

STAT 341 Probability and Statistics

Spring 2019, MWF 2:00-2:50, Math 103

Course Information

- **Instructor:** Kelly McKinnie, Math 111, 243-5694, kelly.mckinnie@umontana.edu
- **Textbook:** A First Course in Probability, 8th ed., by Sheldon Ross
- **Prerequisites:** M 172 or M182 (Calculus II) or M 162 (Applied Calculus)
- **Software:** Some assignments will require the use of R. R is a free program which can be downloaded from <http://www.r-project.org/>. It is also available in the Math 206 computer lab. R is a high-level statistical programming language which is especially good for doing simulations. That will be the primary use of R in this course.
- **Office Hours:** See <http://www.umt.edu/people/mckinnie>

Catalog description

Offered autumn and spring. Probability, probability models and simulation, random variables, density functions, special distributions, and a brief survey of estimation and hypothesis testing. Computer use integrated throughout.

Learning Outcomes :

1. Understand and use basic probability, counting and combinatorial methods, and Bayes' Theorem.
2. Write formal proofs of basic results in set theory and probability.
3. Use models for discrete and continuous random phenomena and be able to apply these models to real problems.
4. Simulate random phenomena in R.

Important dates:

Dates	Topic
Jan 18	Last day students can add a course on CyberBear
Jan 31	Last day students can drop a course on CyberBear or change grading option to audit
Mar 15	Last day to add/drop course by paper w/o Dean's approval.
Apr 26	Last class day, and last day to petition to drop/add and change to CR/NCR.
Apr 29	Final exam (required) Monday April 29, 2-4pm in Math103.

Grading (+/- grading will be used):

- **Problem Sets:** 30%
- **Midterm Exams 1,2,3:** 45%. Tentative dates are Fri, Feb. 8; Fri, Mar. 8; Fri, Apr. 12. Makeups are given at instructor's discretion and only in cases of emergency or other important circumstances. If you cannot make it to an exam, you must let me know BEFORE the exam is given.
- **Final Exam (comprehensive):** 25%.

Incompletes

Incompletes are given at the discretion of the instructor and are only considered in cases where the student has been in attendance and doing passing work up to three weeks before the end of the semester, and for reasons beyond the student's control and which are acceptable to the instructor, the student has been unable to complete the requirements of the course on time. Negligence and indifference are not acceptable reasons.

Students with disabilities

Students with disabilities may request reasonable modifications by contacting me. The University of Montana assures equal access to instruction for students with disabilities in collaboration with instructors and Disability Services for Students, which is located in Lommasson Center 154. The University does not permit fundamental alterations of academic standards or retroactive modifications.

Academic Honesty

All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the Student Conduct Code. You can find it in the A-Z index on the UM home page.

Comments

We will cover most of Chapters 1-4 of Ross plus selected material from other chapters or other sources.

Homework

Homework will be due at the beginning of class and is to be handed in as a hard copy. If you cannot be in class, you may email me the homework by that time (please do not email me the homework if you will be in class). I will drop your lowest homework score.

Most of the problems in the written homework cannot be solved by simply plugging into a formula given in the book. They will require real problem-solving skills. Often there will be multiple ways to solve a problem. As on the tests, answers by themselves are not adequate without indicating your reasoning. You are allowed and even encouraged to work with others on the homework as long as the solutions you present are your own. However, if you simply rely on me or others to direct you on every problem, then you will not improve your problem-solving skills.

Homework assignments will sometimes include a component from a web-based homework system called WebWorks which will immediately tell you whether your each answer is correct or not. These problems will generally be of the more routine calculation type. Usually, I will require you to do only a few of these problems, but I will post additional problems on each WebWorks assignment so that you can get more practice if you feel you need it. It is important that you know how to do these more routine problems, but it is up to you on how much practice you need.