

ECON 3818: INTRO TO STATISTICS WITH COMPUTER APPLICATIONS

Instructor:	Joseph Fry	Class Time:	M-W-F 11:15am-12:05pm
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Office Hours:	Thursday 2-4	Office:	ECON 309A
TA:	Anand Butler	Email:	anbu8063@colorado.edu
Office Hours:	Wednesday 12:15-1:15; 2:30-4:30	Office:	ECON 414

COURSE DESCRIPTION

Econ 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 the methods.

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

Required Materials

- Textbook: *The Basic Practice of Statistics*. David Moore, William Notz, and Michael A Fligner.
- You've already bought this! Access will be available through Canvas

Prerequisites:

- Econ 2010 & 2020. Econ 1088 (or an approved similar course). This class requires algebra and calculus so exposure to these concepts is required.

Computer Application: **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.

Grading:

Assignment	Percentage
Recitation Attendance	10%
Achieve Homeworks	10%
R Problem Sets	20%
Midterms	35%
Final	25%
iClicker Questions (Extra Credit)	5%

Curving: 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.

Grade Adjustments: Other than the 0.5% bump discussed above, 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.

Grading Scale:

Grade	Percentage	Grade	Percentage
A	$93 \leq x$	C	$73 \leq x < 77$
A-	$90 \leq x < 93$	C-	$70 \leq x < 73$
B+	$87 \leq x < 90$	D+	$67 \leq x < 70$
B	$83 \leq x < 87$	D	$63 \leq x < 67$
B-	$80 \leq x < 83$	D-	$60 \leq x < 63$
C+	$77 \leq x < 80$	F	$x < 60$

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 two chapter homeworks with the lowest grades will be dropped.

Recitation: Recitation attendance is graded. Material covered in recitation will look very similar to exam questions and will serve as high-quality review of lecture material. Your TA is Anand Butler. Email: Anand.butler@colorado.edu.

R Assignments: There will be six **R** assignments throughout the semester. A ‘.Rmd’ (R Markdown file) and a ‘.html’ file should be turned in for each assignment. Late assignments will receive a 50% penalty if submitted before solutions have posted or a 75% penalty if submitted after solutions have been posted. The **R** assignment with the lowest grade will be dropped.

Exams: There will be two midterms throughout the semester. They will consist of multiple choice questions along with a couple of free response questions. 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. For the midterms, your lowest grade will be dropped. The final exam is cumulative, but the midterms are not.

Extra Credit: The only extra credit opportunity will be through iClickers. There will be roughly 1-2 clicker questions per lecture. A maximum of five percentage points will be added to your grade for excellent clicker participation. Make sure to register your iClickers,

instructions provided here:

<https://oit.colorado.edu/tutorial/cuclickers-set-iclicker-student-account>

TENTATIVE COURSE OUTLINE

Week	Dates	Content
1	Aug 22-26	<ul style="list-style-type: none">• Chapters: 1, 2• Due: R assignment 0, due Friday at 11:59pm• Due: Homework, Ch. 1, due Sun at 11:59pm
2	Aug 29 - Sept 2	<ul style="list-style-type: none">• Chapters: 12• R Day: Monday and Wednesday (Bring Laptop)• Due: Homework, Ch. 2,12, due Sun at 11:59pm
3	Sept 5-9	<ul style="list-style-type: none">• No Class Monday: Labor Day• Chapters: 13,3• Due: R assignment 1, due Friday at 11:59pm• Due: Homework, Ch. 13, due Sun at 11:59pm
4	Sept 12-16	<ul style="list-style-type: none">• Chapters: 3, Distributions Handout, Expectations Handout• Due: Homework, Ch. 3, due Sun at 11:59pm
5	Sept 19-23	<ul style="list-style-type: none">• Chapters: 8• R Day: Monday (Bring Laptop)• Due: R assignment 2, due Friday at 11:59pm• Due: Homework, Ch. 8, due Sun at 11:59pm
6	Sept 26 - 30	<ul style="list-style-type: none">• Chapters: 9 and Midterm Review• Midterm 1, Friday 9/30• Due: Homework, Ch. 9, due Sun at 11:59pm
7	Oct 3-7	<ul style="list-style-type: none">• Chapters: 15, 16• Due: Homework, Ch. 15-16, due Sun at 11:59pm
8	Oct 10-14	<ul style="list-style-type: none">• Chapters: 17• R Day: Monday (Bring Laptop)• Due: Homework, Ch. 17, due Sun at 11:59pm
9	Oct 17-21	<ul style="list-style-type: none">• Chapters: 18, 20• R Day: Monday (Bring Laptop)• Due: R assignment 3, due Friday at 11:59pm• Due: Homework, Ch. 18, due Sun at 11:59pm

