

STAT 451 Statistics Methods I
Fall 2017
Sec. 1: MWF 9:00-9:50, Math 108
Sec. 2: MWF 10:00-10:50, Math 108

Course Information

- **Instructor:** David Patterson, Math 208, 243-6748, david.patterson@umontana.edu
- **Office Hours:** See Moodle page.
- **Prerequisites:** One year of college mathematics including some basic probability. No background in statistics is assumed.
- **Textbook:** Stats: Data & Models, 4th ed., by DeVeaux, Velleman, & Bock.
- **Recommended:** Writing Science in Plain English, by Anne Greene, U. Chicago Press (\$15).
- **On-line homework:** MyStatLab homework system required. Access code can be purchased bundled with the text or separately from Pearson at <http://www.pearsonmylabandmastering.com>. Course ID is **patterson42133**. Instructions for accessing MyStatLab are on Moodle.
- **Software:** Some assignments will require the use of the free programs R/RStudio. Instructions for installing R/RStudio are posted on Moodle. R/RStudio is also installed in the Math 206 computer lab which is open during the day M-F.
- **Computer lab:** Stat 457 is an optional 1-credit course which will introduce you to R/RStudio. The instructor is Quy Cao.

Catalog description

Intended primarily for non-mathematics majors who will be analyzing data. Graphical and numerical summaries of data, elementary sampling, designing experiments, probability as a model for random phenomena and as a tool for making statistical inferences, random variables, basic ideas of inference and hypothesis testing.

Learning Outcomes :

1. To learn how to describe and explore sets of data both numerically and graphically.
2. To learn about the normal, binomial, and other basic models for the distribution of a single variable and the linear regression model for the relationship between two variables.
3. To learn the basic ideas of good experimental design and good sampling design.
4. To understand some basic probability theory, and the importance of the normal distribution and Central Limit Theorem to statistical inference.
5. To learn the fundamental ideas of statistical inference for means and proportions including both hypothesis testing and confidence intervals.
6. To learn how to critically evaluate scientific journal articles with respect to the material learned in this class.

Topics

We will cover the chapters in the textbook sequentially. I expect that we will cover the first 22 to 24 chapters.

Note: One of the goals of this course is to teach you how to write clearly and directly about data and statistical results as for a scientific report. The text, while excellent, uses a more informal and conversational style in describing data sets and results and so cannot always be used as a model for how to write.

Important dates:

- **Monday, September 4:** Labor Day, no classes.
- **Monday, September 11, 5 pm:** last day to add courses by Cyberbear without instructor consent.
- **Thursday, September 21, 5 pm:** last day to drop classes or change grading option by Cyberbear.
- **Thursday, November 2, 5 pm:** last day to drop course or change grading option. Requires paper form signed by advisor and instructor. Changes after this date are only in exceptional circumstances by petition.
- **Fri, November 10:** Veterans' Day, no classes.
- **Wed, Nov. 22-Fri, Nov. 24:** Thanksgiving break, no classes.
- **Tue, December 12:** last day of classes.

Grading (+/- grading will be used):

- **Homework:** 30% (combination of MyStatLab HW and written HW)
- **Midterm Exams 1,2:** 45%. Dates are **Wed, Oct. 11** and **Wed, Nov. 15** in late afternoon/early evening. 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%. I am scheduling the final exam for **Thursday, Dec. 14, 5-8 pm**, instead of the regularly scheduled times on Thur and Fri, Dec 14-15.

Homework

- 15% of your grade will be based on MyStatLab homework assignments. Make sure you save your work regularly, particularly if you are approaching the deadline. You may continue to work on assignments after the deadline. You will receive half-credit for additional work completed after the deadline.
- 15% of your grade will be based on weekly hand-in homework. Many of these will require you to prepare a report using RStudio and R Markdown in which you will analyze one of more sets of data. I will drop your lowest homework score.

Graduate Increment

- If you are taking the course for graduate credit, you will be required to complete occasional extra homework problems.

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 may request reasonable modifications by contacting me. The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and Disability Services for Students. “Reasonable” means the University permits no 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 action 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 or at www.umt.edu/vpsa/policies/student_conduct.php.