Instructor: Dr. Sara Avila

Email: sara.avila@colorado.edu

Voice:

Additional ways to contact Dr. Avila:
- Office Hours: Wednesdays and Thursdays 10 am -12:15 pm using Canvas Chat or Zoom

INSTRUCTOR BIO
I am an economics instructor with almost two decades of experience teaching in public and private universities. My research interests are in the fields of environmental and urban 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 always learning about better methods to communicate and teach.
I am also an avid runner and have a deep affection for the meals that my husband cooks.

Term Start: Aug 31, 2020
Term End: Dec 14, 2020

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. This course begins by reviewing and extending the statistical material covered in Econ 3818. Following this, students are guided through the principals of regression analysis starting with the simple regression model. We introduce estimation, inference and specification in the lineal regression.

COURSE OBJECTIVES

By the end of the course you should be able to:
1. Explain the assumptions of the simple linear regression model
2. Conduct econometric analysis of the simple linear regression model using statistical packages
3. Explain the assumptions of the multiple linear regression model

4. Conduct econometric analysis of the multiple linear regression model using statistical packages
5. Make and test inferences using the simple and multiple linear regression model
6. Discuss Heteroskedasticity and explain how to correct for it
7. Formulate a novel but straightforward question and test it using real world data
8. 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, 7th Edition with Mindtap, by Jeffrey M. Wooldridge, Cengage Publishing, ISBN 978-1-337-55886-0.

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. 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: 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 in R

SUPPLEMENTAL MATERIAL

We might need you to read journal articles that will be provided by the instructor in the Canvas System, by links to websites or via the CU Library.

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 14 modules corresponding to the 14 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, homeworks 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	15	14	210	21%
Discussion Postings	25	4	100	10%
Homework*	27	10	270	27%
Mini Project	120	1	120	12%
Proctored Midterm Exam	100	1	100	10%
Proctored Cumulative Final Exam	200	1	200	20%
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 (210 POINTS) – There will be fourteen 15-point exercises. Modules 4-13 will be Computer Exercises through Mindtap. They will be a combination of multiple choice, numeric, and short answer/fill in the blank. They should be done in R (although you can use any statistical package to complete them) and will be open book open notes. Except for the first three modules, computer exercises will be completed in Mindtap.

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. See the class schedule for due dates of posts and comments. Discussions are open book and open note. Discussions will be submitted through Canvas. The initial discussion post is due earlier in the module and the discussion response is due later in the module.

Homework assignments (270 Points) – There will be eleven 27-point Homework assignments. The format will be multiple choice and/or fill in the blank and will be open book, open notes. They may be quiz format (1 attempt and you're done) or you may have 3 attempts at each late-module question and your score is the average. Homework can be completed in Mindtap. I will drop the lowest grade.

Mini-Project (120 POINTS) – There will be one individual mini project. This assignment will be 3 pages in length (2 pages of content and 1 page of resources), single spaced, Times New Roman 12 point font, 1"

margins. This writing assignment as well as preliminary one-page proposal will be submitted through Canvas. You will investigate your own hypothesis. This paper will encompass most of what we have learned in the class. Instructions will be detailed and will be released after the midterm

Exams (300 POINTS) – There will be two (2) exams. The proctored midterm exam is worth 100 points and the proctored cumulative final exam is worth 200 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. The Department of Economics at the University of Colorado Boulder requires students to use the online proctoring tool, *Proctorio*, for their proctored exams. *Proctorio* allows students to complete an assessment at a remote location, such as their home, while helping to ensure the integrity of the exam. There is no cost to use this tool.
- Please review Proctorio Minimum System Requirements to ensure you have the correct hardware and software to use this tool.
- 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

Extra Credit Practice Exams (0 Points) – There may be two (2) 20-point extra credit practice exams (one associated with the midterm and the other with the final). The format of the exam will be multiple choice/problems and are open book open notes. The exams are completed on Canvas or Mindtap and are open book open notes.