10	Oct 24-28	<ul style="list-style-type: none"> • Chapters: 20, 21 • Due: Homework, Ch. 20-21, due Sun at 11:59pm
11	Oct 31 - Nov 4	<ul style="list-style-type: none"> • R Day: Monday (Bring Laptop) • Midterm Review • Midterm 2, Friday 11/4
12	Nov 7-11	<ul style="list-style-type: none"> • Chapters: 6,4 • Due: R assignment 4, due Friday at 11:59pm • Due: Homework, Ch. 6 due Sun at 11:59pm
13	Nov 14-18	<ul style="list-style-type: none"> • Chapters: 4,5 • Due: Homework, Ch. 4,5 due Sun at 11:59pm
14	Nov 21-25	<ul style="list-style-type: none"> • No Class: Thanksgiving Break
15	Nov 28 - Dec 2	<ul style="list-style-type: none"> • Chapters: 26 • R Day: Monday (Bring Laptop) • Due: R assignment 5, due Friday at 11:59pm • Due: Homework, Ch. 26, due Sun at 11:59pm
16	Dec 5-7	<ul style="list-style-type: none"> • Final Exam Review
	TBA	<ul style="list-style-type: none"> • Final Exam

UNIVERSITY POLICIES

- **Classroom Behavior:** Both students and faculty are responsible for maintaining an appropriate learning environment in all instructional settings, whether in person, remote or online. Those who fail to adhere to such behavioral standards may be subject to discipline. Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with race, color, national origin, sex, pregnancy, age, disability, creed, religion, sexual orientation, gender identity, gender expression, veteran status, political affiliation or political philosophy. For more information, see the policies on classroom behavior and the Student Conduct Conflict Resolution policies.
- **Requirements for COVID-19:** As a matter of public health and safety, all members of the CU Boulder community and all visitors to campus must follow university, department and building requirements and all public health orders in place to reduce the risk of spreading infectious disease. Students who fail to adhere to these requirements will be asked to leave class, and students who do not leave class when asked or who refuse to comply with these requirements will be referred to Student Conduct and Conflict Resolution. For more information, see the policy on classroom behavior and the Student Code of Conduct. If you require accommodation because a disability prevents you from

fulfilling these safety measures, please follow the steps in the “Accommodation for Disabilities” statement on this syllabus. If you feel ill and think you might have COVID-19, if you have tested positive for COVID-19, or if you are unvaccinated or partially vaccinated and have been in close contact with someone who has COVID-19, you should stay home and follow the further guidance of the Public Health Office (contacttracing@colorado.edu). If you are fully vaccinated and have been in close contact with someone who has COVID-19, you do not need to stay home; rather, you should self-monitor for symptoms and follow the further guidance of the Public Health Office (contacttracing@colorado.edu).

- **Accommodation for Disabilities:** If you qualify for accommodations because of a disability, please submit your accommodation letter from Disability Services to your faculty member in a timely manner so that your needs can be addressed. Disability Services determines accommodations based on documented disabilities in the academic environment. Information on requesting accommodations is located on the Disability Services website. Contact Disability Services at 303-492-8671 or dsinfo@colorado.edu for further assistance. If you have a temporary medical condition, see Temporary Medical Conditions on the Disability Services website.
- **Preferred Student Names and Pronouns:** CU Boulder recognizes that students’ legal information doesn’t always align with how they identify. Students may update their preferred names and pronouns via the student portal; those preferred names and pronouns are listed on instructors’ class rosters. In the absence of such updates, the name that appears on the class roster is the student’s legal name.
- **Honor Code:** All students enrolled in a University of Colorado Boulder course are responsible for knowing and adhering to the Honor Code academic integrity policy. Violations of the Honor Code may include, but are not limited to: plagiarism, cheating, fabrication, lying, bribery, threat, unauthorized access to academic materials, clicker fraud, submitting the same or similar work in more than one course without permission from all course instructors involved, and aiding academic dishonesty. All incidents of academic misconduct will be reported to the Honor Code (honor@colorado.edu); 303-492-5550). Students found responsible for violating the academic integrity policy will be subject to nonacademic sanctions from the Honor Code as well as academic sanctions from the faculty member. Additional information regarding the Honor Code academic integrity policy can be found on the Honor Code website.
- **Sexual Misconduct, Discrimination, Harassment and/or Related Retaliation:** CU Boulder is committed to fostering an inclusive and welcoming learning, working, and living environment. The university will not tolerate acts of sexual misconduct (harassment, exploitation, and assault), intimate partner violence (dating or domestic violence), stalking, or protected-class discrimination or harassment by or against members of our community. Individuals who believe they have been subject

to misconduct or retaliatory actions for reporting a concern should contact the Office of Institutional Equity and Compliance (OIEC) at 303-492-2127 or email cureport@colorado.edu. Information about university policies, reporting options, and the support resources can be found on the OIEC website. Please know that faculty and graduate instructors have a responsibility to inform OIEC when they are made aware of incidents of sexual misconduct, dating and domestic violence, stalking, discrimination, harassment and/or related retaliation, to ensure that individuals impacted receive information about their rights, support resources, and reporting options. To learn more about reporting and support options for a variety of concerns, visit Don't Ignore It.

- **Religious Holidays:** Campus policy regarding religious observances requires that faculty make every effort to deal reasonably and fairly with all students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance.