

**Graduate Econometrics**  
**Spring 2021**  
**Tuesday 5:30-8:15 PM \*\*Online\*\***

\*Instruction is hybrid:

- We will meet in person on the following dates: 3/24, 4/7
- The majority of the “lecture” will be delivered remotely in an asynchronous fashion.
- I will hold “sections” via Zoom during the originally assigned meeting time. These sections are not required, but are highly encouraged.
- Exams will be given via Canvas *at the same time for everyone, during the official meeting time (Tuesday 5:30-8:15).*

**Instructor:** Dr. Lisa Schulkind

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Office: Friday 227B

Office Hours: Tuesday 2:30-4:00pm and 7:30-8:00pm

Teaching Assistant: Seth Howard

Email: showar38@uncc.edu

Office Hours: Wednesday 12:00-1:00pm

**COURSE DESCRIPTION AND OBJECTIVES**

This course is designed to introduce students to the advanced study of econometric theory as well as its application to economic problems. Topics include the derivation of least squares estimators, maximum likelihood estimation, instrumental variables and the problems of multicollinearity, heteroskedasticity, and autocorrelation. In addition, emphasis will be placed on applying these concepts using economic data. The primary goal of the class is to provide the tools needed in order to read and contribute to the body of applied economic literature.

## REQUIRED TEXTS

Damodar Gujarati and Dawn Porter, Basic Econometrics, 5th Edition (2008).

Publisher: McGraw-Hill Higher Education, ISBN: 9780073375779

A. Colin Cameron, Pravin K. Trivedi, Microeconometrics Using Stata, Revised Edition, 2nd Edition (2010).

Publisher: Stata Press, ISBN: 9781597180733

## RECOMENDED TEXTS

Joshua Angrist and Jorn-Steffen Pischke, Mostly Harmless Econometrics: An Empiricist's Companion (2009).

Publisher: Princeton University Press, ISBN: 9780691120355

Stock and Watson, Introduction to Econometrics, any edition.

Publisher: Addison-Wesley

## SOFTWARE

This course will require the use of the statistical program Stata. You are welcome to use a different statistical program in its place, but I will only answer questions about Stata. It is available to students for free via Apporto (I will provide instructions on how to access it early in the course). You might also want to purchase your own copy of **Stata/IC**, available at a reduced price from: <http://www.stata.com/order/new/edu/gradplans/>

## GRADING

15% - Problem Sets

10% - Class Participation

15% - Replication Project

60% - Exams

Problem Sets: I will assign at least one problem set for each topic that will consist mostly of questions from the text. They will be posted on Canvas, and are intended to provide opportunities to practice using the information learned in class and in the readings. You must hand in your own assignment, but you are encouraged to work through the problems with your classmates. They will be graded as ✓ (put significant effort into all questions, according to my subjective evaluation), ✓- (put significant effort into at least half of the questions) and o (significant effort not displayed or didn't hand in). **Due dates will be posted on Canvas.** Late assignments can

receive a maximum grade of ✓-. No exceptions. Answer keys will be posted and students are encouraged to attend office hours to ask questions. **Questions that require Stata do files and log files (or equivalent) will receive zero credit without them.**

#### Class Participation:

You can earn up to 10 class participation points throughout the semester. Points may be earned in the following ways:

*Section Attendance:* Attending section will earn  $\frac{1}{2}$  of a point (maximum of  $\frac{1}{2}$  point per week).

*Weekly Feedback:* You can earn up to 1 point each week by filling in the weekly feedback survey. Acknowledging that you have watched the weekly roundup video will earn  $\frac{1}{2}$  of a point and submitting a question related to the course content will earn an additional  $\frac{1}{2}$  of a point. Note: Some weeks will not offer both opportunities.

*Share your knowledge!:* You can also earn participation points by creating high quality study guides or instructional videos to share with your classmates or by doing a peer review of someone else's guide/video. Example: Make a step by step guide or video showing how to answer a problem set question in Stata or in another statistical software. You can earn up to 2 points for an exceptional contribution and up to  $\frac{1}{2}$  of a point for a thoughtful peer review.