Extra Credit Problem Sets (0 Points) – There **may be** two (2) 20-point extra credit problem sets. The format of the problem sets will be short answers/problems and will be open book and open notes. Problem sets will be submitted through Canvas and are due on Wednesdays.

COMMUNICATION

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

E-mail

Instructor **sara.avila@colorado.edu**

- All e-mail sent to me should contain the following: Course Name and Number (i.e., ECON 4818. I have 100 students in three different courses, so it takes me a while to know which course you are taking), your name, short description of your question. I will respond to email within 12-18 hours, but usually within 2-4 hours. I always respond to email. 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.

Mobile:

- This is my cell phone number. Call or text anytime between 8am – 9pm MTN. I sometimes have my phone turned off during the middle of the day but leave a message when it is a good time to get a hold of you and I will call you back.

Additional ways to contact Dr. Avila:
- Online Office Hours: Wednesdays 11 am -12:30 pm and Thursdays 10 am -12 pm using Canvas Chat or Zoom
- On campus Office: Not available while COVID-19 guidelines are in place.
- General Course Announcements: Please check the "announcements" section on Canvas.

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 a series of critical thinking questions that reflect material from the various delivery formats and required readings. 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.

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, I don't want to see anyone writing "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. In other words, it is 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.
6. Respect the time of others. This class is going to require you to work in groups. Learn to respect the time of others in your group and your experience will be much better. Always remember that you are not the only person with a busy schedule, be flexible. Do not procrastinate! You may be one that works best with the pressures of the deadline looming on you, but others may not be that way. The same is true for the reverse. The key to a successful group is organization, communication and a willingness to do what it takes to get it done.

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

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

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 Code of Conduct.

REQUIREMENTS FOR COVID-19

As a matter of public health and safety due to the pandemic, all members of the CU Boulder community and all visitors to campus must follow university, department and building requirements, and public health orders in place to reduce the risk of spreading infectious disease. This class is conducted entirely online. However, if you need to come to campus you will need to follow the required safety measures.

Required safety measures at CU Boulder include:

- maintain 6-foot distancing when possible,
- wear a face covering in public indoor spaces and outdoors while on campus consistent with state and county health orders,
- clean local work area,
- practice hand hygiene,
- follow public health orders, and
- if sick and you live off campus, do not come onto campus (unless instructed by a CU Healthcare professional), or if you live on-campus, please alert CU Boulder Medical Services.

Students who fail to adhere to these requirements may be asked to leave campus, and students who do not leave the campus when asked or who refuse to comply with these requirements will be referred to Student Conduct and Conflict Resolution. For more information, see the policies on COVID-19 Health and Safety and classroom behavior and the Student Code of Conduct. If you require accommodation because a disability prevents you from fulfilling these safety measures, please see the "Accommodation for Disabilities" statement on this syllabus.

Before returning to campus, all students must complete the COVID-19 Student Health and Expectations Course. If you need to come to campus, that day, students are required to complete a Daily Health Form.

Students who have tested positive for COVID-19, have symptoms of COVID-19, or have had close contact with someone who has tested positive for or had symptoms of COVID-19 must stay home and complete the Health Questionnaire and Illness Reporting Form remotely.

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 STUDENTS 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 policy may include: 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 who are 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 at the Honor Code Office website.

SEXUAL MISCONDUCT, DISCRIMINATION, HARASSMENT AND/OR RELATED RETALIATION

The University of Colorado Boulder (CU Boulder) is committed to fostering a positive and welcoming learning, working, and living environment. CU Boulder will not tolerate acts of sexual misconduct intimate partner abuse (including dating or domestic violence), stalking, protected-class discrimination or harassment by 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 cureport@colorado.edu. Information about the OIEC, university policies, anonymous reporting, and the campus resources can be found on the OIEC website.

Please know that faculty and instructors have a responsibility to inform OIEC when made aware of incidents of sexual misconduct, discrimination, harassment and/or related retaliation, to ensure that individuals impacted receive information about options for reporting and support resources.

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. 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.

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/

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 2020, Avila, University of Colorado Boulder

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