

ECONOMICS 33 I, Empirical Methods in Economics, Fall 2024

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Course website: <https://courses.furman.edu/> (Moodle)

Class: MWF 9:30-10:20, Th lab 2:30-4:30 (RLY108)

Office Hours: by appointment (email or ask after class!)

WELCOME!

Welcome to Empirical Methods in Economics! I am thrilled to embark on this journey with you as we explore the fascinating world of econometrics together. This course is designed to transform complex concepts into practical tools that we can confidently use. While we will engage with some quantitative methods, our focus will be on real-world applications that make these methods accessible and relevant. Whether you aspire to work in finance, public policy, or any field that relies on data-driven decision-making, the skills we develop here will be invaluable.

This econometrics class is more than just a requirement; it's a gateway to understanding how economists make sense of the world. Through hands-on projects and engaging assignments, we will learn to turn numbers into meaningful insights, making us not only better economists but also more informed and critical thinkers. By the end of this course, you will be able to conduct your own analyses, tackle real-world problems with confidence, and appreciate the power of data in shaping economic theories and policies. Let's work together to make this a rewarding and enjoyable experience that will serve you well in your academic and professional endeavors.

COURSE DESCRIPTION

This course focuses on techniques for estimating regression models and on problems that are encountered in applying these estimation techniques. The goal of the course is to teach you the theory of econometrics and to give you experience in estimating econometric models with real data. The course involves an intensive course paper that will expose you to the different stages of the research process.

LEARNING OBJECTIVES

1. Appreciate the complexity of choices people make when presenting information, doing data analysis, and conducting research
2. Develop a solid understanding of econometric theory and methods, including regression analysis, hypothesis testing, and model specification.
3. Cultivate the ability to design and conduct empirical research studies in economics, encompassing idea formulation, data collection, analysis, and interpretation.
4. Enhance critical thinking and problem-solving skills through the application of econometric techniques to real-world economic issues.
5. Practice effective communication and presentation skills.
6. Reflect on the ethical considerations and responsibilities in conducting research and promote academic integrity and the ethical use of data.

TEXT

Recommended: Jeffrey Wooldridge. *Introductory Econometrics A Modern Approach*, 7th Edition

Required: There will be occasional readings from sources other than your textbook posted to our course website. I expect that you will read these papers and articles before you come to class, as they will be important components of our classroom discussion.

PREREQUISITES

ECN-111; MTH-145 or MTH-150; and ECN-120, MTH-120 or MTH-340. While we will review these fundamental concepts again, you should hopefully be familiar with the following topics: random variables, probability distributions, independence, expected value operator, variance of random variables, sampling distribution, hypothesis testing, and confidence intervals.

ACADEMIC INTEGRITY

All activities and assignments that you complete during this course are governed by the Furman University academic integrity policy (www.furman.edu/integrity). Furman University asks all students to abide by the integrity pledge ([found here](#)). You should familiarize yourself with the important definitions and examples of plagiarism found on the University academic integrity website (see above). Trust and respect are vital to the success of collaborative learning endeavors. As such, any and all integrity violations will be taken extremely seriously and will be adjudicated according to Furman's policy 190.6. I expect all students to review Furman's policies on academic integrity. You are responsible for upholding these standards as you complete the lab assignments, conduct your research, take the quizzes, and complete the case studies for this course. You should be aware of the consequences of cheating, fabrication, facilitation, and plagiarism. I will report all academic integrity violations to the Associate Academic Dean. In this class, any academic integrity violation results in an F for the course.

GENERATIVE AI

In this course, generative artificial intelligence (GenAI)-based assistance, such as ChatGPT, is treated the same way as collaboration with others: for most assignments you are welcome to talk about your ideas and work with other people, both inside and outside the class, as well as with GenAI-based assistants. GenAI is a subset of AI that utilizes machine learning models to create new, original content, such as images, text, or music, based on patterns and structures learned from existing data. However, as is indicated in the University academic integrity policy, all work you submit must be your own. You should never include in an assignment anything that was not written directly by you without proper citation (including quotation marks and in-line citation for direct quotes). By submitting assignments in this class, you pledge to affirm that they are your own work and you attribute use of any tools or sources. Violations will be considered academic misconduct.

