

ECON 818, Fall 2023
Advanced Econometrics II

Instructor Contact Information

Instructor Name and Preferred Title: Zongwu Cai, Professor
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Office Hours: MW 10:30 am – 12:00 pm
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Class Time and Location

Class Time: MW 12:30 pm – 13:45 pm
Class Location: Snow 452
Semester: Fall 2023

Course Hours and Instructional Methods:

This is an in-person course that fulfills 3 credit hours. Consistent with KU policy and the federal definition of a credit hour, this means you should expect to spend at least 9 hours a week on this course over the 15-week semester. Most weeks 2.5 hours will be instructional time in the classroom (i.e., class meetings) and the remaining time will involve out-of-class work. The instructional mode will be lecture only, but often conducted as a seminar with in-class discussion and possible collaboration on research.

Course Description

This is one of the core courses required for the Ph.D. program in economics and it is about the study of estimation and hypothesis testing within the context of the stochastic simultaneous equation models, such as, for linear and nonlinear parametric regression models, which can be applied in microeconomics and macroeconomics research. It emphasizes on theory and methodologies as well as applications. Inference with those models will be by nonlinear parametric, semi-parametric, and nonparametric methods. Prerequisite: [ECON817](#).

Learning Outcomes

After successful completion of this course, you will be able to:

1. Conduct state of the art publishable research on advanced econometrics.
2. Participate actively in international conferences using microeconomic theory and macroeconomic theory empirically.
3. Be identified internationally as an authority on advanced econometrics.
4. Contribute to governmental research and policy using advanced econometrics.
5. Carry on your own research in a manner identifying you within the profession as affiliated with others having expertise in your research.

Course Materials

The textbook for this course is *“Econometric Theory and Methods”* by Russel Davidson and James MacKinnon (2004) [Oxford University Press, New York, ISBN 978-0-19-512372-2]. The topics include Chapters 9 – 11, and some additional materials such as my own lecture notes on *“Nonparametric Econometrics”*, which can be downloaded from [the course website](#).

Course Assignments and Requirements

Reading assignments for each class will depend upon the speed with which the class progresses through the relevant material as well as the research interests of the class. Problems for Homework will be assigned at class meetings. No late homework will be accepted. Missed homework will receive a grade of zero. The homework will be collected at the end of each chapter (the due date will be announced later) and graded. You are allowed to work with other students on the computer coding for some homework problems, however, verbatim copying of homework is absolutely forbidden. Therefore, each of you must ultimately produce your own homework to be handed in and graded. Homework assignments are long and painful and require a lot of effort on your part, but you will not be able to do well on exams without doing homework assignments.

General Assignment Information

- Unsolved problems in the relevant literature will be emphasized in class along with the kinds of expertise needed to solve the problems.
- Students interested in contributing to this literature by solving those unsolved problems will be encouraged to do so.
- Students wishing to apply but not extend the methodology covered in the course will be encouraged to do so, if focused on a new application not previously published.
- A term paper by using nonparametric techniques learned from this course to analyze real data (applied problems) or reading papers from original publishable research is required. You need to a presentation for this at the end of the semester (see the schedule later).

Evaluation Criteria and Grading Scale

Student Survey of Teaching

You will have multiple opportunities to provide feedback on your experience in this course. Suggestions and constructive criticism are encouraged throughout the course and may be particularly valuable early in the semester. You will also be asked to complete an end-of-semester, online Student Survey of Teaching, which could inform modifications to this course (and other courses that I teach) in the future.

Grading

Students taking the course for a grade are required to complete all the homework assignments, the exam, and the class presentation (on December 4 and 6), which will include some applications of the methods that you have learned in the course. **Exam makes up 1/3, homework counts 1/3, and presentation counts 1/3 of the course grade.**

Grading Scale

89.5% - 100% = A
 84.5% - 89.4% = B+
 79.5% - 84.4% = B
 74.5% - 79.4% = C+
 0.00% - 74.4% = C

Incomplete Grades

You may be assigned an 'I' (Incomplete) grade if you are unable to complete some portion of the assigned course work because of an unanticipated illness, accident, work-related responsibility, family hardship, or verified learning disability. An Incomplete grade is not intended to give you additional time to complete course assignments or extra credit unless there is indication that the specified circumstances prevented you from completing course assignments on time.

Attendance Policy

The attendance policy is consistent with the [University Excused Absences](#) policy (USRR 2.2.1).

Academic Success

In addition to any policies and resources noted above, the [KU Academic Success Student Resources](#) website provides links to KU Policies and Resources pertaining to academic misconduct, grading policies, harassment and discrimination, diversity and inclusion, mandatory reporting, equal opportunity and affirmative action, and student rights and responsibilities. Please visit the site to familiarize yourself with these policies and

resources. If you have questions or concerns about any of these policies, statements, or resources, please let me know, or contact Student Affairs directly.

Course Schedule

Week	Date	Topic	Assignment	Due Today
1	August 21, 23	Chapter 9: GMM	Read Chapter 9 of Textbook	
2	August 28, 30	Chapter 9: GMM	Chapter 9 of Textbook	
3	Sept 4, 6	Chapter 9: GMM and Nonparametric GMM	Read Cai and Li (2008, ET)	
4	Sept 11, 13	Chapter 10: MLE	Read Chapter 10 of Textbook	Due day for HW#1 from Chapter 9
5	Sept 18, 20	Chapter 10: MLE	Read Chapter 10 of Textbook	
6	Sept 25, 27	Chapter 11: Discrete and Limited Dependent Variable	Read Chapter 11 of Textbook	Due day for HW#2 from Chapter 10
7	Oct 2, 4	Chapter 11: Discrete and Limited Dependent Variable	Read Chapter 11 and Handout	
8	Oct 9, 11	EXAM		
9	Oct 16, 18	Chapter 1 of Lecture Notes: Density, Distribution & Quantile Estimations	Read Chapter 1 of Lecture Notes	Due day for HW#3 from Chapter 11
10	Oct 23, 25	Chapter 1 of Lecture Notes: Density, Distribution & Quantile Estimations	Read Chapter 1 of Lecture Notes	
11	Oct 30, Nov 1	Chapter 1 of Lecture Notes: Density, Distribution & Quantile Estimations	Read Chapter 1 of Lecture Notes	
12	Nov 6, 8	Chapter 2 of Lecture Notes: Nonparametric Regression Models	Read Chapter 2 of Lecture Notes	Due day for HW#4 for Chapter 1 of Lecture Notes

Week	Date	Topic	Assignment	Due Today
13	Nov 13, 15	Chapter 2 of Lecture Notes: Nonparametric Regression Models	Read Chapter 2 of Lecture Notes	
14	Nov 20, 22	Thanksgiving—No class Wednesday Monday: Chapter 2 of Lecture Notes: Nonparametric Regression Models	Read Chapter 2 of Lecture Notes	Start to read papers and prepare your presentation
15	Nov 27, 29	Chapter 3 of Lecture Notes: Nonparametric Quantile Models	Read Chapter 3 of Lecture Notes	
16	Dec 4, 6	Last Week of Classes	Presentations	Due day for HW#5 for Chapters 2 and 3 of Lecture Notes
17	Dec 13	Finals Week		The final PPT for presentation is due December 12

Note that you will receive a paper(s) for your reading and your class presentation is based on the paper(s) you will read. Alternatively, you can write a term paper. For presentation, you will have about 18 minutes for your presentation and about 2 minutes for questions. The date for your presentation will be decided later (possibly at the end of the semester).