University of Florida
Department of Economics
Fall 2023

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Econometric Methods I
ECO7426

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Instructor:	Ignacia Mercadal	**Time:**	T&Th 4:05 – 6:00pm
Email:	imercadal@ufl.edu	**Room:**	MAT 119
Office Hours:	Wednesdays 1:00–3:00	Sign up for an appointment here	

Course Description and Objective

This course is part of the second year sequence in econometrics offered for Ph.D. students in economics. The goal of the class is to provide Ph.D. students with tools that can be useful in applied research. We will cover topics including non-linear models, maximum likelihood estimation, the generalized method of moments, and an introduction to non-parametrics.

Textbooks and Readings:

- Colin Cameron and Pravin K Trivedi. *Microeconometrics: Methods and Applications.* Cambridge university press, 2005
- Bruce Hansen. *Probability and Statistics for Economists.* Princeton University Press, 2022b
- Bruce Hansen. *Econometrics.* Princeton University Press, 2022a
- Jeffrey M Wooldridge. *Econometric Analysis of Cross Section and Panel Data.* MIT press, 2010
- William H Greene. *Econometric Analysis.* Pearson, 2012
- Fumio Hayashi. *Econometrics.* Princeton University Press, 2000
- Kenneth E Train. *Discrete Choice Methods with Simulation.* Cambridge University Press, 2009

Assignments and Grading:

Your grade will be based on performance on 4 problem sets (20%), two exams (30% each), and a research proposal (20%).

You are welcome to discuss assignments with other students, but you must turn in your own work on Canvas. Please use RMarkdown or equivalent for assignments that include code, and make sure the code runs, I will not fix bugs. I recommend R, but you can use any programming language.

Grading will be according to the following scheme:

Score	Grade
94 - 100	A
90 - 93.99	A-
87 - 89.99	B+
83 - 86.99	B
80 - 82.99	B-
77 - 79.99	C+
73 - 76.99	C
70 - 72.99	C-
67 - 69.99	D +
64 - 66.99	D
61 - 63.99	D-
0 - 60	E

Regrade Requests Regrade requests must be typed and submitted in writing **within a week of receiving your graded problem set or exam back**. You must state the exact reason for a regrade, either due to a mis-calculation adding the points or an alternative but valid solution. "I think I deserve more points for this answer" is not an acceptable request and will

not be considered. The whole assignment will be regraded, which means that *your grade can increase or decrease.*

The above grading policies are consistent with UF policies regarding grade determination. This information can be found here. Make-up exams will be arranged only for absences that are explicitly covered by the UF Attendance Policy. Whenever possible, you should reach out at least ten business days in advance to arrange a make-up exam. Of course, this will not always be possible. Unforeseen absences and emergencies occur and can be excused without such advance notice. In most cases, you will be asked to provide evidence or documentation of an absence that is explicitly excused by the UF Attendance Policy. Absences related to religious holidays and worship do not require this documentation.

Research Proposal

The proposal must identify a question of economic interest that has not been answered in the literature, and propose a concrete way to use available data to answer it. Proposals usually contain some descriptive figures or preliminary regressions suggesting that we can learn something useful from the variation in the data. Alternative, you can reproduce the results of an existing paper and find at least one interesting change or addition that would extend improve on the paper's econometric analysis.

You may choose any topic (subject to my approval), **as long as you use some of the tools studied in class**. You can work individually or in pairs. There will be three deliverables associated to the project (details for each of them will be available on Canvas):

- **November 3**: 2-4 pages. Literature review (~ 5 papers) on the topic of interest. Identify question and data.
- **November 28, 30**: In-class presentations.
- **December 12**: Final Proposal Due

Disability Accomodations

Students with disabilities who experience learning barriers and would like to request academic accommodations should register with the Disability Resource Center. Once registered, students will receive an accommodation let-

ter that can be presented to the instructor when requesting accommodations. Please register at the beginning of the course if seeking accommodations. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Resources

Good Advice on Coding: Gentskow and Shapiro's *Code and Data for the Social Sciences: A Practitioner's Guide* https://web.stanford.edu/%7Egentzkow/research/CodeAndData.pdf