Generative AI use is explicitly prohibited for use in: quizzes, case studies and certain components of the research project (specifically, generating a bulleted list of points from your reading of previous research and your review of your peer's paper).

It is your responsibility to assess the validity and applicability of any GenAI output that is submitted. You bear the final responsibility. You should be aware that all GenAI tools have a tendency to make up incorrect facts and fake citations or confidently reassert factual errors, that code generation models have a tendency to produce inaccurate outputs, and that image generation models can occasionally come up with highly offensive products. You will be responsible for any inaccurate, biased, offensive, or otherwise unethical content you submit regardless of whether it originally comes from you or a GenAI tool. Please also note that different classes at Furman may implement different GenAI policies, and it is your responsibility to conform to expectations for each course.

While GenAI offers valuable learning opportunities, if you have specific concerns about GenAI use, including those about data privacy or security, please contact me early to discuss alternatives.

COURSE REQUIREMENTS

Grades will be based on the following

Lab Assignments	15%
Team-Based Learning Quizzes	20%
Case Studies	20%
Empirical Project:	40%
Class Participation	5%

Lab Assignments

The lab assignments will help familiarize you with STATA and give you some experience in running and interpreting regressions. Your assignments will be due to Moodle. Lab assignments turned in late will be penalized 10 points (out of 100) for each day late.

Team-Based Learning Quizzes

We will employ Team-Based Learning (TBL), a structured pedagogical approach that emphasizes the development of high-performance learning teams. This method enhances critical thinking, problem-solving, and collaboration skills, making it particularly effective for complex, intellectual tasks. Over the term, you will complete four quizzes individually and as part of a team. Each quiz will be weighted with 70% for the individual effort and 30% for the team effort, though this split may be adjusted after the second quiz based on class feedback. Additionally, peer evaluations will contribute 8% to your final grade, assessing your preparation, attendance, and contributions to team discussions. For more details, please refer to the full document [linked here](#).

Case Studies

In this course, instead of traditional exams, you will complete two case studies during designated lab sessions. These case studies are designed to allow you to apply econometric methods to real-world economic issues or policies. You will be expected to analyze the case using the techniques learned in class, critically question the data and assumptions provided, and arrive at a reasoned conclusion. Your performance will be assessed using a rubric that evaluates your analytical process, the application of econometric methods, your critical examination of data and assumptions, and the soundness of your conclusions. For anticipated absences due to official university activities, you must discuss alternative arrangements with me in advance; otherwise, a missed case study will result in a zero.

Empirical Project

The empirical project will give you exposure to gathering your own data, conducting analyses on that data, and summarizing the results you find. This is an important skill that will be useful to you in any profession. The project will also include a poster presentation to introduce your topic and allow you to get feedback at an early stage. There will also be a peer review of your paper. Deadlines for these components are spread throughout the term and are listed on the schedule below and on Moodle. Please see details on the [Empirical Project handout](#).

Due to the time-sensitive nature of certain assignments, I will not accept anything after the date due for the poster session, draft of your paper, and your peer review. If you do not turn in one of these assignments on time, you will be given zero for that assignment. Other assignments for the empirical project that are turned in late will be penalized 10 points (out of 100) for each day late.

There are four times this term when you are required to meet with me to talk about your course project. To schedule these meetings with me, please use jessicahennessey.youcanbook.me to schedule a 20-minute slot. Note: meeting slots will become available to book the week before.

Class Participation

Students are expected to attend class in-person unless there is an excused reason (quarantine, documented health issue, representing Furman at an official event, etc). Students are expected to play an active role in learning. This includes showing up on time, being prepared, participating in class discussions, paying attention to the instructor and your peers, and respecting the opinions, needs, and rights of others. I anticipate that you give any pre-class assignment your fullest attention so that when you enter class you are ready to engage in a thoughtful discussion. Your participation and preparedness are critical to individual and class success as meaningful class discussions are influenced by your inquiry, experience and insight.

