Course Syllabus
University of Colorado Boulder
Introduction to Statistics with Computer Application
Economics 3818-010
Fall 2025

Professor: Nicholas E. Flores
Office: Econ 107
Email: Nicholas.Flores@Colorado.edu

Lecture Classroom: Econ 105
Class Meeting Time: MWF 9:05 a.m. – 9:55 p.m.

Office Hours: Econ 107, MW 2:30 p.m. – 4:00 p.m. and by appointment
Zoom ID on Course Canvas Site

Teaching Assistant: Zehao Jing
Office: Econ 14
Office Hours: T 3 p.m. – 6 p.m.
Email: Zehao.Jing@colorado.edu

Recitation 011
Classroom: DUAN G131
Meeting Time: M 3:35 p.m. – 4:45 p.m.

Recitation 012
Classroom: Econ 205
Meeting Time: W 4:40 p.m. – 5:30 p.m.

Website
Canvas is our class website:

- Login using your University of Colorado Boulder identikey and password https://canvas.colorado.edu/
- Under Course List, click "ECON 3818: Introduction to Statistics"
- Note: all email correspondence will be through your CU Boulder email address. Do not use the Canvas mail or messages, it is not checked.

Course Overview
The purpose of this course is to introduce you to the principles of statistical reasoning and inference. To this end the ultimate goals of the course are for you to thoroughly understand the following concepts: describing data with graphs and numbers, basic probability rules, sampling distributions of test statistics, hypothesis testing, and confidence intervals across multiple settings covered in the course, and finally knowledge of simple regression. This foundational course is essential to your success in the study and long-run understanding of economics. CU economics 4000-level courses require

knowledge of basic statistical reasoning and understanding. Further our required econometrics courses build directly off of this course. Finally, this course helps you build a skill that has enormous potential financial return in the marketplace.

The course consists of five closely related parts. The first part of the course introduces ways to explore data using visual and numerical measures. You will learn about summary measures for single variables and we will consider relationships between variables. The second part of the course introduces you to basic probability theory, popular probability distributions, and mathematical expectation. The third part of the course introduces you to sampling distributions and their properties, properties of estimators, confidence intervals, and hypothesis testing. The fourth part of the course is all applied statistical inference including inference about a population mean, inference about differences in two population means, inference about a single proportion from a population, and inference about differences in two proportions. The fifth and final part of the course further explores correlation and simple regression analysis and then adds inference about simple regression.

Course Modality

This is an in-person course. You will be required to come to class and recitation. No part of this course is remote with the exception of occasional Zoom office hours. We are hoping the in-person experience will make for a richer learning experience for you.

Textbook

The Basic Practice of Statistics, 9th Edition, by David Moore, William Motz, and Michael Fligner. The course will use MacMillan Publishing's Achieve homework system that comes with an electronic version of the book embedded in the system. You will sign up for the Basic Practice of Statistics + Achieve System through Canvas. **Detailed instructions for signing up are provided on the course Canvas site.**

Class Technology

Achieve Learning System

The course will use the Macmillan Publishing, Achieve Learning system for Learning Curve, Homework, and Quiz assignments. **There are instructions to sign up for Achieve through Canvas found in the Getting Started Module**.

Clickers - The class and recitation sections will use clickers. Clicker responses are used both for monitoring attendance and measuring performance.

Handheld Calculator – You will need a handheld calculator to do calculations during in-class exams. You cannot use your phone or borrow your neighbor's calculator during exams. Graphing calculators such as the TI-83 or TI-84 are popular because they have a full array of statistical functions built in plus graphing capabilities. Graphing is a nice extra, but not required. The main thing you will need is a calculator with full statistical functions. You will need to be versed in using these calculators for exams and neither I nor the TA will be training you.

R Computer Applications – R is a free programming language that is available for Mac, Windows, and Unix operating systems. It is pre-installed on computers in most University computer labs and can be downloaded from the Internet. You will use the R Studio Interface to do R exercises. We will spend some of our class/recitation time working on these. R has good self-contained documentation in the basic R installation. On your first R exercise, you will get some basic training on how to install and do some basic operations in R. I will help you through the semester. An additional free resource is the book Modern R with the tidyverse by Bruno Rodgrigues:

https://b-rodrigues.github.io/modern_R/

This free ebook provides instruction on programming in R. But mainly we are going to implement the things we learn from the book in R.

Class Support/Help (Also found on Canvas)
(1) The primary help options for the course are the professor and teaching assistant who have regular office hours.

(2) The department offers a free drop-in tutoring lab. Information can be found by clicking here.

(3) There are private tutors that provide one-on-one help for a fee. The department keeps a list of potential tutors that can be found by clicking here.

Do not fall behind in this course. Students who keep up with all assignments almost always succeed in the course. Failing to keep up often results in failing the course. Do the required work and use the help available to you to in order to master the material. I want you to succeed in the course.

