



University of Colorado Boulder
INTRODUCTION TO ECONOMETRICS
ECON 4818 SYLLABUS, FALL 2026

Instructor: Dr. Sara Avila

Email: sara.avila@colorado.edu

Zoom: <https://cuboulder.zoom.us/my/saraavila>

- Office Hours: Tuesdays and Thursdays 9 am -11:00 am using Zoom -Also by appointment

INSTRUCTOR BIO

I am an economics instructor with more than two decades of experience. My research interests are in the fields of environmental economics and more recently, in how to teach economics. I have worked on topics related to air quality, climate change, urban transportation, and biodiversity conservation. I am passionate about building understanding in a diverse environment. I am also an avid (but aging) runner, so when I am not injured, I run every day.

Term Start: August 31, 2026

Term End: December 4, 2026, with final exam ending on December 6, 2026.

COURSE 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 4818: Introduction to Econometrics"
- Note: all email correspondence will be through your CU Boulder email address.
 - Do not use the Canvas email or messages, it is not checked.

COURSE DESCRIPTION

This course provides an introduction to the theory and applications of modern econometrics. The course reviews hypothesis testing and mathematical expectations and then introduces the linear regression model.

This course is divided into five parts. The first part reinforces the fundamentals of mathematics and probability theory. The second part introduces simple and multiple regressions. The third part overviews the main assumptions of linear regression models with emphasis in unbiasedness, asymptotics, and heteroskedasticity. The fourth part explores variable transformations. Finally, students are expected to apply their knowledge in a Mini-Project.

This foundational course is essential to your success in the study of economics. The applications of the tools and skills learned in this course are to be applied to a myriad of areas: health, education, income distribution, sports management, urban planning, voting prediction, race issues, environmental conservation, climate change, just to name a few.

COURSE OBJECTIVES

By the end of the course, you should be able to:

1. Explain the assumptions of the simple and multiple linear regression model
2. Conduct econometric analysis of the linear regression model using statistical packages
3. Make and test inferences in the linear regression model
4. Formulate a novel but straightforward question and test it using real world data
5. Communicate the results of econometric analysis in a clear and professional way

COURSE PREREQUISITES

Requires prerequisite courses of ECON 3070 (Intermediate Microeconomic Theory) and ECON 3818 (Introduction to Statistics with Computer Applications) or STAT 4520 or APPM 4570 or CHEN 3010 or CSCI 3022 or CVEN 3227 or MATH 4520 (all minimum grade C-).

REQUIRED COURSE MATERIALS

Textbook (required): Introductory Econometrics: A modern approach, 8th Edition with Mindtap, by Jeffrey M. Wooldridge, Cengage Publishing, ISBN 9780357900161

Students are required to have access to Mindtap (which includes an eBook) at a minimum and can optionally choose to purchase a paper text. Mindtap is where you will read your textbook and complete some graded assignments.

Day 1 Digital Access: The CU Book Store and the publisher coordinated to deliver those materials through a program called “Day 1 Digital Access”, which will appear on your tuition and fee bill as “Day 1 Digital Access”.

What does this mean for you?

1. You will receive access to all your course materials, digitally, on the first day of classes, through the course Canvas page.
2. You will see a “Day 1 Digital Access” charge on your tuition and fee bill for about: **\$117.00 or a bit more**
 - This is a guaranteed lowest price, discounted by the publisher, and not available outside this course
3. You have the option to opt out. This means: you won’t pay for anything, but you lose all access to the course materials.
 - You can opt out by: using a link in a reminder email you will receive with the subject heading “Day 1 Digital Access”.
 - You must opt out no later than September 8, otherwise you will be charged for the materials.
4. Please keep in mind that “opting out” means that your access to these materials will be turned OFF, and you will have no way to complete assignments.

If you are taking in person courses and your other courses require expensive texts, you might want to consider [CU Book Access which costs: \\$269 + tax](#). **This may not be the best option for you if you take courses online or you only take a few courses.**

You will access Mindtap through our course website, Canvas. For options and support see:
https://www.cengage.com/coursepages/UC_Mindtap

Course Website: <https://canvas.colorado.edu/> (Canvas) Grades and any further additional readings will be posted on Canvas. Please check Canvas frequently for any relevant notifications/changes that may occur throughout the course.