Grade Categories (from the Furman University Catalog):

Grade	Description
A	Excellent. The mark of highest distinction earned by those students whose work represents the best that can be expected of a student at Furman.
B	Good. The mark of distinction earned by those students whose work represents a high degree of achievement in meeting the characteristic demands of the course.
C	Satisfactory. The mark earned by those students who have attained such familiarity with the content of the course and such ability to apply this knowledge as may be expected of a student who gives to the course a reasonable amount of time, effort, and attention.
D	Marginal. The lowest passing grade representing inferior work. It indicates that the student would be seriously handicapped in attempting subsequent courses for which this work is a prerequisite.
F	Failure. The mark indicates unconditional failure. No credit earned.

Grades will be determined by the following scale: A (93-100), A- (90-92), B+ (88-89), B (83-87), B- (80-82), C+ (78-79), C (73-77), C- (70-72), D+ (68-69), D (63-67), D- (60-62), F (0-59).

Student Resources:

Many excellent, additional resources and services, including writing, speech, and technology consultations, are provided at Furman. Please take advantage of these services.

- The [Writing and Media Lab](#) is available to support students with writing and multimedia projects. Students may schedule individual appointments with consultants.
- The [Center for Academic Success](#) employs professional staff who work with students to assist with executive functioning skills, test-taking strategies, study strategies and other academic success-related skills. Students can directly access resources on the website at any time.
- Library Support is provided by a dedicated team of librarians who can assist locating documents, information, and resources for your course or research projects. For more

information about how to utilize these resources, visit the [Library website](#). Our course library is [Brittany Champion](#).

- Empowering and equipping students to manage their mental health and academic success, the Trone Center for Mental Fitness's stepped care model offers an array of evidence-based services. The resources listed below are free, confidential and accessible to all enrolled students. Go to the [Trone Center for Mental Fitness Website for details](#).
- Paladin Peer Support is a student peer mentoring organization focused on wellness and self-efficacy. Follow them on Instagram and connect for support in reaching personal well-being goals.
- The [Office for Spiritual Life](#) provides individual confidential counseling for students in person and online.
- Whether you are still exploring career paths or looking to land that first position after Furman, the [Malone Center](#) has resources to help you in each step of your career journey.

Accommodation Requests

It is my goal to fully include everyone in our classroom. The Student Office for Accessibility Resources (SOAR) is committed to helping qualified students with disabilities achieve their academic goals by providing reasonable academic accommodations under appropriate circumstances. If you have a disability and anticipate the need for an accommodation in order to participate in this class, please register with the Student Office for Accessibility Resources. They will assist you in getting the resources you may need to participate fully in this class. You can contact the SOAR office at 864.294.2320 or at soar@furman.edu. You can find additional information and request academic accommodations at the [SOAR webpage](#).

Name/Pronoun Use:

I will gladly honor your request to address you by an alternate/preferred name or gender pronoun. Please advise me of this preference early in the semester so that I may make appropriate changes to my records.

Classroom Technology:

ITS and Help Desk: If you have technical problems with Moodle, or if you have any other computer issue that is preventing your access to course materials and sessions, please contact the ITS Service Center by calling 294-3277 or by emailing service.center@furman.edu.

Devices such as phones, laptops, tablets, iPads, etc., should only be used if their use is immediately relevant to a specific task related to what we are doing in class. In other words, *if you aren't using it to perform a task specifically related to what we are doing in class at that very moment, please put it away.*

Course Notifications:

Announcements related to the class will be communicated via email. Changes made to assignments and deadlines will also be updated in Moodle.

Nondiscrimination Policy and Sexual Misconduct:

Furman University and its faculty are committed to supporting our students and seeking an environment that is free of bias, discrimination, and harassment. Furman does not unlawfully discriminate on the basis of race, color, national origin, sex, sexual orientation, gender identity, pregnancy, disability, age, religion, veteran status, or any other characteristic or status protected by

applicable local, state, or federal law in admission, treatment, or access to, or employment in, its programs and activities.

If you have encountered any form of discrimination or harassment, including sexual misconduct (e.g. sexual assault, sexual harassment or gender-based harassment, sexual exploitation or intimidation, stalking, intimate partner violence), we encourage you to report this to the institution. If you wish to report such an incident of misconduct, you may contact Furman's Title IX Coordinator, Melissa Nichols (Trone Center, Suite 215; Melissa.nichols@furman.edu; 864.294.2221).

