

## Economics 4848 Applied Econometrics

Spring 2020

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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 data analysis that we do in class will be similar to your assignments, however the theory behind the techniques we use will also be covered on exams.

### Prerequisite

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 Jeffrey M. Wooldridge

Using Econometrics: A Practical Guide by A.H. Studenmund

*Software:* We will learn 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 are not required to purchase their own copies of STATA, as it is available in some computer labs on campus. If you choose not to buy Stata, please plan your work time accordingly. No late assignments will be accepted because you could not access a computer lab on the weekend. You can find a list of campus labs with STATA at: <http://webdata.colorado.edu/labs/softwaresearch/>

If you choose to purchase your own copy of STATA, you can receive a discount on the software through the Universitys GradPlan. Information is available at: <http://www.stata.com/order/new/edu/gradplans/student-pricing/>. I would suggest Stata/IC license which is \$48 for 6 months.

## Grade Breakdown

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

- Assignments (15% total)
- Data project and presentation (20%)
- 2 Midterm Exams (20% each)
- Final Exam (25%)

**Assignments (15% total):** Students may work alone or with **one** other student. If you work with a partner please upload one assignment for both of you. Assignments must be uploaded on Canvas by 10:00pm on the day they are due. No late assignments will be accepted for any reason. Your lowest homework assignment will be dropped from your overall score for the course. While you will be able to work with a classmate on your homework, 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** during the regularly scheduled class time. The exams will be similar to your homework assignments in that you will be given data to analyze and a few theory based questions. Given the nature of programming in STATA and this course, all exams should be considered "cumulative" in the sense that you will need to know how to use any and all of the tools we've learned throughout the semester. The theory sections of each exam will be non-cumulative.

Students must take exams at scheduled times. They may not be taken early/late and no make ups are given. If you must miss a midterm due to an emergency the weight will automatically be divided between the other midterm and final exam. Midterm scores will not be dropped due to poor performance or lack of preparation. You **cannot** miss both midterms.

**Final Exam (25%):** The final exam is **Tuesday, May 5th from 4:30-6:30pm**. This exam cannot

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 **March 9**, your cleaned data set will be due on **March 19**, and your preliminary analysis will be due on **April 6**. Individual meetings will be scheduled the week of April 6-10, in lieu of regular class. In addition, each student/group will give a presentation the week of April 27th discussing their research question, data, methods, and results. Both students must present part of their project if working in a group. 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), Initial Data Analysis (15 points), Presentation (20 points), Final Paper (30 points), Corrections to Assignments (5

sible for knowing and adhering to the academic integrity policy. Violations of the policy may include: plagiarism, cheating, fabrication, lying, bribery, threat, unauthorized access to academic materials, clicker fraud, resubmission, and aiding academic dishonesty. All incidents of academic misconduct will be reported to the Honor Code Council (honor@colorado.edu; 303-735-2273) and will result in a failing grade for the course. Students who are found responsible for violating the academic integrity policy will be subject to nonacademic sanctions from the Honor Code Council as well as academic sanctions from the faculty member. Additional information regarding the academic integrity policy can be found at the [Honor Code Office website](#)

## Tentative Class Schedule

Week	Content	Assignments
Week 1	<b>January 13-17</b> Course Information, types of data Statistics and Sampling	
Week 2	<b>January 21-24</b> Introduction to STATA, Creating Variables	
Week 3	<b>January 27-31</b> Creating Variables Exploring Continuous & Categorical Data	Homework 1 Due 1/28
Week 4	<b>February 3-7</b> Bivariate Regression, Distribution of $\hat{\beta}$	Homework 2 Due 2/4
Week 5	<b>February 10-14</b> Hypothesis Testing Goodness of Fit Measures	Homework 3 Due 2/13
Week 6	Tues., Feb 18: Multivariate Regression, Project Overview Thurs., Feb 20: <b>Exam 1</b>	<a href="#">Research Q due 2/23</a>
Week 7	<b>February 24-28</b> Non-linear Models Interpreting Coefficients in Non-Linear Models	Homework 4 Due 2/27
Week 8	<b>March 2-6</b> Categorical Variables in Regressions, Interaction Models	Homework 5 Due 3/5
Week 9	<b>March 9-13</b> Limited Dependent Variables ACS/CPS Tutorial	<a href="#">Proposal Due 3/9</a> Homework 6 Due 3/12
Week 10	<b>March 16-20</b> Tues., Mar 17: Data Set Thurs., Mar 19: <b>Exam 2</b>	<a href="#">Data Set Due 3/17</a>
Week 11	<b>March 23-27 Spring Break, No Class</b>	
Week 12	<b>March 30-April 3</b> Omitted Variable Bias	Homework 7 Due 4/2
Week 13	<b>April 6-10</b>	