**Replication Project:** You will be asked to replicate many of the main findings from a published, peer-reviewed paper. This project is designed to give you a chance to practice applying the theory from class using Stata. The project will be handed in in three stages, and more details about what is expected in each stage will be given in class and on Canvas. You may work in groups of 1-3 students, but may NOT consult with anyone other than your group members, the teaching assistant and myself. You may use Stata resources available on the web, but MAY NOT use anything you may find that is directly related to replicating the paper or contact the author(s) of the paper. Late assignments will lose a full letter grade each day that they are late.

Exams: There will be three exams given throughout the semester: two during the semester and one during finals week. Each exam counts equally.

## **COURSE OUTLINE**

*This is meant as a rough guide. Exam dates will not change without advanced notice, but we might cover topics slightly slower or faster than expected. Any changes will be announced in class. Any additional course readings will be posted on Canvas.*

Topic 1: Introduction to Course and Stata and Review of Calculus, Matrix Algebra and Basic Statistical Concepts

Approximate Dates: Weeks 0-3 (Jan 20-Feb 20)

GP: Introduction, Chapters 1 and Appendices A & B

CT: Chapters 1 & 2

SW: Chapters 1, 2 & 3

Topic 2: Two Variable Regression Analysis

Approximate Dates: Weeks 4-5 (Feb 21 – March 6) before Exam 1; Week 6-7 (March 10-March 20) after Midterm 1

GP: Chapters 2, 3, 4 (including appendix 4A) & 5

CT: Chapter 3

### **Exam #1: Week 6: Tuesday March 9**

Topic 3: Multiple Regression Analysis: The Problem of Estimation/Inference

Approximate Dates: Weeks 8-9 (March 21-April 3)

GP: Chapters 7 & 8

Topic 4: Multiple Regression Analysis: Dummy Variables and Nonlinear Models

Approximate Dates: Week 10 (April 4-April 10)

GP: Chapters 6, 9 & 14

### **Exam #2: Week 11: Tuesday April 13**

Topic 5: Relaxing the Assumptions of the Classical Model: Multicollinearity, Heteroskedasticity and Autocorrelation

Approximate Dates: Weeks 11 -12 (April 14-April 24)

GP: Chapters 10, 11 & 12

Topic 6: Model Specification and Diagnostic Testing

Approximate Dates: Week 13 (April 25-May 1)  
GP: Chapter 13

Topic 7: Panel Data Regression Models

Approximate Dates: Week 14 (May 2-May 5)

GP: Chapter 16

CT: Chapter 8

Topic 8: Instrumental Variable Models

Approximate Dates: If time allows

CT: Chapter 6

SW: Chapter 12

**Exam #3 (Final): May 11 from 5 - 7:30pm**

## CLASS POLICIES

- Academic Integrity:** I will not tolerate intellectual dishonesty. All students are required to read and abide by the Code of Student Academic Integrity. Violations of the Code of Student Academic Integrity, including plagiarism, will result in disciplinary action as provided in the Code. Definitions and examples of plagiarism are set forth in the Code. The Code is available from the Dean of Students Office or online at <http://legal.uncc.edu/policies/up-407>.
- Accommodation Policy:** If you have a disability that qualifies you for academic accommodations, please provide a letter of accommodation from Disability Services in the beginning of the semester. For more information regarding accommodations, please contact the Office of Disability Services at 704-687-0040 or stop by their office in Fretwell 230.
- Exam Policy:** There will not be any regularly scheduled makeup exams. If you cannot be there on exam days, do not take this class. If you miss an exam for any reason, you must contact me prior to the examination time or as soon as you are reasonably able to do so and we will discuss the possibility of a makeup exam or alternative grade weighting. These options will be provided at my discretion, and only in the case of a documented serious illness or family emergency.
- Re-grade Policy:** If you would like your exam re-graded, you must submit a re-grade request, *in writing, within one week* of receiving your graded exam. Your request should point out the question(s) where you think you deserve additional credit, along with an explanation. Please note that your *entire exam* will be reviewed, and your final score may go *up or down*.
- Statement on Diversity:** The Belk College of Business strives to create an inclusive academic climate in which the dignity of all individuals is respected and maintained. Therefore, we celebrate diversity that includes, but is not limited to ability/disability, age,

culture, ethnicity, gender, language, race, religion, sexual orientation, and socio-economic status.