

## Economics 4848- Applied Econometrics Fall 2022, MWF 9:05-9:55, HLMS 141

Prof. McKinnish  
Econ 115  
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### Office Hours

M 10:30-11:30 W 1:30-2:30  
Email to set up an appt outside of office hours

### Course Prerequisite

This class requires previous completion of Economics 3818, Intro to Statistics, or the equivalent.

### Course Description

The goal of this course is to teach you how to analyze data in order to obtain meaningful inferences, in other words, to use data to say something informative about interesting questions. Because these are skills that are best learned by doing, this requires that students develop facility with a statistical software package. While in the first few weeks, students will spend time learning STATA, this is only a means to an end, and the key focus of this course is developing skills in econometric analysis and interpretation.

### Course Materials

#### *Textbook:*

A course pack developed by Prof. Brian Cadena serves as an informal textbook. It is available in electronic form on Canvas

#### *Software:*

Students must install STATA on their laptop for this course:  
<http://www.stata.com/order/new/edu/gradplans/student-pricing/>  
Stata/BE is sufficient for this course, current price 6 months is \$48.

### Course Requirements

*Attendance:* Attendance is crucial to success in this class because of the highly cumulative nature of the course material. **Attendance will be taken regularly and any student missing more than 20% (3 weeks of class, or 9 class meetings) of the course's scheduled classes will receive a failing grade.** There is no distinction between excused and unexcused absences, with absences for all reasons, including illnesses and emergencies, counting towards this 9 class limit. Students therefore do not need to email me regarding their absences except in the case of very extenuating circumstances that will cause a multiple week absence. I reserve the right to record an absence for students who spend substantial class time on non-class activities.

*Homework:* Students will regularly work on ungraded exercises during class time to practice course material. Graded homework assignments are not given. It is, however, crucial that students take time outside of class each week to review log file, class notes and in-class exercises from that week's classes.

*Exams:* Three midterms and a final exam. **Midterm 1: Mon, Sept 19;**  
**Midterm 2: Fri, Oct 7; Midterm 3: Fri, Oct 28.**

*Research Paper:* The goal of this course is to train you to perform and interpret original analyses of economic data. To that end, you will complete one independent research project, using the skills taught in this course. You will write a paper (roughly 8 pages, double-spaced, including figures and tables) on a topic of interest to you, focusing on original analysis of relevant data. Some course time will be spent teaching you how to download and analyze U.S. Census data, and many students will formulate a research question that can be investigated using Census data. Students are, however, free to pursue other data sources on topics of interest. I will hold individual meetings the week of Nov 7 to make sure that you have found an appropriate topic and data set and provide some individual guidance (class will be cancelled during the week to allow for individual meetings during class time). The research paper is due **Thurs, Dec 8, by 10 pm.**

## **Grades**

Grades will be based on:

15% Midterm 1 (Mon, Sept 19)

15% Midterm 2 (Fri, Oct 7)

15% Midterm 3 (Fri, Oct 28)

30% Final Research Project (Due Thurs, Dec 8, 10 pm)

25% Final Exam (CU-Boulder final exam schedule TBA)

Letter grade standards: I evaluate work in this course from the perspective of an employer. An A on an exam or on the final project means that an employer would consider the student a desirable hire. Standards for other letter grades are based on degree of departure from this standard.

## **Course Specific Policies**

*Material from a Missed Class:* If you miss class, you are responsible for obtaining the material you missed. You should arrange to obtain log file and notes from a classmate and work through these on your own to review the missed material. Ungraded in-class exercises are posted on the course website for students who miss class to complete on their own. You are always welcome to ask questions in office hours once you have reviewed the notes and completed any missed in-class exercises on your own.

*Missed Exams:* Make-up exams for the midterms will not be given. Midterm exam absences will only be excused for compelling circumstances (generally family emergencies or documented illness), in which case the other course material will be re-weighted. Students anticipating conflict with an exam date due to religious observance or over-scheduling (3 or more exams on the same day) should bring these to my attention within the first 3 weeks of class.

*Class Disruptions:* Computers should not be used for non-class activities during class time and cell phones should be stored away during class time.

## **How Can I Do Better?**

When students come to office hours to express dissatisfaction with their performance in the class and ask advice about how to improve, my answer is always the same. I provide this advice here, so everyone has it from the first day of class!

***Material in this class is advanced and highly cumulative. Material must be practiced multiple times to master. Mastering one week's material is crucial to understanding the next week's material.***

- 1) Attend every day. Put your cell phone away. Only have class material open on your computer.*
- 2) Mentally engage in class.* Take excellent notes. However, material is not learned by passively typing in commands and writing without thinking. Are you concentrating on following and understanding the material? Can you answer the questions I am asking in class?
- 3) Review previous class material before each class.* Course material is highly cumulative. You will learn much better in class if you have already mastered the material from the previous lecture. Review previous material so that it is fresh in your mind for the next lecture.
- 4) Focused effort during in-class exercises is crucial.* Review class material before coming to class so you are prepared for in-class exercises. Focus on the exercise without distraction and refer to your class notes and log files rather than just answering off the top of your head. After completing the exercise, check over your work carefully while referring to your course notes and log files.
- 5) Practicing for exams must include working problems, not just reading over old answers.* Simply reading over in-class exercises before an exam **will not** be sufficient! It is important to actually re-work examples from class and the class exercises. Even more effective is practicing the skills by applying them to new variables. For example, using the class data sets, conduct a different t-test, a different nonlinear regression, a different categorical variable regression, etc than the ones already done in class. You only truly master the material by working new problems you have not already seen.

## **Course Schedule**

Week 1 (Aug 22, 24, 26): Introduction and Getting Started in STATA

Week 2 (Aug 29, 31, Sept 2): Summarizing Continuous Data

Week 3 (Sept 7, 9): Categorical Data

Week 4 (Sept 12, 14, 16): Hypothesis Testing

### **Mon, Sept 19: Midterm 1**

Week 5 (Sept 21, 23): Simple Regression

Week 6: (Sept 26, 28, 30): Non-linear Models

Week 7 (Oct 3, 5): Categorical Variables

### **Fri, Oct 7: Midterm 2**

Week 8 (Oct 10, 12, 14): Multiple Regression

Week 9 (Oct 17, 19, 21): Interaction Models

Week 10 (Oct 24, 26): Omitted Variable Bias, Standard Errors and Multicollinearity

### **Fri, Oct 28: Midterm 3**

Week 11 (Oct 31, Nov 2, 4): How to do the Project/IPUMS Tutorial

Week 12 (Nov 7, 9, 11): Individual meetings during class time to discuss final projects

Week 13 (Nov 14, 16, 18): Advanced topics: Logit Model

Week 14: Thanksgiving Break

Week 15 (Nov 28, 30, Dec 2): Advanced Topics: Fixed-Effects Models

Week 16 (Dec 5, 7): Advanced Topics: Difference-in-Differences Models

**Thurs, Dec 8, 10 pm, Final Papers Due**

**Final Exam data/time posted by CU registrar in October**

## University 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 policies on [classroom behavior](#) and the [Student Conduct & Conflict Resolution policies](#).

### 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](mailto: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](mailto:contacttracing@colorado.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](mailto: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](mailto: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](mailto: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.