

Math 20 – Summer 2017

My Contact Information:

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Lectures: MWF, 11:30am - 12:35pm
X-hour: Tu, 12:15pm - 1:05pm
Office Hours: Monday, 4:00pm - 5:00pm
Tuesday, 3:00pm - 4:00pm
Thursday, 10:00am - 11:00am

Course Description:

Our capacity to fathom the world around us hinges on our ability to understand quantities which are inherently unpredictable. Therefore, in order to gain more accurate mathematical models of the natural world we must incorporate probability into the mix. This course will serve as an introduction to the foundations of probability theory. Topics covered will include some of the following: discrete and continuous random variables, random vectors, multivariate distributions, expectations; independence, conditioning, conditional distributions and expectations; strong law of large numbers and the central limit theorem; random walks and Markov chains. There is an honors version of this course: see MATH 60.

Textbook:

We will use material from two textbooks.

1. *Introduction to Probability*, by Grinstead and Snell. This book is available online for free: <https://math.dartmouth.edu/~prob/prob/prob.pdf>
2. *Probability Theory: A Concise Course*, by Rozanov. (The revised English edition, translated and edited by Richard A. Silverman.) This book can be found for around \$10 (for example, on Amazon).

Writing Mathematics:

In addition to learning probability theory, a core goal of this course is to help students learn to read and write mathematics. We'll spend time in class discussing how to articulate rigorous mathematical arguments in a clear and convincing way. On homework assignments, a portion of the grade will be based on the quality of exposition.

Canvas:

Student grades will be posted on Canvas, and may be accessed through <http://canvas.dartmouth.edu>. All other course material will be posted on our course page. Please do not email me through the Canvas system.

X-hour:

We will use the X-hour occasionally throughout the quarter, so be sure not to schedule anything during that time (12:15pm - 1:05pm, Tuesday).

Homework:

Homework will be assigned each Wednesday and due the following Wednesday. There will be a total of eight homework assignments.

Unexcused late assignments will not be accepted.

Homework Collaboration Policy:

It can be very helpful to study and work with a group. This type of cooperative learning is encouraged; however, be sure that you have a thorough understanding of the concepts as well as the mathematical steps used to solve a problem. You must be able to work through the problems on your own. Each student must complete her or his assignment individually and independently and must turn in her or his own work.

On each homework assignment, you must **list** any resources you used to help you complete the assignment. This includes other class members with whom you discussed the problems.

Returned Papers:

You must retain all returned papers in case of any discrepancy with the recorded grades on Canvas. I cannot correct any mistakes in grading or recording of scores without the original document. All concerns regarding grades on assignments or exams must be handled within one week of the return of the paper.

Exams:

There will be two midterm exams and a final exam. The final exam will be cumulative, but with more weight on the material covered after the second midterm. The dates and locations for the exams will be posted on the course webpage and announced in class.

If you must miss an exam due to a College activity, you must seek approval from me at least two weeks prior to the exam day.

Labs:

Two labs will be assigned throughout the term. Students will use the R programming language to perform probabilistic analysis. No prior programming experience is needed. Each of the two lab assignments is worth 5% of the final grade.

Grading Scheme:

Course scores are weighted as follows:

Homework	25%
Labs	10%
Midterm Exam 1	20%
Midterm Exam 2	20%
Final Exam	25%

Disabilities

Students with disabilities who will be taking this course and may need disability-related classroom accommodations are encouraged to make an appointment to see me as soon as possible. Also, they should stop by the Academic Skills Center in Collis Center to register for support services.

Religious Observances

Some students may wish to take part in religious observances that occur during this academic term. If you have a religious observance that conflicts with your participation in the course, please meet with me before the end of the second week of the term to discuss appropriate accommodations.