Economics 4818 : Introduction to Econometrics

Spring 2018 Economics 117 TuTh, 11-12:15pm

Instructor: Taylor Jaworski Email: taylor.jaworski@colorado.edu
O ce: Economics 14C O ce Hours: TuTh 3-4:30pm (or by appointment)

Description

This course introduces students to regression methods for analyzing data in economics and related elds. We will cover techniques for estimating regression models as well as problems that arise in estimating such models related to inference, speci cation, and interpretation. The majority of the course will be spent developing the theory for the ordinary least squares estimator; extensions will include panel data methods and di erence-in-di erence. The goal of the course is to teach the basics of the theory and practice of econometrics as well as provide exposure to estimating econometric models with actual data.

Course Materials & Statistical Software

There is one required textbook for this course, which are available in the campus bookstore:

? Je rey M. Wooldridge, *Introductory Econometrics: A Modern Approach*

Additional course materials{including lectures, readings, and assignments{will be made available on Desire2Learn. Students are also **required** to have access to the statistical software Stata/IC. Information on student pricing is available on the Stata website. Alternatively, computers equipped with Stata are available in Econ 7.

Grading

Assignments (20% total, 5 4%): Students are required to complete 5 assignments. Assignments must be submitted through the dropbox on D2L. Assignments will involve mathematical derivations and empirical analysis using Stata. Due dates are listed the course outline below. Complete answers to assignments will be posted on D2L. Emailed assignments will NOT be accepted. Solutions for assignments will be distributed in class.

Exams (80% total, 35% midterm + 45% nal): There will be an in-class midterm exam on March 1. Solutions for the midterm will be distributed in class. There will be cumulative nal exam on Wednesday, May 9, 4:30-7pm.

Attendance: While attendance and participation do not gure directly into the course grade, I will take attendance and use it for students who fall close to a letter grade cuto . I will also refer to attendance for students who later ask for letters of recommendation. Students with perfect attendance will receive one extra credit point.

Policy on late work and missed exams: Late assignments will not be accepted. Students who miss the midterm exam for a valid medical reason will have the weight shifted to the nal

exam. Students unable to complete coursework for medical reasons must provide written documentation.

O ce Hours & Email

I encourage you to attend o ce hours or to setup a time to meet outside of o ce hours if the day/time listed above do not work for you. You should come to o ce hours prepared

01/30 Population versus samples, estimators, large samples
? Wooldridge, appendix C.1-C.4

02/01 Con dence intervals, hypothesis testing
? Wooldridge, appendix C.5-C.6

Simple Regression Model

02/06 Assumptions of simple regression model, tted values and residuals, goodness-of- t
? Wooldridge, chapter 2.1-2.3

02/08 Interpretation of coe cients, functional form
? Wooldridge, chapter 2.4

Assignment #2 due February 8, hardcopy in-class and on D2L by 11:00am

02/13 Unbiasedness of ordinary least squares
? Wooldridge, chapter 2.5a

02/15 Variance of the ordinary least squares estimators, estimating the error variance
? Wooldridge, chapter 2.5b-2.5c

02/20 Extending the simple regression model to two variables
? Wooldridge, chapter 3.1a

Assignment #3 due February 20, hardcopy in-class and on D2L by 11:00am

02/22 Extending the simple regression model to several variables
? Wooldridge, chapter 3.1b

02/27 Midterm Exam Review

03/01 Midterm Exam

Multiple Regression Analysis

03/06 Deriving and interpreting the multiple regression model
? Wooldridge, chapter 3.2

03/08 The expected value of the OLS estimator
? Wooldridge, chapter 3.3

03/13 The variance of the OLS estimator
? Wooldridge, chapter 3.4

03/15 The Gauss-Markov Theorem
? Wooldridge 3.5

03/20 Sampling distribution of the OLS estimator
? Wooldridge, chapter 4.1

03/22 Hypothesis testing (and con dence intervals) for a single parameter
- ?Wooldridge, chapter 4.2-4.4

Assignment #4 due March 22, hardcopy in-class and on D2L by 11:00am

04/03 Large sample properties of the OLS estimator
- ?Wooldridge, chapter 5

04/05 Functional form, goodness-of- t in multiple regression
- ?Wooldridge, chapter 6.2-6-3

04/10 Dummy variables, interaction variables
- ?Wooldridge, chapter 7

04/12 Heteroskedasticity
- ?Wooldridge, chapter 8.1-8.2

Panel Data

04/17 Combining cross-section and time series data
- ?Wooldridge, chapter 13.1-13.2

04/19 Fixed e ects
- ?Wooldridge, chapter 14.1

The Selection Problem

04/24 Omitted variable bias
- ?Wooldridge, chapter 3.3, 15.1

04/26 Regression analysis and quasi-experiments
- ?Angrist & Pischke, chapter 2
- ?Blake, Nosko, & Tadelis, \Consumer Heterogeneity and Paid Search E ectiveness"

05/01 Motivation and setup for the Di erence-in-Di erence methodology
- ?Wooldridge, chapter 13.2-13.5

05/03 Application to \What is the impact of immigration on native wages?"
- ?Card, \The Impact of the Mariel Boatlift on the Miami Labor Market"

Assignment #5 due May 3, hardcopy in-class and on D2L by 11:00am

The Final Exam will be on, Wednesday, May 9, 4:30-7pm, which is the date of nal exam scheduled by the University.