THE UNIVERSITY OF TEXAS AT AUSTIN
Department of Statistics and Data Sciences
College of Natural Sciences

SDS 321

Introduction to Probability and Statistics

Spring 2017

Professor	Purnamrita Sarkar
Office Hours	Tuesdays 11:30-12:30
Location	GDC 7.306
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Course Web page	http://www.cs.cmu.edu/~psarkar/sds321.html

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Syllabus

Course Description

This course provides an introduction to probability and statistics. The first part of the course covers the fundamentals of probability theory, including discrete and continuous random variables, multiple random variables, and limit theorems. This section of the course will also cover the application of probability to counting problems.

The second part of the course will focus on classical statistical inference, covering parameter estimation, hypothesis testing, and confidence intervals.

Prerequisites Students are expected to have a good familiarity with Calculus I. No previous experience with probability or statistics is assumed.

Quantitative Reasoning

This course carries the Quantitative Reasoning flag. Quantitative Reasoning courses are designed to equip you with skills that are necessary for understanding the types of quantitative arguments you will regularly encounter in your adult and professional life. You should therefore expect a substantial portion of your grade to come from your use of quantitative skills to analyze real-world problems.

Textbook

In addition to the slides and material made available on the course webpage, students will be assigned readings and additional problems from the course textbook

- Introduction to Probability. Dimitri P. Bertsekas and John N. Tsitsiklis, 2nd edition. Athena Scientific. Note that the first edition does not cover the statistics portion of the course.
- A First Course in Probability, by Sheldon Ross

Course website

Slides, homework problems and any additional material will be posted at the course website: `www.cs.cmu.edu/~psarkar/sds321.html`.

Grades will be posted at `canvas.utexas.edu`.

Evaluation

There will be three exams.

If you have to miss an exam due to a legitimate documented conflict, please let me know as soon as possible, and we will make arrangements for a make-up exam.

There will also be approximately weekly homeworks (no homework will be assigned on midterm days) - 10 homeworks in total which should be submitted via canvas by Tuesday 5pm (unless otherwise specified). The final exam will consist of two one hour and fifteen minute exams. Out of the four exams, I will take the best three. The homeworks will count for 25% of the grade. The three counted exams will each carry 25%.

Requests for Regrade

Clerical requests will be corrected without hassle. Other regrading requests must be submitted in writing within on week (7 days) of the exam's return. Be aware that the entire exam will be subject to regrading, and grades may go up or down.

Class Schedule

This schedule lists the topics that will be covered in the semester, and the exam dates.

Dates	*Topics*
1/17–2/2	Probability Basics, counting
2/7–2/25	Discrete random variables, expectation and variance
3/2	**Exam 1**
3/7–3/9	Continuous random variables
	SPRING BREAK
3/21–4/4	More continuous random variables, Advanced topics in probability: covariance, total expectation, derived distributions
4/6	**Exam 2**
4/11	Limit theorems
4/13–4/20	Estimation and confidence intervals
4/25–5/4	Hypothesis testing
Final exam day	**Final exam**

Students with Disabilities

Students with disabilities may request appropriate academic accommodations from the Division of Diversity and Community Engagement, Services for Students with Disabilities, 512-471-6259, `http://www.utexas.edu/diversity/ddce/ssd/`.

Religious Holy Days

By UT Austin policy, you must notify me of your pending absence at least fourteen days prior to the date of observance of a religious holy day. If you must miss a class, an examination, a work assignment, or a project in order to observe a religious holy day, you will be given an opportunity to complete the missed work within a reasonable time after the absence.

Scholastic Honesty

We expect students to behave with integrity. Students found cheating on exams or homework will receive a score of zero for that exam or assignment, and may be subject to additional disciplinary action. For more information on the University of Texas scholastic dishonesty policy, see the 2006-2007 General Information Catalog, Appendix C.

Campus Safety

Please note the following recommendations regarding emergency evacuation from the Office of Campus Safety and Security, 512-471-5767, `http://www.utexas.edu/safety`:

- Occupants of buildings on The University of Texas at Austin campus are required to evacuate buildings when a fire alarm is activated. Alarm activation or announcement requires exiting and assembling outside.
- Familiarize yourself with all exit doors of each classroom and building you may occupy. Remember that the nearest exit door may not be the one you used when entering the building.
- Students requiring assistance in evacuation should inform the instructor in writing during the first week of class.
- In the event of an evacuation, follow the instruction of faculty or class instructors.
- Do not re-enter a building unless given instructions by the following: Austin Fire Department, The University of Texas at Austin Police Department, or Fire Prevention Services office.
- Behavior Concerns Advice Line (BCAL): 512-232-5050
- Further information regarding emergency evacuation routes and emergency procedures can be found at: `http://www.utexas.edu/emergency`.