If you would like to speak with someone who can advise you but maintain complete confidentiality, you can talk with a counselor, a professional in the Student Health Center or someone in the Office of Spiritual Life. If you speak with a faculty member, understand that as a mandated reporter of the University, the faculty member MUST report to the University's Title IX Coordinator what you share to help ensure that your safety and welfare are being addressed, consistent with the requirements of the law. However, unless there is an ongoing safety risk to you or to the Furman community, you will determine whether the university initiates any formal process. You are entitled to supportive measures (such as a no contact order or academic accommodations) regardless of whether you decide to initiate a formal process.

Additional information about Furman's Sexual Misconduct Policy, how to report sexual misconduct and your rights can be found at the Furman Title IX Webpage at www.furman.edu/titleix. You do not have to go through the experience alone.

Consent to Use Student Materials

Your work in this class may be used for future research purposes and will be kept confidential. Use of your materials is completely voluntary. You have the right to choose not to allow the use of your materials for future research. Please know that if you choose not to have your materials used, your grade will not be affected in any manner. There are no anticipated risks to you, beyond those encountered in everyday life. All records will be maintained securely on Box. The results of any research using these materials may be published but will not include your name or any identifiable references to you. If you choose to allow me to use your materials this semester, you have the right to opt out at any time by notifying me. You have the opportunity to ask questions about your materials or any related research at any time.

If you DO NOT wish for your materials to be used in future research, please complete and return [this form](#) either in print or digital form to me before the end of the course. If you do not return this form, you give consent for me to use your materials for future research.

HOW TO GET THE MOST OUT OF THIS COURSE

“Learning results from what the student does and thinks, and only from what the student does and thinks. The teacher can advance learning only by influencing what the student does to learn.” – Herb Simon.

Your goals for this course may range from preparation for graduate school, gaining tools for practical empirical applications, or simply meeting a graduation requirement. Whatever the case, there are common study practices that will enable you to get the most out of this course.

1. **Be an Active Participant:**

Attendance is the first step, but being actively engaged is where the real learning happens. Prepare for each class by reading assigned materials and considering questions or topics you'd like to explore further. Skimming the posted slides or the relevant chapter beforehand can provide a helpful introduction and frame your thinking for the class discussion.

2. **Engage in Continuous Review:**

The material in this course builds on itself, so consistent review is crucial. After each class, take some time to review your notes, identify areas of confusion, and address them promptly. Don't hesitate to ask questions—early clarification can prevent larger misunderstandings later. When assessments are returned, take time to understand the feedback fully and use it to guide your study focus.

3. **Leverage Group Work:**

Collaborative learning can be incredibly powerful. Discussing concepts with peers can expose you to different perspectives and problem-solving strategies. Working in groups on lab assignments and discussing your empirical projects can deepen your understanding and make the learning process more enjoyable and less isolating.

4. **Approach the Empirical Project with Intention:**

Start early and maintain a consistent effort on your empirical project. This is not just an assignment—it's a significant piece of work that can showcase your abilities. Use it as an opportunity to explore a topic of interest, and don't hesitate to seek feedback throughout the process. A well-executed project can be a standout component of your portfolio for job applications or graduate school.

5. **Make use of office hours**

Whether you have specific questions or just want to discuss the material more deeply, I am happy to meet with you!

6. **Cultivate a Growth Mindset:**

Finally, remember that learning is a process. It's normal to find some concepts challenging at first, but persistence and effort lead to improvement. Embrace mistakes as learning opportunities, and keep pushing yourself to understand the material more deeply. The skills you develop in this course will serve you far beyond the classroom.