Statistical package: 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 Rodrigues:

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

This free e-book provides instruction on programming in R. But mainly we are going to implement the things we learn from the book in R. You are welcome to use other programming packages if you are proficient in them, but direct support will be provided only in R

INSTRUCTIONAL METHODOLOGY AND DELIVERY

This course is delivered via distance education format using the CU Canvas system. This format will use a combination of readings, online discussion, and other web-based resources. You will interact with the instructor and other students using the communication functions provided by Canvas. You will submit assignments in accordance with the course outline using Canvas.

COURSE PRESENTATION AND PROCEDURES

There will be 13 modules corresponding to the 13 weeks of the course (1 module per week). You should proceed through one module per week, which will be comprised of readings from the course texts, supplemental class notes, graded discussion questions, homework and quizzes, exams, and various outside sources of information such as additional readings and video content, among other content.

COURSE OUTLINE

Review the separate weekly class schedule found on Canvas under “Syllabus” link.

CLASS PARTICIPATION

This course is designed to engage you mostly through exercises, however, there will be 3 to 4 class discussions on the topics covered in the course materials. It is important that you participate in class

discussions to facilitate learning by other students and gain exposure to different viewpoints of other students in the class.

EVALUATION AND GRADING

Course grades will be determined by the completion of assignments, exams, and discussions, as shown below:

	Points per assignment	Frequency	Grade Points	Grade Percentage
Exercises*	20	13	260	26%
Discussion Postings	25	4	100	10%
Quizzes*	20	10	200	20%
Final Project	150	1	150	15%
Proctored Midterm Exam	140	1	140	14%
Proctored Cumulative Final Exam	150	1	150	15%
TOTAL			1000	100%

Keep a copy of all work created for the course, including work submitted through Canvas.

*The lowest grade of these assignments will be dropped. See below.

COURSE GRADING CRITERIA

Grade	Percentage Grade	Equivalent Points	Indicates
A	93-100	930 – 1000	Excellent
A-	90-92.99	900 – 929	
B+	87-89.99	870 – 899	
B	83-86.99	830 – 869	Above Average
B-	80-82.99	800 – 829	
C+	77-79.99	770 – 799	
C	73-77.99	730 – 769	Average
C-	70-72.99	700 – 729	
D+	67-69.99	670 – 699	
D	63-67.99	630 – 669	Below Average
D-	60-62.99	600 – 629	
F	0-59	600 or lower	Failure

There is +/- grading in this class.

ASSIGNMENTS

Exercises (260 POINTS) – There will be fourteen 20-point exercises. The first three exercises do not require the use of a statistical package. Exercises in Modules 4-12 will be Computer Exercises through Mindtap. They will be a combination of multiple choice, numeric, and short answer/fill in the blank. They can be done in R (although you can use any statistical package to complete them) and will be open book and open notes. Except for the first three modules, computer exercises will be completed in Mindtap. I will drop the lowest grade.

Quizzes (200 Points) – There will be eleven 20-point Proctored Quizzes. The format will be multiple choice and/or fill in the blank. I will drop the lowest grade.

Discussion postings (100 POINTS) – There will be four 25-point discussion postings. The discussion will occur asynchronously; I will post a discussion question and you will respond to the questions at your convenience prior to the due date. Discussions are open book and open note. Discussions will be submitted through Canvas. The initial discussion post is due Thursdays and the discussion response is due Sundays.

Final-Project (150 POINTS) – There will be one individual final project. This assignment will be 3 pages in length, single spaced, Times New Roman 12 point font, 1" margins. This writing assignment as well as a 5-minute video, will be submitted through Canvas. You will investigate your own hypothesis. This paper will encompass most of what we have learned in the class.

Exams (290 POINTS) – There will be two (2) exams. The proctored Midterm Exam is worth 140 points and the proctored cumulative Final Exam is worth 150 points. The format of the exam will be multiple choice and calculations and will be closed book. The exams are completed on Canvas or Mindtap in a proctored setting.

