Econ 9473
Econometric Theory II
Spring 2020

## COURSE INFORMATION

Class Meeting: MW 2:00-3:15pm
Geological Science Building, Rm 111
Instructor: Alyssa Carlson
235 Professional Building
Email: carlsonah@missouri.edu
Office: 573-882-3161
Website: http://courses.missouri.edu
Office Hours: M 3:30-4:30pm (or by appointment)

## COURSE DESCRIPTION

This class is the second course in the Economics PhD first year econometrics sequence. The course will build upon what was taught in 9471 covering more advanced econometric methods such as Instrumental Variables, Generalized Methods of Moments, Panel Data methods, and Maximum Likelihood methods of estimating Limited Dependent Variables.

## LEARNING OBJECTIVES

- Articulate the big picture concepts of IV, GMM, and ML estimation.
- For a variety of econometric methods, describe their critical assumptions, computation, and output/interpretation.
- Judge which of two methods is "better" in a given situation, articulating tradeoffs between the two (imperfect models)

## TEXT AND MATERIAL

We will be using Jeffrey Wooldridge (2010) "Econometrics Analysis of Cross Section and Panel Data" 2nd Ed. In addition to the textbook, lecture slides will also be provided. Please print (or have access to) slides during class so you may take additional notes to those provided.

Optional Texts: "Microeconometrics: Methods and Applications" by Cameron and Trivedi is another commonly utilized graduate level reference (but a little more dry of a read compared to Wooldridge). For a fun text that is particularly useful for treatment effects estimation, "Mostly Harmless Econometrics" by Angrist and Pischke is a quick and econometrically sound read.

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## TOPICS

| Chapters | Topic |
|---|---|
| 1 | Introduction |
| 2 | Conditional Expectations and Related Concepts in Econometrics |
| 4 | Review of Single Equation Linear Model and Ordinary Least Squares Estimation |
| 5 | Instrumental Variables Estimation of Single-Equation Linear Models and Control Function Approaches |
| 14 and 8 | Generalized Methods of Moments and application to System IV |
| 10 | Basic Linear Unobserved Effects Panel Data Methods |
| 13 | Maximum Likelihood Methods |
| 15 | Binary Response |
| 16 | Multinomial and Order Response |
| 17 and 19 | Corner Solution Model and Sample Selection |

## GRADE COMPOSITION

Problem Sets – 30%
Midterm – 30%
Final (**Wednesday, May 13, 12:30-2:30 p.m.**) – 40%

**Problem Sets –** There will be 4-6 problem sets assigned throughout the semester. While collaboration on the assignments is encouraged, each student must turn in his/her own problem set, written in his/her own words (no direct copies or photocopies allowed). Assignments must be turned in on time and in hard copy format (email submissions only allowed if discussed with me before the due date). If an assignment is turned in within 24 hours after the due date, it will automatically lose 50% of the grade. No credit is given to problem sets handed in more than 24 hours late. All homeworks will be distributed at least a week before they are due.

**Midterm** – You will have the entire class time (1hr15min) to complete the midterm. For the midterm you may bring three 8.5x11 pieces of paper with your own study material (cheat sheets) as well as a calculator and pen/pencil. You may not use your phone as a calculator and the cheat sheets must be your own work (no printing multiple copies for multiple students).

**Final Exam** – You will have the entire final exam time (2hrs) to complete the final. The final exam questions will focus on material on the second half of the course. But do keep in mind that material learned in the first half is still pertinent in understanding the second half. Therefore the final will be

cumulative in that sense. In addition to the three cheat sheets from the midterm, you are allowed three more 8.5x11 pieces of paper with your own study material.

If you have a significant reason that you believe would justify rescheduling an exam, you must contact me **as soon as possible**. Significant reasons that can be anticipated (e.g. any schedule conflicts with final exams, required participation in University-sponsored activities, conferences, etc.) must be given to me at least **two weeks** before the exam. For reasons that cannot be anticipated, see me immediately to make appropriate arrangements. Generally, if circumstances warrant it, makeup exams will only be provided *before* the regularly scheduled exam. However, the resolution of any conflicts will be handled on a case-by-case basis.

