

ECON 672: Econometrics II
Professor Mohitosh Kejriwal
Spring 2022

Lectures: Mondays and Wednesdays, 1:10-2:40pm, Rawls 2058.

Office Hours: On Zoom by appointment.

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Grader: Linh Nguyen (nguye535@purdue.edu)

Course Overview: The objective of this course is to provide a rigorous introduction to the basic tools used in econometric analysis. The topics covered will include bootstrap methods and applications, the generalized method of moments, and linear panel data models. Emphasis will be placed both on understanding the theory underlying the various econometric methods as well as the application of these methods to the analysis of economic data. Familiarity with the material covered in ECON 670 and 671 or equivalent courses will be assumed.

Learning Outcomes: By the end of the course, you will be able to (i) develop close familiarity with several econometric techniques that are useful for analyzing different types of models/data used in economics; (ii) appreciate the relevance of these techniques through their application to economic datasets; (iii) understand the strengths and limitations of the techniques via simulations.

Problem Sets: Each topic will be accompanied by a set of exercises. They will consist of analytical, simulation-based as well as empirical problems. You are encouraged to work on them in groups (not exceeding three). Familiarity with a matrix-oriented programming language (e.g., MATLAB) is essential. Questions about problem set grading should be addressed to the grader.

Exams: There will be two exams: a closed-book midterm and a closed-book final. The midterm will be held during class time on **Monday, February 7**. The final exam will be held on **Wednesday, March 2**, the last day of class (room and time will be announced later). The final exam is cumulative and will be based on all the material covered in the course.

Grading: Problem Sets (20%), Midterm (30%), Final (50%).

Course Website: All material related to the course will be available through Brightspace at <https://purdue.brightspace.com/>. You will need to log in with your Purdue username and password.

Recommended Textbooks: (1) “*Econometrics*,” by Bruce Hansen, available at <https://www.ssc.wisc.edu/~bhansen/econometrics/Econometrics.pdf> (2) “*Econometric Analysis of Cross Section and Panel Data*,” by J.M. Wooldridge, The MIT Press. (3) “*Microeconomics: Methods and Applications*,” by A. Colin Cameron and Pravin K. Trivedi, Cambridge University Press. (4) “*Time Series and Panel Data Econometrics*,” by M. Hashem Pesaran, Oxford University Press.

Other Useful References:

1. Arellano, M.: “*Panel Data Econometrics*,” Oxford University Press.
2. Baltagi, B.H.: “*Econometric Analysis of Panel Data*,” John Wiley & Sons.
3. Davidson, R. & MacKinnon, J.G.: “*Econometric Theory and Methods*,” Oxford University Press.
4. Greene, W.H.: “*Econometric Analysis*,” Prentice Hall.
5. *Handbook of Econometrics*, North Holland.
6. Ruud, P.A.: “*An Introduction to Classical Econometric Theory*,” Oxford University Press.
7. White, H.: “*Asymptotic Theory for Econometricians*,” Academic Press.
8. Hayashi, F.: “*Econometrics*,” Princeton University Press.

Lectures and Class Notes: I will provide a set of lecture notes for each topic that will be covered in class. These notes are not exhaustive in the sense that they are intended to provide a basic outline of the lecture material and will not contain the formal derivations of most results. These derivations will be covered in class and so it is important that you attend class regularly and take adequate notes. In addition, I will provide an extensive list of references for each topic.

Classroom Guidance Regarding Protect Purdue: The Protect Purdue Plan, which includes the Protect Purdue Pledge, is campus policy and as such all members of the Purdue community must comply with the required health and safety guidelines. Please refer to <https://protect.purdue.edu/> as well as the Protect Purdue information on Brightspace for current protocols. Face masks are required in the classroom. Any student who has substantial reason to believe that another person is threatening the safety of others by not complying with Protect Purdue protocols is encouraged to report the behavior to and discuss the next steps with their instructor. Students also have the option of reporting the behavior to the Office of the Student Rights and Responsibilities. See also Purdue University Bill of Student Rights and the Violent Behavior Policy under University Resources in Brightspace.

Emergency: In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances.

Course Topics:

1. The Bootstrap: Hansen (Chapter 10), Cameron and Trivedi (Chapter 11).
2. Generalized Method of Moments: Hansen (Chapter 13), Cameron and Trivedi (Chapter 6).
3. Linear Panel Data Models: Hansen (Chapter 17), Cameron and Trivedi (Chapters 21 & 22), Pesaran (Chapter 26), Wooldridge (Chapters 10 & 11).