

Econ 308: Econometrics
Course Syllabus
Spring 2023

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Global Research Institute
and
Department of Economics
Chancellors Hall, Room: 267
William and Mary

Course meetings: Tuesdays and Thursdays 12.30-13.50

Location: Chancellors Hall–Room:114

Office Hours (student consultation): Wednesdays 11-12 at Room: 267

1 About the Instructor

Dr. Weldeegzie is a postdoctoral research fellow at the Global Research Institute. Prior to coming to William and Mary, he was an Assistant professor at the Department of Development Economics, Ethiopian Civil Service University where he taught Advanced Econometrics for graduate students. Dr. Weldeegzie received his PhD Economics from the Australian National University, MA in

Economics of Development from the Erasmus University Rotterdam and BA Economics from Jimma University, Ethiopia. Weldeegzie's broad research interest and previous work include human capital accumulation and impact evaluations of development programs.

2 About the course

This course will cover the fundamental methods used in recent empirical analysis. We will begin by the simple and multiple linear regression models, Ordinary Least Squares estimation techniques, and learn how to apply these techniques to the real-world data sets. We will further discuss methods for applying regression analysis to causal inference, a fundamental problem in attributing causal effect to certain policies and/pr programs. This course is essential preparation for advanced work in economics and is highly recommended for anyone who intends to pursue upper level coursework or graduate training in related fields such as public policy, political science, public health etc.

The first part of the course will focus on the foundations while the second part of the course will go beyond the basics and explore the sources of endogeneity problems in empirical exercise of identifying causal effects of policies and programs. In addition, we will learn some of the most recent remedies in Econometrics to solve these problems. The focus will be on the application of these research designs and techniques by understanding the intuition behind each design and technique rather than theoretical development.

At the end of the course, students will be able to:

1. explain the fundamental assumptions of using Ordinary Least Squares estimation
2. write and execute STATA do files and use real world data to run regressions and interpret results
3. examine the sources of endogeneity concerns in empirical research projects
4. understand the fundamental problem of causal inference
5. explain and critique the recent literature that apply econometric analysis
6. investigate interesting research question by designing and executing an empirical research project

Pre-requisites:

(ECON 307 OR ECO 071) OR (MATH 106 OR MATH 351 OR SOCL 353 OR BUAD 231) AND (ECON 101 OR ECO 011) AND (ECON 102 OR ECO 021

Topics:

- 2.1 Introduction**
- 2.2 Simple Linear Regression**
- 2.3 Multiple Linear Regression**
- 2.4 STATA Basics**
- 2.5 Specification, Estimation, and Inference**
- 2.6 Endogeneity Sources**
- 2.7 Instrumental Variables Approach**
- 2.8 Regression Discontinuity Design**
- 2.9 Panel data and Difference-in-Difference models**
- 2.10 Conducting Empirical Research**

Assignments & Grading: Students are responsible for attending lectures, taking notes, and reviewing your notes after each class. Beyond the lecture notes, I encourage you to obtain notes from another student if you miss class. Evaluations will be based on two exams worth 20% each (one in the mid and one in the end of the semester) and five assignments worth 10% for the first four individual assignments and 20% for the fifth assignment which is group work. Assignments will include STATA problem sets, mathematical or theoretical questions and a short term paper (write-up) project that applies certain econometric exercise to answer a given research question. Collaboration with your peers on assignments is permitted and encouraged. However, each student or group must turn in their own copy (including code and and results when using STATA). Assignments will be due in class (in hard copy form only and not by email). A 5% per additional day grade penalty will apply to assignments not turned in by the due date specified on the assignment. The main purpose of these assignments is to enhance learning ability and contribute to the achievement of the course goals (1-6) in various ways.

If you cannot attend an exam due to justifiable reasons beyond your capacity, you must notify me and schedule a make-up exam at least two weeks in advance. All other make-up exams required for any reason will incur an automatic 15% grade penalty.

Important Dates:

- FEBRUARY 3; Friday – Last Day for Add/Drop
- MARCH 9; Thursday – Mid-Exam (20%)

- MARCH 14 & 16; Tuesday & Thursday– Spring Break (no class)
- MAY 5 – End of Undergraduate Classes
- MAY 10 – Final Exam 9am–12pm (20%)

3 Policy

Academic Integrity: William & Mary has had an honor code. We all are responsible for upholding the ideals of honor and integrity. The student-led honor system is responsible for resolving any suspected violations of the Honor Code, and I will report all suspected instances of academic dishonesty to the honor system. See the Student Handbook and the Honor Code.

Respect for Diversity: William & Mary respects and appreciates diversity. Diverse backgrounds and experiences are essential to the critical thinking endeavor at the heart of university education. In this classroom, students are expected to respect individual differences due to but not limited to: age, cultural background, disability, ethnicity, family status, gender identity and representation, immigration status, national origin, race, religion, sex, sexual orientation, socioeconomic status, and veteran status. I expect you to engage respectfully in discussion of diverse worldviews or ideologies embedded in course readings, presentations, and artifacts, including those course materials that are at odds with personal beliefs and values if any.

Mandatory Reporting: William & Mary faculty are required by law to report any information they receive pertaining to sexual misconduct or assault. As a mandatory reporter, any disclosures to the instructor of this nature will have to be further disclosed to the Title IX coordinator on campus. If you have issues or concerns regarding yourself or someone else, and would like to share them confidentially, you are strongly encouraged to contact The Haven, a confidential resource center for those impacted by sexual violence and harassment, relationship violence, stalking, and other gender-based discrimination. They are located at Sadler Center, Suite 146P and can be reached by email thehaven@wm.edu or phone 757 221 2449. More information available [here](#).

Accessibility Services: It is the policy and practice of William & Mary to create an inclusive and accessible learning environments for all. Any student who feels the need for accommodation based on the impact of a learning, psychiatric, physical, or chronic health diagnosis should contact Student Accessibility Services at sas@wm.edu. For more information, [click here](#).

Electronic Device Use: Use of cell phones and tablets or other electronic devices during class is not recommended but can be used if it enhances students' learning experience without distracting other's attention.

4 Campus Support

The Dean of Students provides Care Support Services (CSS) to students in need. If you are facing challenges to your mental, physical, and social health, you are strongly encouraged to contact them (care@wm.edu). If you are concerned that a fellow student may be facing physical, emotional, or academic difficulties, you can also contact CSS on their behalf (confidentially and anonymously if you wish). More information available [here](#).

Additional support:

Campus Libraries

Tribe TutorZone

The Office of Career Development & Professional Engagement

Student Counseling Services and for more important numbers to get help see [here](#)

5 Syllabus Revisions

You are responsible for all materials, updates, & announcements discussed during class sessions. In case(s) of unforeseen circumstances, the instructor will use William & Mary email account to communicate with each student electronically.

References

- [1] Joshua D Angrist and Jörn-Steffen Pischke. *Mostly harmless econometrics: An empiricist's companion*. Princeton university press, 2009.
- [2] Joshua D Angrist and Jörn-Steffen Pischke. *Mastering'metrics: The path from cause to effect*. Princeton university press, 2014.
- [3] R Carter Hill, William E Griffiths, and Guay C Lim. *Principles of econometrics*. John Wiley & Sons, 2018.
- [4] Jeffrey M Wooldridge. *Introductory econometrics: A modern approach*. Cengage learning, 7th Edition.