

PROBABILITY THEORY

St. Olaf College • Math 262

Dr. Matthew Wright • Fall 2019

Meeting Times (in Tomson 182): Monday, Wednesday, and Friday, 10:45 – 11:40am

Office Hours (in RMS 405): Mon. 9–10, Tues. 9:30–10:30, Wed. 2–3, Thurs. 1–2, Fri. 9–10,
whenever the door is open, or by appointment

Contact the professor at: wright5@stolaf.edu

Web Site

The course web site is:

<http://math262.mlwright.org/>

You will refer to this web site frequently for homework assignments and course files.

In addition, the course will use *Moodle* for grades and password-protected resources.

Text: *Probability with Applications in Engineering, Science, and Technology*, 2nd edition, by Carlton and Devore (note that this text is available electronically via the St. Olaf Library web site)

Course Objectives

1. To gain intuition about and understanding of the mathematical concept of probability.
2. To give numerical answers to simple and complex probabilistic questions.
3. To understand and use the fundamental concept of a random variable.
4. To learn about specific discrete and continuous probability distributions, and how to use them to model real-world phenomena.
5. To explore links among probability theory, mathematical statistics, and data analysis.
6. To use computational tools, such as the statistical computing package *R* and the computer algebra system *Mathematica*, to solve problems in probability.

Grading

Your final grade will be a weighted average of the following:

Reading Guides:	5%
Homework:	30%
Midterm Exams:	40% (20% for each of two exams)
Final Exam:	25%

Preparing for Class

Preparing for class is essential for success in this course. Before most class periods, the professor will assign reading from the textbook, along with a *Reading Guide*

containing comprehension questions. Your completed Reading Guide will be collected at the start of the class period and graded for completeness. Be sure to complete the reading and the Reading Guide each day, and come to class prepared to use your knowledge from the textbook.

Reading Guides will *not* be accepted late. However, your lowest two reading guide scores will be dropped.

Homework

Homework will be assigned and collected frequently – approximately every other class period. Assignments and due dates will be announced in class and posted in the course web site. *Keeping up with the homework is important, not only to get a good grade, but also for mastering the course material!* Struggling with a homework problem is not a sign of failure, but part of the learning process. The proper way to work on a homework problem is as follows:

1. Read and attempt to understand the problem, looking up definitions or theorems if necessary.
2. Make a plan for solving the problem.
3. Attempt to carry out the plan. Revise the plan. Spend time thinking about the problem.
4. If you have spent significant time on the problem and still can't solve it, then talk to Prof. Wright or another student who is working on the same problem. Then go back to step 2.
5. If you think you have solved the problem, then check your answer. Ask yourself, "Is my answer reasonable? Can I verify it in some way?" See if you can improve your solution.
6. Write your solution neatly and thoroughly.

Collaboration on homework is encouraged (see #4 above), but *you must hand in your own work*. For full credit, explain your solutions clearly and *show all work*.

Homework will be due in the homework mailbox at 4pm on the due date. Late work will *not* be accepted in general. However, your lowest two homework grades will be dropped.

Exams

This course will have three exams, including the final exam. Plan to be present at each exam. Make-up exams will be given only in circumstances that are truly exceptional (i.e., that occur with low probability), and must be arranged in advance. In particular, travel plans are not a valid excuse to miss an exam.

Exam 1: Friday, October 4 (in class); Sections 1.1 – 2.4

Exam 2: Monday, November 11 (in class); Sections 2.5 – 3.8

Final Exam: Friday, December 13, 9:00 – 11:00am; Chapters 1 – 4

Strategies for Success

- Complete the reading and answer the questions on the Reading Guide before each class.
- Attend class faithfully, take good notes, and participate in class activities.
- Keep up with the assignments and projects. Start early — don't wait until the last minute to get started!
- Practice is essential for learning mathematics! Work each problem carefully and thoroughly.
- Work with other students. Mathematics is a collaborative activity! You will find that you will both learn from and teach your classmates.
- Ask questions!
- If you are having trouble, seek help! Prof. Wright is happy to talk with you.

Inclusivity

Prof. Wright is committed to supporting all students. This course strives to be an inclusive learning community, respecting those of differing backgrounds and beliefs. As part of the St. Olaf community, we aim to be respectful to everyone in this class, regardless of race, ethnicity, religion, gender, or sexual orientation. If you have any questions or concerns, don't hesitate to talk with Prof. Wright.

Accommodations

Prof. Wright is committed to supporting the learning of all students. If you have already registered with Disability and Access (DAC) and have your letter of accommodations, please meet with the professor early in the course to discuss, plan, and implement your accommodations in the course. If you have or think you have a disability, please contact the Disability and Access office at 507-786-3288 or wp.stolaf.edu/asc/dac.

Academic Integrity

Claiming someone else's work as your own will earn you a failing grade on the work in question. Don't do it. For more information, see the *Academic Integrity* section of *The Book* (wp.stolaf.edu/thebook/academic/integrity).