ECON 3818: Introduction to Statistics

Economics 3818 is an introductory course in the theory and methods of statistics. Statistics allows datasets to be transformed into usable information, analyzed for patterns and trends, which improve decision-making.

Upon completion of the course, students should be able to

- Be prepared for a future course in Econometrics -- the data driven side of economics.
- Will be able to load datasets into R and perform statistical methods to gather information about the data.
- Understand the probability theory behind basic statistical tests and implement them.

We will study basic probability, probability distributions (especially the normal distribution), and descriptive and inferential statistics, including estimation and hypothesis testing. Emphasis is on both theory and applications. Weekly problem sets will explore issues in statistical theory and practice. The course will use the programming language R to do data analysis on simulated and real datasets.

Course Info

	Instructor	Kyle Butts	kyle.butts@colorado.edu
	Lecture	MWF 11:30-12:20pm	Econ 119
	Office Hours	M 2-4pm and W 9-11am	Zoom
	TA	Ge Song	ge.song@colorado.edu
	Office Hours	TBD	Zoom
	Textbook	The Basic Practice of Statistics 9e. David Moore, William Notz, and Michael A Fligner.	You already bought this! *Course Materials on Canvas*
	Software	**R** is a free programming language that is utilized primarily for data analysis. We will spend time throughout the course working on *R* exercises through the *RStudio* interface.	Download **R** and RStudio
	Prerequisites	Econ 1088, 2010 and 2020	

Grading

Homework	10%	**Midterm 1**	20%
R Problem Sets	15%	**Midterm 2**	20%
R Project	15%	**Final**	20%

Curving and Grade Asjustments:

Midterms may be curved individually, and a curve may be applied to the overall course grade to conform to departmental standards. I will automatically increase final course grades that are 0.5% below any grade cutoff after any final grading curve has been applied. I will not grant any request to increase your grade to meet a certain cutoff. You will receive the grade that you earned throughout the course. If you are concerned about your grade(s) you should immediately come talk to me. I will do everything I can to help you be successful in this course.

Homework:

There will be weekly homework assignments assigned through the Achieve website. These will be due by 11:59 pm on *most* Sundays. No late homework will be accepted. The 2 chapter homeworks with the lowest grades will be dropped.

Recitation:

Recitation attendance is not mandatory. However, it is crucial for success to attend recitation. Material covered in recitation will look very similar to exam questions and will serve as high-quality review of lecture material. Your TA is PhD student TBD.

R Project & Exercises:

There will be an introductory and five simple R assignments throughout the semester. These will serve to (i) develop your coding abilities and (ii) improve your understanding in this course. At the end of the semester, you will analyze a dataset as a final project. The R project will be worth 15% and the R assignments will be worth another 15%. R assignments must be turned in to Canvas before class starts on Wednesday. A compiled html file should be turned in for the assignment.

Exams:

There will be two midterms throughout the semester. They will consist of multiple choice questions along with a couple of free response questions. You may use your notes and book for the exam, but may not work with anyone on them. Any tables required will be provided by the instructor. There will be no make-up exams, unless there is documentation of a medical or family emergency. If you miss an exam, the weight of that exam will be added to the final exam. The final exam is cumulative, but the midterms are not.

Tentative Course Calendar

WEEK	DATES	MONDAY	WEDNESDAY	FRIDAY	ASSIGNMENTS
1	08/23 - 08/27	Syllabus + Intro	Chapter 1	Chapter 2	R assignment 0 Chapter 1 and 2, Sunday
2	08/30 - 09/03	R Day *(Introduction)*	R Day *(Visualizing Data)*	Chapter 12	Chapter 12, Sunday
3	09/06 - 09/10	No Class *Labor Day*	Chapter 13	Chapter 14	R assignment 1, Wednesday Chapter 13 and 14, Sunday
4	09/13 - 09/17	Chapter 3	Distributions	Expectations	Chapter 3, Sunday
5	09/20 - 09/24	R Day *(Distributions)*	Chapter 8	Chapter 9	Chapter 8 and 9, Sunday
6	09/27 - 10/01	*Review*	Midterm	Chapter 15	R assignment 2, Wednesday Chapter 15, Sunday
7	10/04 - 10/08	Chapter 15	Chapter 16	Chapter 16 Chapter 17	Chapter 15, Sunday
8	10/11 - 10/15	Chapter 17	R Day *(Sampling Distributions)*	Chapter 18	Chapter 16 and 17, Sunday
9	10/18 - 10/22	R Day *(Size and Power)*	Chapter 20	Chapter 20	R assignment 3, Wednesday Chapter 20, Sunday
10	10/25 - 10/29	Chapter 21	Chapter 21	R Day *(t-dist)*	Chapter 21, Wednesday
11	11/01 - 11/05	Midterm	Chapter 22	Chapter 22	R assignment 4, Friday Chapter 22, Sunday
12	11/08 - 11/12	Chapter 23	Chapter 4	Chapter 6	Chapter 4, 6, and 23, Sunday
13	11/15 - 11/19	Chapter 5	Chapter 5	R Day *(Regression)*	Chapter 5, Sunday
14	11/22 - 11/26	R Day *(ggplot2)*		No Class *Thanksgiving*	R Project, Due Sunday
15	11/29 - 12/03	Chapter 26	Chapter 26	*Review*	R assignment 5, Wednesday Chapter 26, Sunday
16	12/06 - 12/08	*Review*	*Review*		
Final	12/12 - *1:30-4pm*				Final Exam

University Policies

Students with Disabilities:

If you qualify for accommodations because of a disability, please submit to me a letter from disability services in a timely manner so that your needs can be addressed. Disability services determine accommodations based on documented disabilities. Contact: 303-492-8671, Center for Community N200.

Religious Observance Policy:

Campus policy regarding religious observances requires that faculty make every effort to reasonably and fairly deal with all students who, because of religious obligations, have conflicts with scheduled exams, assignments, or required attendance. If you have a conflict, please contact me at the beginning of the term so we can make proper arrangements.

Honor Code:

All students of the University of Colorado at Boulder are responsible for knowing and adhering to the academic integrity policy of this institution. Violations of this policy may include: cheating, plagiarism, aid of academic dishonesty, fabrication, lying, bribery, and threatening behavior. All incidents of academic misconduct shall be reported to the Honor Code Council (honor@colorado.edu ; 303-725-2273). Students who are found to be in violation of the academic integrity policy will be subject to both academic sanctions from the faculty member and non-academic sanctions (including but not limited to university probation, suspension, or expulsion). Other information on the Honor Code can be found at: http://www.colorado.edu/policies/honor.html and at http://www.colorado.edu/academics/honorcode/

Discrimination & Harassment Policy:

The University of Colorado Policy on Sexual Harassment applies to all students, staff and faculty. Sexual harassment is unwelcome sexual attention. It can involve intimidation, threats, coercion, or promises or create an environment that is hostile or offensive. Harassment may occur between members of the same or opposite gender and between any combinations of members in the campus community: students, faculty, staff, and administrators. Harassment can occur anywhere on campus, including the classroom, the workplace, or a residence hall. Any student, staff or faculty member who believes s/he has been sexually harassed should contact the Office of Discrimination and Harassment (ODH) at 303-492-2127 or the Office of Judicial Affairs at 303-492-5550. Information about the ODH and the campus resources available to assist individuals who believe they have been sexually harassed can be obtained at: http://www.colorado.edu/odh/