COURSE SCHEDULE (Any important changes will be announced in class)

Date	Class	Research Assignments Due	Associated readings for class (required in bold)
8/28	Introduction to Econometrics		
8/29	Lab 1: Orientation to Lab Environment, Economic Research, Generative AI		
8/30	Research: The research process		Acemoglu, Johnson and Robinson (2001) article
9/2	No Class - Labor Day		
9/4	Review of Probability and Statistics		Wooldridge Appendix B&C
9/5	Lab 2: Intro to STATA, data management, research		Wheelan Ch 7
9/6	Review of Probability and Statistics		Wooldridge Appendix B&C
9/9	Review of Probability and Statistics		Wooldridge Appendix B&C
9/11	Simple Linear Regression		Wooldridge Ch 2
9/12	Lab 3: Stata techniques, statistics		
9/13	Simple Linear Regression		Wooldridge Ch 2
9/16	Simple Linear Regression	Research Proposal	Wooldridge Ch 2
9/18	Multiple Linear Regression: Estimation		Wooldridge Ch 3
9/19	Lab 4: Regression		
9/20	Multiple Linear Regression: Estimation		Wooldridge Ch 3
9/23	Multiple Linear Regression: Estimation	Meet with me this week about your proposal	Wooldridge Ch 3
9/25	Quiz #1		
9/26	Lab 5: Research literature review		Greenlaw Ch 3 & 6 (p 93-99)
9/27	Multiple Linear Regression: Inference		Wooldridge Ch 4
9/30	Multiple Linear Regression: Inference		Cult of Statistical Significance , Wooldridge Ch 4
10/2	Multiple Regression: Further Issues		Wooldridge Ch 6
10/3	Lab 6: Regression Inference		
10/4	Multiple Regression: Further Issues		Wooldridge Ch 6
10/7	Qualitative Information		Wooldridge Ch 7
10/9	Qualitative Information	Data, Model and Annotated Bibliography	Wooldridge Ch 7
10/10	Lab 7: Qualitative Information		
10/11	Research: Audit (what else should you as a researcher have thought of?)		
10/14	No Class - Fall Break		
10/16	Research: Poster discussion	Meet with me this week about your data/model/annotated bibliography	Tufte Ch 1 , Tufte Ch 9
10/17	Lab 8: Tableau		
10/18	Quiz #2 (Chapters 4-7)		
10/21	Heteroskedasticity		Wooldridge Ch 8
10/23	Heteroskedasticity		Wooldridge Ch 8
10/24	First Case Study (Ch 2-7)		
10/25	Heteroskedasticity		Wooldridge Ch 8

10/28	Specification and Data Issues	Poster and data files	Wooldridge Ch 9
10/30	Specification and Data Issues		Wooldridge Ch 9
10/31	<i>Poster Day: Prep 2:30-3:30, Poster Session 3:30-4:30pm</i>		
11/1	Specification and Data Issues		Wooldridge Ch 9
11/4	<i>Research: Writing in Economics</i>	Meet with me this week about your poster	McCloskey - Economical Writing
11/6	<i>Research: peer review</i>		
11/7	<i>Lab 9: Heteroskedasticity and Data Problems</i>		
11/8	Quiz #3 Heteroskedasticity and Data Problems (Chapters 8 and 9)		
11/11	Introduction to Time Series Analysis		Wooldridge Ch 10 & 12
11/13	Introduction to Time Series Analysis		Wooldridge Ch 10 & 12
11/14	<i>No lab - Time to work on paper</i>		
11/15	<i>No class - Time to work on paper</i>		
11/18	Panel Data Methods	Draft of Paper and data (due to peer and me by email)	Wooldridge Ch 13 & 14
11/20	Panel Data Methods		Wooldridge Ch 13 & 14
11/21	<i>Lab 10: Time Series and Panel Data</i>		
11/22	Identifying transferrable skills, Work in Applied Econometrics		
11/25	Quiz #4 (Chapters 10, 12, 13, and 14)	Peer Review (due to peer and me by email)	
11/27	No class - Thanksgiving Break		
11/28			
11/29			
12/2	Instrumental Variables	Meet with me this week about your draft	Wooldridge Ch 15
12/4	<i>Lab 11: Instrumental Variables</i>		
12/5	Second Case Study (Focus on Chapters 8 through 14)		
12/6	Research: Editing your paper		Economic Importance and Statistical Significance
12/9	Research: Reflection on term - career competencies	Final paper due on last day of classes (12/10)	
12/18	8:30-11:00am Final Exam Period	By Wednesday, December 18th: Meet with me for final conversation	