

Economics 4848

Applied Econometrics

Spring 2024

Email: jennifer.klein@colorado.edu Office Hours: T/Th 11:30-12:30 in Econ 04A Mondays 12-2pm via Zoom Website: Canvas	TA: Office Hours: Email:
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Course Description

Applied Econometrics provides an overview of econometric techniques commonly used in applied research in microeconomics. Methods and topics covered in this course will help students develop a deeper understanding of econometrics as well as learn to use STATA, a statistical software package commonly used in economics. Learning to use STATA will take a significant amount of time and effort but will be extremely valuable as it is much more powerful than what you can do in Excel, EViews, etc. Students will apply the econometric models using data from the US Census Bureau and the Bureau of Labor Statistics. In addition, students will be able to apply these skills to a research topic of their choosing. Typically, each week we will discuss the theory for the current topic and then spend some time working with data to apply the theory in STATA.

This class requires previous completion of Econ 3070, Intermediate Micro, and Econ 3818, Intro to Statistics, or the equivalent.

Course Materials

There is no required text but you may find the following resources helpful:

- Introductory Econometrics: A Modern Approach by Jeffery M. Wooldridge
- Using Econometrics: A Practical Guide by A.H. Studenmund

Software: We will be learning to use a statistical software program called STATA in class. For all assignments, projects, and exams you will be required to complete all analysis using STATA.

Students can receive a discount on the software through the University's GradPlan. Information is available at: <https://www.stata.com/order/new/edu/profplus/student-pricing/>. I would suggest Stata/BE license which is \$48 for 6 months.

Grade Breakdown

Grades for this course will be based on the following criteria:

- Class Participation (5% total)
- Stata Practice Assignments (5% total)
- Group data project (20%)
- 2 Midterm Exams (20% each)
- Final Exam (30%)

Final grades will be determined by your cumulative performance at the end of the semester, and this may or may not correspond to the typical ten-point grading scale (A's are 90-100, B's are 80-89, etc.)

Class Participation (5% total): We will be using CUClickers to facilitate practice questions and attendance in class. There will be one point for each question asked during class, graded for completion, not correctness. Students not in attendance or not answering any questions receive a 0 for the day, no exceptions. You can answer the questions in the CU Clicker app on your phone. An account is free through the university. Four days of attendance are dropped.

Stata Practice Assignments (5% total): One assignment is due the week before each exam. These will be completed on Canvas. Each has a 10% grade penalty each day if submitted late, and they will not be accepted once the assignment closes and the answers are posted. While you may work with a classmate on your homework, you each must submit your own assignment. In addition, your exams will be completed individually. Therefore, it is in your best interest to ensure you fully understand the material.

Midterm Exams (20% each): Midterm exams will be held on **February 20** and **March 19**. The exams will be similar to the Stata assignments and our in-class work in that you will be given some data to analyze with accompanying questions and a few theory based questions. Exams will be taken on Canvas. Exams may not be taken early/late and no make ups are given. If you must miss a midterm exam due to an emergency the weight of the midterm will automatically be divided between the other midterm and final exam. Exam scores will not be dropped due to poor performance or lack of preparation. You cannot miss both midterm exams.

Final Exam (30%): The final exam is **Saturday, May 4th at 1:30pm**. This exam cannot be skipped or taken at another time so plan accordingly.

Data Project and Paper (20%): Students will work in groups of 4-5 on a data analysis project applying what you've learned in the course. Your written project is due on **Wednesday, May 1st**. You should start thinking about your topic as soon as possible at the beginning of the semester. Your project should pose a testable economic question that can be answered using one of the techniques we discuss in applied econometrics and using individual level data.

A sample outline of what to include in your project: Introduce your research question and why it is an important topic to study, citing any relevant sources. Describe the data and empirical technique(s) you use. Conduct one or more types of empirical analysis on your data using techniques from the course. Discuss and interpret your empirical findings.

As part of your grade for the project, your chosen research question will be due on **Feb 23**, a project proposal will be due on **Mar 8**, your cleaned data set will be due on **Apr 2**, and your preliminary analysis will be due on **Apr 15**. Individual meetings will be scheduled the week of April 15-19, in lieu of regular class. Due dates for these portions of your project appear in blue in the schedule.

Your overall grade for the final project will be determined as follows: Research Question (5 points), Project Proposal (15 points), Data set submission (10 points), Preliminary Data Analysis (15 points), Final Paper (30 points), Corrections to Assignments (10 points), Collaboration Grade (15 points).

Additional 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](#).

Requirements for Infectious Disease

Members of the CU Boulder community and visitors to campus must follow university, department, and building health and safety requirements and all applicable campus policies and public health guidelines to reduce the risk of spreading infectious diseases. If public health conditions require, the university may also invoke related requirements for student conduct and disability accommodation that will apply to this class.

If you feel ill and think you might have COVID-19 or if you have tested positive for COVID-19, please stay home and follow the [guidance of the Centers for Disease Control and Prevention \(CDC\) for isolation and testing](#). If you 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 but should follow the [guidance of the CDC for masking and testing](#).

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. If you have a required medical isolation for which you will miss class, you do not need to alert me, every student will automatically have 4 days of attendance (2 weeks of class) dropped.

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 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 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.

Mental Health and Wellness

CU 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.

Attendance

Attendance is a necessity in this course. It is where I can guide you in learning STATA and completing a research project, and you can get feedback on where improvement is needed. In-line with department policy, if a student does not attend class for the first three class periods he/she/they will be administratively dropped from the course to make room for others on the waitlist.

Tentative Class Schedule

	Topic	Due Dates
Week 1 January 16 - 20	Course Information Stats Review	None
Week 2 January 21 - 27	Introduction to Stata Creating Variables	None
Week 3 January 28 – February 3	Creating Variables Data Exploration	None
Week 4 February 4 - 10	Bivariate Regression Distribution of Beta-hat	None
Week 5 February 11 - 17	Hypothesis Testing Goodness of Fit	Stata Practice #1 on 2/16
Week 6 February 18 - 24	Tuesday, Feb 20: Exam 1 Thursday, Feb 22: Multivariate Regression & Data Project	Research Question on 2/23
Week 7 February 25 – March 2	Non-linear Models	None
Week 8 March 3 - 9	Categorical Variables in Regressions	Project Proposal on 3/8
Week 9 March 10 - 16	Limited Dependent Variables	Stata Practice #2 on 3/15
Week 10 March 17 - 23	Tuesday, March 19: Exam 2 Tuesday, Mar 21: ACS/CPS tutorial	None
Week 11 March 24 – 30	No Class: Fall Break	None
Week 12 March 31 -April 6	Project Data Set Omitted Variable Bias	Project Data Set on 4/2
Week 13 April 7 - 13	Multicollinearity Heteroskedasticity	None
Week 14 April 14 - 20	Individual Project Meetings	Preliminary Project Analysis on 4/15
Week 15 April 21 - 27	Panel Data	Stata Practice #3 on 4/26
Week 16 April 28 – May 4	Time Series Data Serial Correlation Saturday, May 4 at 1:30pm: Final Exam	Final Paper on 5/1