Course Topics (in order)
Module 0
- Introduction to R
- Chapter 0 Getting Started

Module 1
- Chapter 1 Picturing Distributions with Graphs
- Chapter 2 Describing Distributions with Numbers

Module 2
- Chapter 3 The Normal Distributions
- Chapter 4 Scatterplots and Correlation

Module 3
- Chapter 5 Regression
- Chapter 6 Two-Way Tables

Module 4
- Chapter 8 Sampling
- Chapter 9 Experiments

Module 5
- Chapter 12 Introducing Probability
- Chapter 13 General Rules of Probability

Module 6
- Chapter 14 Binomial Distributions
- Mathematical Expectation

Module 7
- Chapter 10 Data Ethics
- Chapter 15 Sampling Distributions

Module 8
- Chapter 16 Confidence Intervals: The Basics
- Chapter 17 Tests of Significance: The Basics

Module 9
- Chapter 18 Inference in Practice
- Chapter 20 Inference about a Population Mean

Module 10
- Chapter 21 Inference Comparing Two Means
- Chapter 22 Inference about a Population Proportion

Module 11
- Chapter 23 Inference Comparing Two Proportions
- Chapter 24 Inference about Variables: Part IV Review

Module 12
- Chapter 26 Inference for Regression

Prerequisites: Econ 2010 and Econ 2020 and either Econ 1088 or Math 1081 or Math 1300 or Math 1310 or APPM 1350 (all minimum grade C-). Restricted to students with 22-180 units completed.

Course Evaluation

Goal Setting Surveys	3%
Clicker	6%
Learning Curve	10%
Module Homework Exercises	15%
Module Quizzes	10%
R Exercises	10%
Exam 1	12%
Exam 2	12%
Exam 3	12%
Recitation	10%

The goal setting surveys are designed for you to reflect on what you initially want out of the course in the first survey and then you will revisit the goals after Exam 1 and after

Exam 2. If you complete the surveys you will get a perfect grade for 3% of the class. Deadlines for the survey are hard deadlines and so no points are awarded if you are late in doing them.

Clicker points encourage you to come to class. For each session you get 3 points for answering at least half of the clicker questions and then up to 1 point if you answer all questions correctly. If there are 10 questions, you get $1/10^{th}$ of a point for each correct answer. There is no mandatory attendance but you do not get any clicker points if you are not in not in class answering the questions.

Learning curves are designed for you to read the book and answer questions about the material ***before*** class. Learning curves must be completed by 9 a.m. on the assigned day. If you miss the learning curve you cannot make it up – period. The learning curves are very easy. You answer questions and once you reach a point threshold you get a perfect score. If you do each of the learning curve assignments, you will get a perfect score for 10% of the course. But you must get them done by 9 a.m. on the assigned day.

Module homework exercises and quizzes are done in the Achieve system. You can turn in assignments late for up to 10 days, but for each day late you incur a 10% penalty. Please do not contact me requesting extensions. The deadlines are posted well in advance. It is your responsibility to get these assignments completed on time.

There will be approximately twelve R assignments. Assignments are due on canvas at the specified time. The 10% per day penalty also applies to R assignments.

The exams are relatively low stakes, each exam being worth 12% of the grade. Look at the dates and look at your calendar. You need to be in class on these dates. There are no make-up exams.

Your TA runs the recitation and decides on points for evaluation.

Important Dates
August 22 – First Day of Class
September 1 – Labor Day No Class
September 26 – Exam 1
October 24 – Exam 2
November 24 – 28 – Fall and Thanksgiving Break
December 5 – Last Day of Class
December 10 – Exam 3, 7:30 – 10 p.m.

University Policies

CLASSROOM BEHAVIOR

Students and faculty are responsible for maintaining an appropriate learning environment in all instructional settings, whether in person, remote, or online. Failure 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 classroom behavior policy, the Student Code of Conduct, and the Office of Institutional Equity and Compliance.

Accommodation for Disabilities, Temporary Medical Conditions, and Medical Isolation

Disability Services determines accommodations based on documented disabilities in the academic environment. If you qualify for accommodations because of a disability, submit your accommodation letter from Disability Services to your faculty member in a timely manner so your needs can be addressed. Contact Disability Services at 303-492-8671 or dsinfo@colorado.edu for further assistance.

If you have a temporary medical condition or required medical isolation for which you require accommodation, contact your professor to ensure that you keep up the required work for the class. Also 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. Violations of the Honor Code may include but are not limited to: plagiarism (including use of paper writing services or technology [such as essay bots]), 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 Student Conduct & Conflict Resolution: honor@colorado.edu, 303-492-5550. Students found responsible for violating the Honor Code will be assigned resolution outcomes from the Student Conduct & Conflict Resolution as well as be subject to academic sanctions from the faculty member. Visit Honor Code for more information on the academic integrity policy.

Sexual Misconduct, Discrimination, Harassment and/or Related Retaliation

CU Boulder is committed to fostering an inclusive and welcoming learning, working, and living environment. University policy prohibits protected-class discrimination and harassment, sexual misconduct (harassment, exploitation, and assault), intimate partner violence (dating or domestic violence), stalking, and related retaliation by or against members of our community on- and off-campus. These behaviors harm individuals and our community. The Office of Institutional Equity and Compliance (OIEC) addresses these concerns, and individuals who believe they have been subjected to misconduct can contact OIEC at 303-492-2127 or email cureport@colorado.edu. Information about university policies, reporting options, and 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 related to these policies regardless of when or where something occurred. This is to ensure that individuals impacted receive an outreach from OIEC about their options for addressing a concern and the support resources available. To learn more about reporting and support resources for a variety of issues, 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. In this class, you should contact your professor to make arrangements to ensure you keep up with the class**.** See the campus policy regarding religious observances for full details.

Mental Health and Wellness

The University of Colorado Boulder is committed to the well-being of all students. If you are struggling with personal stressors, mental health or substance use concerns that are impacting academic or daily life, please contact Counseling and Psychiatric Services (CAPS) located in C4C or call (303) 492-2277, 24/7.

Free and unlimited telehealth is also available through Academic Live Care.
The Academic Live Care site also provides information about additional wellness services on campus that are available to students.