## COURSE EXPECTATIONS

You can expect me to
- Be available during office hours or appointments to talk all things econometrics!
- Be prepared for class by having lecture slides uploaded at least 24 hours before class.
- Provide clear and quick communication. I will notify you of all due dates in class and via Canvas. I will respond to emails within 24 hours (mostly likely faster).
- Fair grading of homework, exams, and projects

I expect you to
- Be prepared for class with access to lecture slides and materials for taking notes. I allow phones, computers, tablets, etc. as long as they are on silent or vibrate.
- Actively participate in the course. What you get out of it is what you are willing to put into it.
- Be vocal on where you are confused or where we are moving too quickly. If you are having trouble understanding the material, it is likely others in the class are also confused. I will only be able to help you if you tell me you need help.

## ACADEMIC INTEGRITY

Academic integrity is fundamental to the activities and principles of a university. All members of the academic community must be confident that each person's work has been responsibly and honorably acquired, developed, and presented. Any effort to gain an advantage not given to all students is dishonest whether or not the effort is successful. The academic community regards breaches of the academic integrity rules as extremely serious matters. Sanctions for such a breach may include academic sanctions from the instructor, including failing the course for any violation, to disciplinary sanctions ranging from probation to expulsion. When in doubt about plagiarism, paraphrasing, quoting, collaboration, or any other form of cheating, consult the course instructor.

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## ACCOMMODATION OF DISABILITIES

Students with Disabilities:

If you anticipate barriers related to the format or requirements of this course, if you have emergency medical information to share with me, or if you need to make arrangements in case the building must be evacuated, please let me know as soon as possible.

If disability related accommodations are necessary (for example, a note taker, extended time on exams, captioning), please establish an accommodation plan with the MU Disability Center, S5 Memorial Union, 573-882-4696, and then notify me of your eligibility for reasonable accommodations.  For other MU resources for persons with disabilities, click on "Disability Resources" on the MU homepage.

## INTELLECTUAL PLURALISM

The University community welcomes intellectual diversity and respects student rights. Students who have questions or concerns regarding the atmosphere in this class (including respect for diverse opinions) may contact the departmental chair or divisional director; the director of the Office of Students Rights and Responsibilities; the MU Equity Office, or equity@missouri.edu.

All students will have the opportunity to submit an anonymous evaluation of the instructor(s) at the end of the course.

## ACADEMIC INQUIRY, COURSE DISCUSSION, AND PRIVACY

University of Missouri System Executive Order No. 38 lays out principles regarding the sanctity of classroom discussions at the university. The policy is described fully in Section 200.015 of the Collected Rules and Regulations. In this class, students may make audio or video recordings of course activity unless specifically prohibited by the faculty member. However, the redistribution of audio or video recordings of statements or comments from the course to individuals who are not students in the course is prohibited without the express permission of the faculty member and of any students who are recorded. Students found to have violated this policy are subject to discipline in accordance with provisions of section 200.020 of the Collected Rules and Regulations of the University of Missouri pertaining to student conduct matters.

## TITLE IX

University of Missouri policies prohibit discrimination on the basis of race, color, national origin, ancestry, religion, sex, gender, gender identity, gender expression, sexual orientation, pregnancy, age, genetic information, disability and protected veteran status. Discrimination includes any form of unequal treatment such as denial of opportunities, harassment, and

violence. Sex-based violence includes rape, sexual assault, unwanted touching, stalking, dating/interpersonal violence, and sexual exploitation.

If you experience discrimination, you are encouraged (but not required) to report the incident to the MU Office for Civil Rights & Title IX. Learn more about your rights and options at civilrights.missouri.edu or call 573-882-3880. You also may make an anonymous report online.

Students may also contact the Relationship & Sexual Violence Prevention (RSVP) Center, a confidential resource, for advocacy and other support related to rape or power-based personal violence at rsvp@missouri.edu or 573-882-6638, or go to rsvp.missouri.edu.

Both the Office for Civil Rights & Title IX and the RSVP Center can provide assistance to students who need help with academics, housing, or other issues.