

## **Economics 4818: Introduction to Econometrics**

Fall 2020

MWF 12:40 – 1:30pm

Remote (Zoom)

Professor: Adam McCloskey

E-mail: adam.mccloskey@colorado.edu

Office Hours (Zoom): M 1:30 – 2:30pm, F 9:00 – 10:00am

### **Course Description**

The goal of this course is to learn the basics of the theory and practice of analyzing relationships in economic (and other) data. This course serves as an introduction to multiple regression techniques with a focus on economic applications. It includes extensions to discrete response, panel data, and time series models, as well as concepts such as omitted variables, missing data, sample selection, randomized and quasi-experiments, and instrumental variables. The course also develops the ability to apply econometric and statistical methods using the computer package STATA.

### **Prerequisites**

ECON 3818 – Introduction to Statistics with Computer Applications (or equivalent).

### **Course Materials**

The required textbook is *Introduction to Econometrics* by James Stock and Mark Watson (SW). Course material will mostly be based upon the 3<sup>rd</sup> edition but other editions are similar and fine to study from. Lecture notes, STATA exercises and other material will be posted on CU's Canvas website which can be accessed at <https://canvas.colorado.edu/>. Homework and exam questions will be based upon both lectures given in class and required textbook readings. We will use *MyEconLab* for online homework assignments and exams. There are also many other studying resources, as well as a STATA software tutorial, available to you through MyEconLab. MyEconLab is an online product associated with our course that is available for purchase bundled with the textbook or can be purchased directly from Pearson.com. Instructions for registration to our course ID will be provided on Canvas. Free temporary 14-day access to MyEconLab can be requested via [MyEconLab.com](http://MyEconLab.com). If your payment is not received by the end of the temporary 14-day period, you will lose access to the site.

There will be two STATA homework assignments. Students are not required to purchase their own copies of STATA. It is available in campus computer labs. The computer labs in ECON 6 and 7 have been converted to “virtual labs” during the COVID-19 pandemic. This allows students to access the STATA software remotely. Remote access instructions can be found on the Economics Department's website. Students who wish to purchase STATA for the convenience of working on their own devices should purchase the software through the University Grad Plan to obtain a substantial discount. Note that you should purchase STATA/IC (currently priced at \$48 for a 6 month license) since Small STATA is insufficient for the homework assignments. You can find details at <https://www.stata.com/order/new/edu/gradplans/student-pricing/>

## Grades

Midterm 1	September 28th (in class)	20%
Midterm 2	October 30th (in class)	20%
Final Exam (cumulative)	TBD	35%
Homework	Weekly	15%
Take-Home STATA	Two total	10%

In computing your total homework grade, the lowest weekly homework (not STATA assignment!) will be dropped. If you wish to dispute a grade, this must be done *within one week* of receiving graded material.

## Zoom Lectures and Class Participation

The lectures for this course will take place remotely over Zoom. During lecture, we will also solve example problems after covering the relevant material in small groups (using Zoom's "breakout rooms" feature) and as a class. *I will record the parts of lectures that do not involve solving example problems* and links to these recordings will be posted to the course's Canvas website. The example problems will be taken from the end-of-chapter exercises in your textbook so *be sure to have a copy of your textbook available during lecture*. Although I will not take attendance, to maximize your success in the course I highly recommend that you attend the Zoom lectures and do not just view the recordings. This will allow you to interact and ask questions and to gain practice on example problems by seeing how they are solved within the context of learning the lecture material.

## Missed Coursework Policy

If you miss an exam due to illness or a family emergency, AND if you notify me of this prior to the exam, I will drop the exam from your final grade and re-weight the other exams accordingly. Any missed exams without prior notice will automatically receive a grade of zero. If you miss any other assignments due to illness or a family emergency that you have notified me of before the due date, you will be able to make up that work once you are able.

## Homework

Weekly homework will be based on the textbook and material given in class. Weekly homework will be assigned and completed in our course's MyEconLab site. The website will not let you complete these homeworks after the due date. We will also have two take-home STATA assignments that will be posted on our course's Canvas site. Please submit these assignments electronically by the date and time they are due. Late assignments will not be accepted. Please append your STATA "log" files to the STATA assignments when you turn them in.

## E-Mail Policy

Please do not send technical questions about course material over e-mail. The concepts of the course are mathematical in nature and much easier to communicate in office hours and in class. I highly encourage you to participate and ask question in class and to use office hours for questions on course content, homework, etc.

## No Classes

September 7 (Labor Day), November 27 (Thanksgiving Break)

## **Tentative Course Outline**

The course readings (based upon the 3<sup>rd</sup> edition of SW) and outline are provided below. The material we will cover may be adjusted somewhat towards the end of the semester.

### I. Introduction

*Readings:* Chapter 1

### II. Review of Probability and Statistics

*Readings:* Chapters 2 and 3

### III. Linear Regression with One Regressor

*Readings:* Chapters 4, 5 and 17.1-17.4

### IV. Linear Regression with Multiple Regressors

*Readings:* Chapters 6, 7 and 18.1-18.5

### V. Nonlinear Regression

*Readings:* Chapter 8

### VI. Assessing Regression Studies

*Readings:* Chapter 9

### VII. Panel Data

*Readings:* Chapter 10

### VIII. Binary Dependent Variables

*Readings:* Chapter 11

### IX. Instrumental Variables Regression

*Readings:* Chapter 12

### X. Experiments and Quasi-Experiments

*Readings:* Chapter 13

### XI. Forecasting

*Readings:* Chapter 14

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

## 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 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. Required safety measures at CU Boulder relevant to the classroom setting 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 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 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](#). Before coming on to campus each day, all 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](mailto:dsinfo@colorado.edu) for further assistance. If you have a temporary medical condition, see [Temporary Medical Conditions](#) on the Disability Services website. ***Please submit your accommodation letter as soon as possible to ensure we have enough time to set up accommodations.***

### **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 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](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 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 an inclusive and welcoming learning, working, and living environment. CU Boulder 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 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](mailto: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, dating and domestic violence, stalking, 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. Please let me know *within the first two weeks of the course* if you have any of these conflicts.

See the [campus policy regarding religious observances](#) for full details.