Economics 4848
Applied Econometrics
Spring 2023

Email: jennifer.klein@colorado.edu Office Hours: T/Th 11am-noon in Econ 04B Fridays 1-3pm via Zoom Website: Canvas	TA: Office Hours: Email:

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: http://www.stata.com/order/new/edu/gradplans/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 90-10, 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 21 and March 21. 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 Tuesday, May 9th 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 Thursday, May 4th. 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 24, a project proposal will be due on Mar 10, your cleaned data set will be due on Apr 4, and your preliminary analysis will be due on Apr 17. Individual meetings will be scheduled the week of April 17-21, 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

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 classroom behavior policy, the Student Code of Conduct, and the Office of Institutional Equity and Compliance.

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. CU Boulder currently requires COVID-19 vaccination and boosters for all faculty, staff and students. Students, faculty and staff must upload proof of vaccination and boosters or file for an exemption based on medical, ethical or moral grounds through the MyCUHealth portal.

The CU Boulder campus is currently mask-optional. However, if public health conditions change and masks are again required in classrooms, students who fail to adhere to masking 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).

Disability Accommodations

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. See the campus policy regarding religious observances for full details.

Attendance
Attendance is an absolute necessity in this course. It is where I can help guide you in learning STATA and completing a research project, and you can get feedback on where improvement is needed. Students are expected to be in attendance on time for every class, as it may be difficult for you to make up the material and fully understand programming in STATA otherwise. 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 15 - 21	Course Information Stats Review	None
Week 2 January 22 - 28	Introduction to Stata Creating Variables	None
Week 3 January 29 – February 4	Creating Variables Data Exploration	None
Week 4 February 5 - 11	Bivariate Regression Distribution of Beta-hat	None
Week 5 February 12 - 18	Hypothesis Testing Goodness of Fit	Stata Practice #1 on 2/17
Week 6 February 19 - 25	**Tuesday, Feb 21: Exam 1** Thursday, Feb 23: Multivariate Regression & Data Project	Research Question on 2/24
Week 7 February 26 – March 4	Non-linear Models	None
Week 8 March 5 - 11	Categorical Variables in Regressions	Project Proposal on 3/10
Week 9 March 12 - 18	Limited Dependent Variables	Stata Practice #2 on 3/17
Week 10 March 19 - 25	**Tuesday, March 21: Exam 2** Tuesday, Mar 23: ACS/CPS tutorial	None
Week 11 March 26 – April 1	No Class: Fall Break	None
Week 12 April 2 - 8	Project Data Set Omitted Variable Bias	Project Data Set on 4/4
Week 13 April 9 - 15	Multicollinearity Heteroskedasticity	None
Week 14 April 16 - 22	Individual Project Meetings	Preliminary Project Analysis on 4/17
Week 15 April 23 - 29	Panel Data	Stata Practice #3 on 4/28
Week 16 April 30 – May 6	Time Series Data Serial Correlation	Final Paper on 5/4
Week 17 May 6 - 10	**Tuesday, May 9 at 1:30pm: Final Exam**	