This course requires proctored examinations. Exams are proctored which will require planning on your part. Proctors are individuals who administer the exam process following the guidelines provided by University of Colorado Boulder to ensure academic integrity.

Who can be my proctor?

If you are in Boulder or nearby, you can take your exam:

1. At the Department of Economics. There is no cost for using this proctor. This option is only on selected days during the exam period.
2. At the University Testing Center on-campus in Boulder, CO. There may be a cost for using the testing center. This option is only available M-F during regular business hours.
3. With Proctorio. Online proctoring is a service that uses a webcam and microphone to ensure academic integrity. To use this service, you must have access to a computer with a webcam and a microphone. There will be a cost for using the online proctoring services. Please review [Proctorio Minimum System Requirements](#) to ensure you have the correct hardware and software to use this tool.

If you are outside of Boulder, you can take your exam:

1. At an accredited college or university testing center in your town or nearby. There may be a cost for using this testing center.
 2. With Proctorio or a comparable online proctoring service as determined by your instructor. Online proctoring is a service that uses a webcam and microphone to ensure academic integrity. To use this service, you must have access to a computer with a webcam and a microphone. There will be a cost for using the online proctoring services.
- Note that you are required to have a computer with a functioning webcam and microphone or have access to a computer with a functioning webcam microphone to complete your exams.
 - See Canvas for detailed information about proctoring. If you are in a rural area or on a military base, you may need approval process.

EXTRA CREDIT

There MAY be 30 points of extra credit available (= 3% of the course grade).

- Extra credit may be available during the semester for completing certain activities, such as listening and commenting on a podcast or solving practice exams. These extra credit opportunities will be determined by the instructor and announced on Canvas.

COMMUNICATION

I am nice and I want you to succeed. Do not hesitate to contact me about anything.

E-mail: sara.avila@colorado.edu

- **Please always remind me of what course you are taking.** I will remember your story and your face, but I forget which course you are taking.
- I will respond to email within 12-18 hours, but usually within 2-4 hours. I always respond to emails. If you have not had a response within 18 hours, I did not receive the email. Be sure to use your CU email address because sometimes Gmail and yahoo email accounts are filtered into my spam folder.

Additional ways to contact Dr. Avila:

- Online Office Hours: Wednesdays and Thursdays 9 am -11:30 am using Zoom (<https://cuboulder.zoom.us/my/saraavila>)
- Announcements: Please check the “announcements” section on Canvas.
- Use the “Place to Talk” discussion space

TUTORING

The Economics Department provides a free drop-in tutorial office which offers assistance on all core courses in the major, and occasionally on other undergraduate courses in the Department. Its website is <https://www.colorado.edu/economics/node/513/attachment>.

The Economics Department maintains a list of tutors who are available for private hire. Its website is <https://www.colorado.edu/economics/node/515/attachment>.

TECHNOLOGY SUPPORT

CU Boulder uses Canvas.

Here is the list of recommended system requirements: [Canvas Computer Specifications Page](#)

Here is the detailed list of internet browsers in Windows, MacOS, iOS and Android: [Supported Browsers Page](#)

Technical Support

- Canvas technical support. If you are experiencing issues with Canvas please contact:
 - CU Boulder's Help desk at 303-735-4357 (5-HELP) or help@colorado.edu. 5-Help will answer your call: Monday through Friday from 7:30 a.m. to 7:00 p.m., Saturday and Sunday from noon to 6:00 p.m., Closed during [University Holidays](#)
 - On your computer, click the “help” (?) icon on the left side of Canvas, once logged in within the Canvas App, you can search the Canvas support guides, Report a Problem or chat with Canvas Support 24 hours a day, 7 days a week.
- Connect tech support:
 - <http://mpss.mhhe.com/> or <http://bit.ly/StudentRegistration>

COURSE POLICIES.

Course Withdrawal Policy: Any student who wishes to withdraw from the course must submit a request directly to [Continuing Education](#). For complete information, please visit their website at <https://ce.colorado.edu/resources/topics/dates-and-deadlines-general-info/>

POLICY ON DUE DATES

Each lecture you will complete Exercises, Homework, R Exercises and sometimes discussion posts. It is your responsibility to turn in each assignment on the required date. Exercises or discussion postings turned in after the scheduled due date will be lowered to the next letter grade for each 12-hour period late. The exceptions that may be considered is due to sickness, university excused function, or circumstances beyond the students' control. The instructor reserves the sole right to determine what grounds constitutes a reasonable excuse for missing or submitting a late work assignment, the right to require the student to submit proper verification of such excuse.

