



STAT/MATH 418, Sections 001 and 002, Spring 2018

Introduction to Probability and Stochastic Processes

This course introduces students to the fundamentals and axioms of probability. Topics covered include combinatorial probability, conditional probability and independence, probability laws, random variables, expectation, Chebyshev's inequality, Laws of Large Numbers, the Central Limit Theorem, and stochastic processes. Applications to engineering fields will be emphasized.

During the course, we will monitor the [New York Times](#) and [Centre Daily Times](#) newspapers for articles involving probability and stochastic processes. We will study the probabilistic information in such articles and relate them to the course and to everyday life.

Contact Information

- [Elena Hadjicosta](#), Instructor
 - Section **001**: Mon/Wed/Fri 2:30 - 3:20 p.m., 107 Wartik Bldg.
 - Office Hours: Wed/Fri 11:00 a.m. - 12:00 noon
 - Office: 418 Thomas Building
- [Donald Richards](#), Instructor
 - Section **002**: Tue/Thu 1:35 - 2:50 p.m., 220 Hammond Bldg.
 - Office Hours: Tue/Thu 3:00-4:00 p.m., or by appointment
 - Office: 311 Thomas Building
- [Aniruddha Rajendra Rao](#), Teaching Assistant
 - Office Hours: By appointment
 - Office: 301 Thomas Building

Course Information

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- [Schedule](#)



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Course Syllabus: Introduction to Probability and Stochastic Processes

General course description: Introductory probability and stochastic processes.

Textbook: *A First Course in Probability*, 8th or 9th edition, by S. Ross.

Required Work:

1. Sixteen (16) weekly homework assignments.
2. Two (2) mid-term examinations, to be held on February 5/6 and March 19/20.
3. A comprehensive final examination, to be held during the week of April 30 - May 4.
4. Full attendance at classes.
5. Regular reading of the [New York Times](#) and the [Centre Daily Times](#).

Homework: Weekly assignments will be collected at the *beginning* of class on Mondays (for Section 001) and on Tuesdays (for Section 002).

Late assignments will not be graded, regardless of reason, but only your **14** highest homework scores will count toward your final grade.

Mid-term Examinations: Two closed-book, mid-term exams will be given.

Exam 1 will cover Chapters 1-3 of the textbook, and will be given on February 5 (for Section 001) and on February 6 (for Section 002).

Exam 2 will cover Chapters 4-5 of the textbook, and will be given on March 19 (for Section 001) and on March 20 (for Section 002).

Final Examination: The final exam is mandatory, closed-book, and *comprehensive*. The exam will be held during the week of April 30 - May 4.

The mid-term and final exams are likely to reflect the homework assignments closely.

For each mid-term and final exam, you must bring your PSU student-ID card. You may also bring a calculator and one 8.5×11 inch *one-sided* page of formulas or notes.

Final Grades: Final grades will be determined as follows:

- A : 94-100%, A- : 90-93.99%
- B+ : 88-89.99%, B : 84-87.99%, B- : 80-83.99%,
- C+ : 78-79.99%, C : 70-77.99%
- D : 60-69.99%
- F : 0-59.99%

Grading policy: Overall scores will be calculated using the following scheme:

Assignments and Exams	Weight	Date
Homework Assignments	25%	Weekly (in class on Mondays/Tuesdays)
Mid-term Exam 1	20%	February 5 (Section 001); February 6 (Section 002)
Mid-term Exam 2	20%	March 19 (Section 001); March 20 (Section 002)
Final Exam	35%	April 30 - May 4

Course Rules:

1. No "make-up" exams will be given for ANY reason. If you miss an exam, you should provide a valid reason to the instructor. If the instructor AND the TA both approve your excuse then your missed exam score will be replaced automatically by your score on the next mid-term exam.

2. No late or make-up homework assignments will be accepted, for ANY reason. (Remember that only your highest 14 homework scores will count toward your final grade.)

3. Early exams *might* be allowed, with prior arrangement, for students with direct conflicts due to other required university programs (chess team, field trip, Blue Band trip, etc.). The director of that program must request in writing that you be excused from the exam.

4. Students are responsible for all announcements and supplements given within any lecture.

5. Academic Integrity and Mutual Respect: All Penn State University, College of Science, and Department of Statistics policies regarding ethics, honorable behavior, and mutual respect apply in this course. These can be found at:

- [Penn State's Policies](#)
- [College of Science's Academic Integrity Policy](#)
- [College of Science's Code of Mutual Respect and Cooperation](#)

The College of Science's Code of Mutual Respect and Cooperation embodies the values that we hope our faculty, staff, and students possess and will endorse to make the College of Science a place where every individual feels respected and valued, as well as challenged and rewarded.

6. If you need to leave class early, please sit in the rear and leave as quietly as possible.

7. Please turn off all electronic devices (cell-phones, etc.) before you enter the classroom.

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Course Schedule

Week	Sections	Homework Assignment
Jan. 8-12	1.1-1.5	1-33; Theor. 9, 10, 12
Jan. 15-19	2.1-2.4	1, 3, 9, 11, 13, 19, 24, 27; Theor. 1, 7, 10, 11
Jan. 22-26	2.5, 3.1-3.2	Chap. 2: 34, 39; Chap. 3: 1, 4, 5, 10, 14, 15, 19, 21
Jan. 29 - Feb. 2	3.3-3.5	23, 28, 37, 38, 48, 53, 55, 64, 65, 78; Theor. 1, 6
Feb. 5	Exam 1 for Section 001	The exam will cover Chapters 1-3
Feb. 6	Exam 1 for Section 002	The exam will cover Chapters 1-3
Feb. 7-9	4.1-4.3	1, 3, 4, 7, 13, 20, 21; Theor. 9, 13
Feb. 12-16	4.4-4.6	35, 38, 40, 44, 46, 49; Theor. 14
Feb. 19-23	4.7-4.9	53, 58, 71, 77, 78, 79; Theor. 16, 17
Feb. 26 - Mar. 2	5.1-5.4	1, 3, 4, 5, 6, 8, 10, 16; Theor. 1, 7
Mar. 5-9	Spring Break	Chapter 4: 61, 63, 65, 71, 80
Mar. 12-16	5.4-5.7	19, 27, 28, 31, 33, 36; Theor. 9, 12
Mar. 19	Exam 2 for Section 001	The exam will cover Chapters 4-5
Mar. 20	Exam 2 for Section 002	The exam will cover Chapters 4-5
Mar. 21-23	6.1-6.3	2, 9, 10, 15, 20, 21, 23; Theor. 9
Mar. 26-30	6.4-6.7	27, 28, 32, 33, 34, 37, 42, 43; Theor. 11
Apr. 2-6	7.1-7.4	1, 3, 6, 16, 18, 21, 26; Theor. 1, 2
Apr. 9-13	7.5-7.8	33, 36, 39, 41, 51, 55, 65, 68; Theor. 4
Apr. 16-20	8.1-8.4	1, 5, 8, 13, 17, 18, 19, 21, 22; Theor. 7 (Hint: logs)
Apr. 23-27	9.1-9.2	1, 2, 3, 4, 5, 6, 7, 8, 9, 10
Apr. 30 - May 4	Comprehensive Final Exam	Date and location to be announced

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