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STAT 451.00: Statistical Methods I

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Syllabus
STAT 451, Statistical Methods I
Fall 2018, MWF 9:00-9:50am (Section 1), 10:00-10:50am (Section 2) in Math 108

Course Information:
- **Instructor**: Jon Graham, Math 204, 243-2561, jgraham@mso.umt.edu.
- **Textbook:** *Statistical Methods & Data Analysis, 7th ed.,* by Ott & Longnecker
- **Office Hours**: To be announced, By appointment
- **Course Webpage**: Accessed through Moodle
- **Grading**:   Homework: 30%   Exams 1,2: 40%   Final: 30%
- **Prerequisites:** One year of college mathematics including M115. A previous course in probability is useful (not required), and no background in statistics is assumed.

Homework

Homework will typically be assigned every Friday, to be handed in at the beginning of class the following Friday. **NO LATE HOMEWORK WILL BE ACCEPTED FOR ANY REASON**, and the lowest homework grade will be dropped. Homework is not only a fairly substantial portion of your grade, but is vital to your success in this class. Working with other students on homework is encouraged, as long as you hand in your own work, and do not simply copy someone else's work. Solutions to all problems will be provided.

Exams

Exams 1 & 2 will be cumulative and closed book. More about the exams, including the exact dates of the exams will be given later. If you cannot make it to an exam, you must let me know **BEFORE** the exam is given. No make-up exams will be given without a documentable reason for missing the exam.

Final Exam

The **Final exam** is scheduled for 8:00-10:00am on Wednesday, December 12 for Section 1 and 8:00am-10:00am on Thursday, December 13 for Section 2.

Course Material and Objectives

This course is an introduction to statistical methods for analyzing data. The course is intended primarily for students in disciplines outside of mathematics who are seeking statistical tools for data analysis. After some sampling and design issues and an introduction to exploratory analysis, the course will focus on probability distributions, relationships between variables, statistical inference through estimation, hypothesis testing, and confidence intervals, categorical data, and linear regression. Both in class and on homeworks, the software package **R** will be used to illustrate statistical techniques and elucidate statistical concepts.

Questions are strongly encouraged, both during class and at office hours. If you are lost and confused, please let me know.

Important Dates
>   **Monday, September 3: Labor Day holiday**
>   **Monday, September 17**: Last day to add courses by Cyberbear.
>   **Monday, September 17**: Last day to drop courses/change grading option in Cyberbear.
>   **Monday, October 29:** Last day to drop courses. Paper form must be signed by advisor and instructor. A W will appear on your transcript. After this date, drops can only be done by with the Dean's signature.
>   **Tuesday, November 6: Election Day**
>   **Monday, November 12: Veterans Day**
>   **Wednesday, November 21 – Friday, November 23: Thanksgiving holiday**
>   **Friday, December 7**: Last day to change grading option (letter grade to CR/NCR or vice-versa). Requires paper form signed by advisor and instructor.

Learning Outcomes: Upon successful completion of STAT 341, a student will:
1. Learn how to describe and explore sets of data both numerically and graphically.
2. 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. Learn the basic ideas of good experimental design and good sampling design.
4. Understand some basic probability theory, and the importance of the normal distribution and Central Limit Theorem to statistical inference.
5. Learn the fundamental ideas of statistical inference for means and proportions including both hypothesis testing and confidence intervals.
6. Learn how to critically evaluate scientific journal articles with respect to the material learned in this class.

Disability Services
>   *The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and Disability Services for Students (DSS). If you think you may have a disability adversely affecting your academic performance, and you have not already registered with DSS, please contact DSS in Lommasson 154. I will work with you and DSS to provide an appropriate accommodation.*

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.