AI POLICY

There are Two Types of Assignments in This Course:

1. **Proctored Quizzes and Exams (NO AI USE)**– You cannot use AI for Proctored Quizzes or Exams
2. **Exercises and Discussions (LIMITED AI USE)**- You should always start these assignments on your own. However, if you get stuck, you may use AI as a guide for solving doubts when coding in R or understanding a step in the problem sets. Be aware that the tutoring from AI may be inaccurate, incomplete, or wrong. If you use AI, be transparent; it's good practice for you and everyone
 - Write the following note at the end of the exercise or in the comment section of the assignment: “Used ChatGP, to see why I got an Error in my Code.”
 - Keep your prompts organized. You can create a document, a note, or even a text on your phone, but keep those prompts organized so you may use them again and on different platforms.

In all cases, your responsibility is to:

- Check the assignment instructions. Most of the time, the professor explains how AI can be used.
- Take responsibility. AI doesn't excuse errors or misinformation—your name is on the final work.
- Act with integrity. Undisclosed AI use may result in academic misconduct procedures.

We'll follow best practices for fairness, transparency, and academic integrity—guided by CU Boulder's [AI syllabus guidance](#) and the Honor Code.

NETIQUETTE

All students should be aware that their behavior impacts other people, even online. I hope that we will all strive to develop a positive and supportive environment and will be courteous to fellow students and your instructor. Due to the nature of the online environment, there are some things to remember.

1. Always think before you write. In other words, without the use of nonverbals with your message, your message can be misinterpreted. So please think twice before you hit submit.
2. Keep it relevant. There are places to chat and post for fun everyday stuff. Do not stray from the discussion in the assigned questions.
3. Never use all caps. This is the equivalent of yelling in the online world. It is not fun to read. Only use capital letters when appropriate.
4. Make sure that you are using appropriate grammar and structure. In other words, do not use “R U” instead of “are you”. There are people in the class that may not understand this type of abbreviation, not to mention it does nothing to help expand your writing and vocabulary skills. Emoticons are fine as long as they are appropriate. A smile 😊 is welcome, anything offensive is not.
5. Treat people the same as you would face-to-face (or kinder). It might be easy to hide behind the computer. In some cases, it empowers people to treat others in ways they would not in person. Remember there is a person behind the name on your screen. Treat all with dignity and respect and you can expect that in return.

Website: <http://www.albion.com/netiquette/corerules.html>

Compiled by Melissa Landin, Instructor, Dept. of Communication, Inver Hills Community College, mlandin@inverhills.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.

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, marital 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](#)

HONOR CODE

"On my honor, as a University of Colorado Boulder student
I have neither given nor received unauthorized assistance."

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. Understanding the course's syllabus is a vital part in adhering to the Honor Code.

All incidents of academic misconduct will be reported to Student Conduct & Conflict Resolution: StudentConduct@colorado.edu. 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, HARRASSMENT 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 abuse (dating or domestic violence), stalking, and related retaliation by or against members of our community on- and off-campus. The Office of Institutional Equity and Compliance (OIEC) addresses these concerns, and individuals who 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](#) including confidential services can be found on the [OIEC website](#).

Please know that faculty and graduate instructors must 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 outreach from OIEC about resolution options and support resources. To learn more about reporting and support for a variety of concerns, visit the [Don't Ignore It page](#).

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. See the [campus policy regarding religious observances](#) for full details. Because of the flexibility of timing of completion of assignments in this class, you must contact the instructor in at least two weeks in advance if you anticipate a religious holiday may impact your completion of coursework.

For more information on the religious holidays most commonly observed by CU Boulder students consult the [online interfaith calendar](#).

STUDENT 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.

REQUIREMENTS FOR INFECTIOUS DISEASES

Members of the CU Boulder community and visitors to campus must follow university, department, and building health and safety requirements and all public health orders to reduce the risk of spreading infectious diseases.