Topics

1. M-Estimation and Nonlinear Regression

   - Cameron and Trivedi, Ch. 5

2. Maximum Likelihood Estimation

   - Cameron and Trivedi, Ch. 5
   - Wooldridge Ch. 13
   - Greene Ch. 16

3. Generalized Method of Moments Estimation

   - Cameron and Trivedi, Ch. 6
   - Wooldridge Ch 14
   - Hansen Ch 13
   - Greene Ch. 15

4. Discrete Choice Models

   - Cameron and Trivedi, Ch. 14 and 15
   - Wooldridge Ch 15 and 16
   - Greene Ch. 23
   - Hansen Ch 25, 26
   - Steven T Berry. Estimating discrete-choice models of product differentiation. *The RAND Journal of Economics*, pages 242–262, 1994

- Aviv Nevo. Measuring market power in the ready-to-eat cereal industry. *Econometrica*, 69(2):307–342, 2001
- Timothy F Bresnahan and Peter C Reiss. Entry and competition in concentrated markets. *Journal of political economy*, 99(5):977–1009, 1991

5. Tobit and Selection Models

   - Cameron and Trivedi, Ch. 16
   - Wooldridge Ch 17, 19
   - Hansen Ch 27
   - Greene Ch. 24

6. Quantile Regression

   - Wooldridge 12.10
   - Hansen Ch 24

7. Nonparametric and Semiparametric Estimation

   - Cameron and Trivedi, Ch. 9
   - Hansen Ch 19, 20
   - Auction papers

8. Structural vs. Non-Structural (time dependent)

   - Michael P Keane. Structural vs. atheoretic approaches to econometrics. *Journal of Econometrics*, 156(1):3–20, 2010

9. Identification (time dependent)

   - Arthur Lewbel. The identification zoo: Meanings of identification in econometrics. *Journal of Economic Literature*, 57(4):835–903, 2019

10. Introduction to Machine Learning (time dependent)

    - Hansen Ch. 29
    - Gareth James, Daniela Witten, Trevor Hastie, and Robert Tibshirani. *An Introduction to Statistical Learning*, volume 112. Springer, 2013 Ch. 1, 4, 6

Tentative Schedule:

TUESDAY	THURSDAY
8/ 22	8/24 Syllabus M-Estimators
8/29 M-Estimators	8/31 M-Estimators
9/ 5 Maximum Likelihood	9/7 Maximum Likelihood
9/12 GMM	9/14 Problem Set 1 GMM
9/19 GMM	9/21 Hypothesis Tests
9/26 Binary Choice	9/28 Binary Choice
10/ 3 Multinomial Models	10/5 Problem Set 2 Multinomial Models
10/10 **Midterm**	10/12 Multinomial Models
10/17 Multinomial Models	10/19 Truncation and Sample Selection

Tuesday	Thursday
10/24 Truncation and Sample Selection	10/26 Problem Set 3 Quantile Regression
10/31 Quantile Regression	11/ 2 Semiparametrics
11/7 Semiparametrics	11/9 Structural vs. non-structural
11/14 Identification	11/16 Problem Set 4 Intro to ML
11/21 Project Discussion	11/23 **Thanksgiving Break**
11/28 Student Presentations	11/30 Student Presentations
12/ 5 **Final Exam**	12/7
12/12 **Research Proposal Due**	12/14

Student Evaluations

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available here. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/.

Health Counseling and Emergencies

- **U Matter, We Care**: If you or a friend is in distress, please contact umatter@ufl.edu or 352-392-1575 so they can reach out and help.

- Counseling and Wellness Center: Reach by phone at 352-392-1575, and the University Police Department: 392-1111 or 9-1-1 for emergencies.

- **Sexual Assault Recovery Services (SARS)**: UFPD Office of Victim Services (confidential) (352) 392-5648, Student Health Care Center, 352-392-1161.

- University Police Department at 352-392-1111 (or 9-1-1 for emergencies).

Cheating and Plagiarism:

UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment."" The Conduct Code specifies a number of behaviors that are in violation of this code and the possible sanctions. You should familiarize yourself with the Student Honor Code and Student Conduct Code. Cheating and plagiarism are not the only violations of this policy. Importantly, ignorance of a policy

is not a valid reason for violating it. If you have any questions or concerns, please consult with the instructor or TA.

Class Recordings

Please be aware of UF's policy on class recordings:

"Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A "class lecture" is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To "publish" means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code."