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Fall 9-1-2020

STAT 451.R00: Statistical Methods I

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STAT 451 Statistics Methods I
Fall 2020
Sec. 1: MWF 9:00-9:50
Sec. 2: MWF 10:00-10:50

Course Information

- **Instructor:** David Patterson, 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, 5th ed., by DeVeaux, Velleman, & Bock. You will get e-access through Moodle and be charged on your tuition bill.
- **Recommended:** Writing Science in Plain English, by Anne Greene, U. Chicago Press.
- **On-line homework:** MyStatLab homework system required. You will have access through the e-book.
- **Software:** Some assignments will require the use of the free programs R/RStudio. Instructions for installing R/RStudio are posted on Moodle.
- **Computer lab:** Stat 457 is an optional 1-credit course which will introduce you to R/RStudio. The instructor is Mohsen Tabibian.

This is an online only course. All lectures will be by Zoom and will be recorded. Attendance at the “live” Zoom lectures is not required. Links to the lecture recordings, the slides for the lectures and many other resources will be posted on the Moodle page for the class. Tests may be taken remotely or in-person. Details of this arrangement will be decided later.

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 20 to 22 chapters plus some additional material.

Important dates:

- **Thursday, August 27, 5 pm:** last day to add courses by Cyberbear without instructor consent.
- **Monday, September 7:** Labor Day, no classes.
- **Wednesday, September 9, 5 pm:** last day to drop courses without W; last day to add courses with electronic override.
- **Wednesday, October 21, 5 pm:** last day to change grading option or to drop course without WP or WF.
- **Tuesday, November 3:** Election Day, no classes
- **Wed, November 11:** Veterans' Day, no classes.
- **Wed, November 18:** last day of classes

Grading (+/- grading will be used):

- **Homework:** 30% (combination of MyStatLab HW and written HW)
- **Midterm Exams 1,2:** 45%. Dates TBA. Format and delivery
- **Final Exam (comprehensive):** 25%.

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 approximately 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.