The CU Boulder campus is currently mask optional. However, if masks are again required in classrooms, students who fail to adhere to masking requirements will be asked to leave the classroom. Since our course is online we do not face this risk, except in the case of in-person proctoring. Students who refuse to comply with these requirements will be referred to Student Conduct & Conflict Resolution. Students who require accommodation because a disability prevents them from fulfilling safety measures related to infectious disease will be asked to follow the steps in the "Accommodation for Disabilities" statement on this syllabus.

For those who feel ill and think you might have COVID-19 or if you have tested positive for COVID-19, please stay home and follow the [further guidance of the Public Health Office](#). For those who have been

in close contact with someone who has COVID-19 but do not have any symptoms and have not tested positive for COVID-19, you do not need to stay home.

COURSE WITHDRAWAL POLICY

Any student who wishes to withdraw from the course must do so by September 7. For complete information, please visit <https://ce.colorado.edu/resources/topics/dates-and-deadlines-general-info/>

ACCOMMODATION FOR DISABILITIES, TEMPORARY MEDICAL CONDITIONS, AND MEDICAL ISOLATION

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.

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.

ADDITIONAL SUPPORT SERVICES

A variety of instructional support services, such as writing center, guidance on personal or educational issues, tutoring questions and library resources are available to the students. For more information about their services, visit their websites linked under modules on Canvas.



Introduction to Econometrics, ECON 4818, FALL 2026 with Avila

Module (start date)	Chapter Number and Topic	Graded Assignments	Due Date by 11:59pm MST/MDT
	Pre-class preparation	Introduce yourself Pre-class assignment	Monday 8/31 Monday 8/31
1 (8/31)	Appendix B: Fundamentals of Probability	Module 1 Exercise Module 1 Quiz	Thursday 9/3 Sunday 9/6
2 (9/8)	Appendix C: Fundamentals of Mathematical Statistics	Module 2 Exercise Module 2 Quiz	Thursday 9/10 Sunday 9/13
3 (9/14)	1 What is Econometrics	Module 3 Exercise Module 3 Quiz	Thursday 9/17 Sunday 9/20
4 (9/21)	2 The Simple Regression Model	Module 4 Exercise Discussion post Module 4 Quiz Discussion comment	Thursday 9/24 Thursday 9/24 Sunday 9/27 Sunday 9/27
5 (9/28)	3 Multiple Regression Estimation	Module 5 Exercise Module 5 Quiz	Thursday 10/1 Sunday 10/4
6 (10/5)	4 Multiple Regression Analysis -Thursday is reading day	Module 6 Exercise 1 Module 6 Exercise 2 Module 6 Quiz	Friday 10/9 Friday 10/9 Sunday 10/11
7 (10/12)	You may take the proctored midterm exam the day of your choosing Thursday through Sunday.	Proctored Midterm Exam	Friday 10/16- Sunday 10/18
8 (10/19)	5 Multiple Regression Analysis: Asymptotics	Module 8 Exercise Discussion post Module 8 Quiz Discussion comment	Thursday 10/22 Thursday 10/22 Sunday 10/25 Sunday 10/25
9 (10/26)	6 Multiple Regression Analysis: Further Issues	Module 9 Exercise 1 Module 9 Exercise 2 Module 9 Quiz	Thursday 10/29 Thursday 10/29 Sunday 11/1
10 (11/2)	7 Multiple Regression Analysis: Analysis with Qualitative Variables	Module 10 Exercise 1 Module 10 Exercise 2 Module 10 Quiz	Thursday 11/5 Thursday 11/5 Sunday 11/8
11 (11/9)	8 Heteroskedasticity	Module 11 Exercise 1 Module 11 Exercise 2 Module 11 Quiz	Thursday 11/12 Thursday 11/12 Sunday 11/15
12 (11/16)	Semester Mini Project	Discussion Post Discussion Comment Project Due	Thursday 11/19 Sunday 11/22 Sunday 11/22
13 (11/30)	You may take the proctored cumulative final exam the day of your choosing Thursday through Sunday	Proctored Final Exam	Friday 12/4- Sunday 12/6