Homeworks will be assigned every Monday and due the following Monday, unless noted. Problems will be posted on Blackboard.
- Due on the due date by the end of class. The lowest three homework scores will be dropped.
- **No late homework will be accepted. Copying solutions directly from the solution manual will not be tolerated**, and will result in a zero for the homework assignment.
- You are encouraged to discuss and work out homework problems with your fellow students, but each individual must submit their own paper.
- If you cannot attend class on the day homework is due, you may email me your homework, but it must be received by **11 AM** on the day that it is due or I will not accept it. I always respond when I have received your email, so if I don't respond, I haven't received your homework.
- When emailing, it must be saved as a PDF file or I will not accept it.

#### 2. Exams:

- Scientific, NON-GRAPHING Calculators are allowed on exams. However, most problems require you to “show each step”—and thus **NO** credit will be given unless you show all work by hand.
- Students should bring and display their UIC ID cards during exams. (Academic dishonesty: Cheating on exams typically results in disciplinary procedures, up to expulsion from the university).
- If you have a **valid** excuse for missing a midterm let me know in advance. In case you are ill on the day of a midterm, give a written evidence/explanation of your absence (e.g. doctor's notes) to me upon returning to class. There will be **no make up exams**. If your excuse is valid with a written document, the missing exam will be replaced by the final (percentage wise). Otherwise it counts as zero.
- There will be **NO** make ups for the final exam. Exceptions will be made only for emergencies, e.g., hospitalization or conflicts in final exam scheduling.

### 3. Lecture Notes / Worksheets:

- Prior to each class, I may post worksheets or additional notes. These will be available on Blackboard.
- You may print these out before/after class for reference.
- They will not be collected, but are available to help you and to help reduce note-taking.

### Grading:

Midterm 1: 20%                  Midterm 2: 20%                  Final Exam: 40%                  Homework: 20%

Grades will be assigned according to the following rule:

$$A \geq 90\% > B \geq 80\% > C \geq 70\% > D \geq 60\% > F.$$

I reserve the right to make adjustments to the overall grading policy.

### Students with Disabilities

- Students with disabilities who require special accommodations for access and participation in this course must be registered with the Office of Disability Services (ODS). Students who need exam accommodations must contact ODS in the first week of the term to arrange a meeting with a Disability Specialist.
- Please contact ODS at 312/413-2183 (voice) or 312/413-0123 (TTY)
- If you need to book a room with ODS to take an exam, you must submit the online form to ODS no later than a week and a half before the scheduled date of the exam.

### Chapters Covered

- Chapter 1: Probability and Distributions (Sec 1.1-1.10)
- Chapter 2: Multivariate Distributions (Sec 2.1-2.8)
- Chapter 3: Some Special Distributions (Sec 3.1-3.7)
- Chapter 5: Consistency and Limiting Distributions (Sec 5.1-5.3)

### Tentative Exam Dates

- Exam 1: Friday, October 6
- Exam 2: Friday, November 10
- Final Exam: Friday, December 15 from 10:30 AM–12:30 PM

## Tentative Course Schedule

Week	Day	Covering Section
1 8/28/17	Mon.	Section 1.1: Introduction
	Wed.	Section 1.2: Set Theory
	Fri.	Section 1.3: Probability Set Function
2 9/4/17	Mon.	Labor Day: No Class
	Wed.	Section 1.3: Probability Set Function
	Fri.	Section 1.4: Conditional Probability and Independence
3 9/11/17	Mon.	Section 1.4: Conditional Probability and Independence
	Wed.	Section 1.5: Random Variables (RV)
	Fri.	Section 1.5: Random Variables (RV)
4 9/18/17	Mon.	Section 1.6: Discrete RVs and Transformations
	Wed.	Section 1.7: Continuous RVs and Transformations
	Fri.	Section 1.8: Expectation of a RV
5 9/25/17	Mon.	Section 1.9: Some Special Expectations
	Wed.	Section 1.10: Important Inequalities
	Fri.	Section 2.1: Distributions of 2 RVs
6 10/2/17	Mon.	Section 2.1: Distributions of 2 RVs
	Wed.	Review Day
	Fri.	<b>Exam 1 on Friday 10/6/2017; Covers Chapter 1</b>
7 10/9/17	Mon.	Section 2.2: Transformations - Bivariate RVs
	Wed.	Section 2.2: Transformations - Bivariate RVs
	Fri.	Section 2.3: Conditional Distributions and Expectations
8 10/16/17	Mon.	Section 2.3: Conditional Distributions and Expectations
	Wed.	Section 2.4: The Correlation Coefficient
	Fri.	Section 2.5: Independent RVs
9 10/23/17	Mon.	Section 2.6: Extension to Several RVs
	Wed.	Section 2.7: Transformations for Several RVs
	Fri.	Section 2.7: Transformations for Several RVs
10 10/30/17	Mon.	Section 2.8: Linear Combinations of RVs
	Wed.	Section 3.1: Binomial Distribution
	Fri.	Section 3.2: Poisson Distribution
11 11/6/17	Mon.	Section 3.3: Gamma, Chi-Square and Beta Distributions
	Wed.	Review Day
	Fri.	<b>Exam 2 on Friday 11/10/2017; Covers Chapter 2, Sections 3.1, 3.2</b>
12 11/13/17	Mon.	Section 3.4: Normal Distribution
	Wed.	Section 3.5: Multivariate Normal Distribution
	Fri.	Section 3.6: T and F Distributions
13 11/20/17	Mon.	Section 3.7: Mixture Distributions
	Wed.	Section 5.1: Convergence in Probability
	Fri.	Thanksgiving: No Class
14 11/27/17	Mon.	Section 5.2: Convergence in Distribution
	Wed.	Section 5.2: Convergence in Distribution
	Fri.	Section 5.3: Central Limit Theorem
15 12/4/17	Mon.	Section 5.3: Central Limit Theorem
	Wed.	Section 5.3: Central Limit Theorem
	Fri.	Review Day
16	Friday	<b>Final Exam on December 15, 2017 from 10:30–12:30 PM</b> Comprehensive