

Econ 308: Econometrics
Course Syllabus
Fall 2024

Department of Economics
College of Arts and Sciences
William and Mary

Professor: Samuel Weldeegzie

E: sweldeegzie@wm.edu

Office Location: Chancellors Hall 337

Office Hours at Chancellors Hall 337

Monday: 3.00-4.00

Wednesday: 11-12:00

Course meetings: TH 11.00 - 12.20 at Chancellors 219 (Section 5)

Course meetings: TH 12.30 - 1.50 at Chancellors 114 (Section 4)

1 About the Instructor

Prof. Weldeegzie is a Visiting Assistant Teaching Professor of Economics at William and Mary and received his PhD Economics from the Australian National University (ANU). Weldeegzie taught Econometrics and (Empirical) microeconomics at William & Mary and several other economics courses at ANU and Ethiopian Civil Service University. Weldeegzie's broad research interest and previous work focus on human capital accumulation and impact evaluations of development programs.

2 About the course

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.

This course will cover the fundamental methods used in recent empirical analysis. We will begin by the Simple and Multiple Linear Regression (MLR) Models and their associated estimation technique—Ordinary Least Squares (OLS). We will discuss further topics such as Inference, OLS Asymptotic, and additional issues including models with qualitative information and heteroscedasticity before we learn how to apply these techniques using real-world datasets.

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 introduce some of the most recent remedies in Econometrics to solve these endogeneity concerns—Panel Data Models and Instrumental Variables Approach. The focus will be on the application of these research designs and techniques by understanding the intuition behind rather than theoretical development.

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

1. explain the fundamental assumptions of SLR and MLR models
2. understand the process of Ordinary Least Squares estimation and properties of the estimators
3. write and execute STATA “do” files and use real world data to run regressions and interpret results
4. examine the sources of endogeneity concerns in empirical research projects
5. understand how panel data and IV approaches solve some of the endogeneity concerns
6. explain and critique the recent literature that apply econometric analysis
7. 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)

Mostly, following the text book by **Wooldrige (2020)**, we will approach the course contents in the following order.

Topics	Wooldrige Chapters
Introduction	Chapter 1
Simple Linear Regression (SLR) models	Chapter 2
Multiple Linear Regression (MLR) models	Chapter 3
STATA practices	Lecture Notes
MLR Inference	Chapter 4
MLR Asymptotics	Chapter 5
MLR further issues	Chapter 6 & 7
Heteroscedasticity	Chapter 8
Endogeneity	Lecture Notes
Panel data models	Chapter 13
Instrumental Variables Approach	Chapter 15

Attendance, Homework, Exam & Grading: Students are responsible for attending lectures, taking notes, and reviewing your notes after each class. I encourage you to obtain notes from another student if you miss class. Evaluations will be based on 5 problem sets (with Stata applications), 1 Exam, 1 quiz, 1 Research/Term paper and a final exam (cumulative).

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.

Assessment type	Due date	weight
PS1	Sep 12	3%
PS2	Sep 26	3%
PS3	Oct 17	3%
PS4	Oct 31	3%
PS5	Nov 14	3%
Exam 1	Oct 8 (in-class)	20%
Quiz	Nov 7 (in-class)	5%
Research Paper	Dec 5	30%
Final Exam (cumulative)	Dec 11 2-5pm [Section 5]	30%
Final Exam (cumulative)	Dec 13 9am-12pm [Section 4]	30%

Grading scale: Letter grades for the course will be based on a 100-point scale as determined by the following: $A(\geq 91)$, $A-(\geq 87)$, $B+(\geq 85)$, $B(\geq 75)$, $B-(\geq 71)$, $C+(\geq 65)$, $C(\geq 60)$, $C-(\geq 55)$, $D+(\geq 50)$, $D(\geq 45)$, $D-(\geq 40)$, and $F(\leq 40)$.

Important Dates:

- September 9; Monday – Last Day for Add/Drop
- October 10; Thursday – Fall Break (no class)
- October 28; Monday – Last day of withdrawal
- November 26; Tuesday – work on your research project remotely (no class)

- December 5; Thursday – Lat day of Classes

3 Campus-wide 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. More information available [here](#) and [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](#).

4 Campus Support

William and Mary 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. More information available [here](#).

The following web links may also be helpful:

[Campus Libraries](#)

[Tribe TutorZone](#)

[The Office of Career Development & Professional Engagement](#)

[Student Counseling Services](#)

For important numbers to get more help see [here](#)

5 Syllabus Revisions

You are responsible for all materials, updates, & announcements discussed during class sessions. I will use Blackboard/William & Mary email account to communicate with students 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] Scott Cunningham. *Causal inference: The mixtape*. Yale university press, 2021.
- [4] R Carter Hill, William E Griffiths, and Guay C Lim. *Principles of econometrics*. John Wiley & Sons, 2018.
- [5] James H Stock, Mark W Watson, et al. *Introduction to econometrics*, volume 104. Addison Wesley Boston, 2003.
- [6] Jeffrey M Wooldridge. *Introductory econometrics: A modern approach*. Cengage learning, 7th Edition 2020 **This is the main reference.**