ECON567B: Econometrics II

Southern Illinois University

Fall 2026

INSTRUCTOR

Soo Jeong Lee
School of Analytics, Finance and Economics
Southern Illinois University
Office: Faner Hall | Room 4136
Carbondale, IL 62901

Email: soojeong.lee@siu.edu
Website: soo-econ.github.io
Student Engagement Hours: Tue. 1-1:50 PM or by appointment

TEACHING ASSISTANT

- **Teaching Assistant/Email**: TBA
- **Student Engagement Hours/Location**: TBA

LECTURE

08/17/2026 - 12/11/2026

- **Class meets:** Tue. and Thu. 2:00 PM - 3:15 PM
- Faner Hall | Room TBA
- **No class:** November 24 and 26 (Thanksgiving Break)

COURSE GOAL

- The second semester of **Ph.D.- level sequence in Econometrics**
- **Prerequisite**: ECON 465 and ECON 567A, or consent of instructor.

The aim of this course is to develop students' understanding of econometric tools most often used in applied research, with a focus on model specification and data issues. While theoretical foundations will be covered as needed, the primary emphasis is on practical application—understanding the assumptions behind each method, interpreting results, and implementing techniques using real-world dataset.

- **Course Sequence:** ECON 567C

To help students see the full scope of the sequence and plan their studies, the course outline provided in the following pages includes all topics that I aim to cover across both ECON 567B and ECON 567C.

STUDENT LEARNING OUTCOMES

By the end of this course, students will be able to:

- Explain the key identifying assumptions behind econometric methods
- Choose appropriate econometric models based on data and research questions.
- Interpret results from econometric analyses in a clear and meaningful way.
- Develop a research proposal that includes a clear question, model specification, and identification strategy.

GRADING

The course grade will be based on the fallowing components:

- **In-class quizzes and assignments**: 60% (tentative: 3 quizzes and 3 assignments)
- **Referee report**: 20%
- **Presentation/ Research Proposal**: 30%

Students will give one presentation and complete two essays: a referee report and a research proposal.

Statistical computing is required for the assignments. Students may use any programming language of their choice. Please note that course examples will primarily use Stata.

COURSE MATERIALS

This course is primarily based on **a set of lecture notes.** Students are required to read the assigned sections from the following main textbook.

- **Main Textbook:** Wooldridge, J.M. (2010), *Econometric Analysis of Cross Section and Panel Data*, 2^{nd} edition, MIT Press, Cambridge, MA.

COURSE OUTLINE

Course Topics (EC567B, EC567C)

ECON567B, Econometrics II

1. Math Review — Wooldridge: Ch. 1-3
2. OLS Estimation with Cross Sectional Data — Wooldridge: Ch. 4
3. Systems of Equation: Pooled OLS (Panel Data) — Wooldridge: Ch. 7
4. Systems of Equation: Generalized Lease Squares (GLS) — Wooldridge: Ch. 7
5. Systems of Equation: Instrumental Variables (IVs) — Wooldridge: Ch. 8
6. Linear Unobserved Effects Panel Data Models — Wooldridge: Ch. 10-11
   : Random Effects vs. Fixed Effects Estimation
7. Treatment Effect Estimation under Unconfounded Assignment — Wooldridge: Ch. 21

ECON567C, Econometrics III

1. Difference in Differences with Panel — Wooldridge: Ch. 21
   : Common Timing, Staggered Intervention
2. Regression Discontinuity Designs — Wooldridge: Ch. 21
3. Maximum Likelihood Estimation — Wooldridge: Ch. 13
4. Binary Response Models: Cross Sectional and Panel Data — Wooldridge: Ch. 15-17
5. Exponential Models for Nonnegative Response Variables — Wooldridge: Ch. 18
6. Treatment Effect Estimation under Confounded Assignment — Wooldridge: Ch. 6, 21
   : Local Average Treatment Effects (LATE), IV and Control Function Approaches
7. Time Series Analysis
8. Introduction to Machine Learning
