
Syllabus

ECON 644: Empirical Analysis II: Introduction to Economic Models

Contact Information and Class Logistics:

Instructor: F. David Osinski

Email: fosinsk1@umd.edu

Office Hours: ELMS Discussion Board Thursday, 10am to 11am (subject to change)
and by appointment either in person or via Zoom
(I also respond to most emails within 24 hours)

TA: Sara Ellen King

Email: sking721@umd.edu

Office Hours: Zoom Sundays 7 to 8 pm, and by appointment via Zoom

Class Location: 1400 16th Street, NW Suite 140, Washington DC

Class Time: Monday, 6:45 - 9:30 pm, with a 15 minute break around 8pm

(Some classes may occur on Friday evenings --- see schedule below)

Class Website: <https://myelms.umd.edu>

General logistics: The course will be administered through the UMD ELMS-Canvas platform. Students will complete assigned readings from the textbook and/or other sources, attend lectures with accompanying slides, and submit assignments. For the purposes of the course, a week will begin at class time, 6:45pm on Monday, and end at 6:44pm the following Monday.

Course Overview:

Overview: Econometrics applies modern statistical methods to economic problems. It introduces techniques for estimating the effect of one or more explanatory variables on a variable of interest. This course emphasizes practical aspects of estimating econometric models of various types and tests of hypotheses. The objective of this course is to provide students with the knowledge and skills of basic applied econometrics that enables them to understand and critically discuss econometrics analyses and to conduct basic econometrics analyses. Students use Stata to conduct econometrics analyses.

Objective: The Professional Master’s program has seven general learning outcomes for students. The learning outcomes that pertain to this course are 1, 2, 3, and 6.

1. Ability to understand, evaluate and analyze economic data.
2. Ability to understand and interpret statistical evidence from economic data.
3. Ability to apply empirical evidence to assessing economic arguments.
4. Ability to apply macroeconomic theories to policy discussions.
5. Ability to apply microeconomic theories to policy discussions.
6. Ability to communicate economic ideas to a broader audience.
7. Ability to evaluate the effectiveness of policy programs using sound economic techniques.

Goal: The course teaches statistical methods and statistical software used to organize and analyze data. The main goal is to quantify how one economic variable is related to another variable, apart from other factors. These techniques are used in academic, policy, and business research.

Description: This course is an introduction to econometric methods with applications to public policy analysis. It is a three-credit required core course. This is the second in the three-course sequence “Empirical Analysis”: ECON 643, ECON 644, ECON 645. The course provides an introduction to econometric methods. The primary focus is on the application and interpretation of multiple regression analysis.

Prerequisites: ECON 643 Empirical Analysis I.

Course Materials:

Introductory Econometrics, by J. Wooldridge. (South-Western 2019, 7th Ed.).

Data Management Using Stata, by M. Mitchell. (Stata Press 2020, 2nd Ed.).

Stata 18. (StataCorp 2023). See below for how to obtain this software.

Grading and expectations: The following lists the grading schema for the class. There is no rounding of grades. The instructor will aim to return assignments to you within 5-7 days following the due date, depending on the length of the assignment.

Grade Breakdown		Letter Grades	
Online Discussions	10%	A: 93-100%	C+: 50-59%
Problem sets	15%	A-: 90-92%	C: 40-49%
Replication Project	15%	B+: 80-89%	C-: 30-39%
Midterm Exam	30%	B: 70-79%	D+: 20-29%
Final Exam	30%	B-: 60-69%	D: 10-19%
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TOTAL:	100%		

Expectations:

General expectations: Students are responsible for attending class meetings, reviewing all class material, submitting assignments, participating in discussions, reviewing posted solutions to correct their work, and contacting the instructor if needed. It is expected that you look ahead to schedule your time. Start your work early and plan ahead, as I may not be able to respond on short notice the day of or night before assignments are due. Please seek help before becoming frustrated and spending a significant amount of time to resolve an issue.

Assignments: The course includes problem sets representing 15% of the final grade. Problem sets will be assigned at the beginning of a week and are due at the end of that same week, before the next class begins. Students may collaborate on problem sets in small groups, although each student must submit their own answers. Each student also must list their collaborators on each assignment, including any AI assistance (see below). Students should not post solutions on the general discussion board for all to see. No late submissions are accepted. No make-up problem sets will be given. Problem sets should be submitted electronically on ELMS by the end of the week they are due. Solutions to problem sets will be posted the week after they are due. Students are expected to review problem set solutions and compare with their work to ensure they are correctly applying the concepts covered.

Replication project: All students are expected to engage in a replication project, representing 15% of their grade. Students may work in groups of one to three, at their preference. Each group will present their project to the class. These will occur after the midterm, with at most one student presentation per week. This entails three parts: (1) choose a published paper among the list provided, (2) summarize the salient aspects of the empirical analysis, (3) replicate at least some econometrics in the paper, and (4) present the paper summary and replication results to the class. More details on this project will be provided as it gets closer.

Online discussions: For some weeks, there will be online discussions on ELMS. Students are required to participate. These discussions represent 10% of the grade. Students are expected to provide thoughtful, timely, and relevant contributions to the discussions. Thoughtful means they reflect a reasonable level of effort and engagement. Timely means they occur early enough that others can respond and engage. Relevant means they connect to the course material. If you provide short/infrequent posts at the last minute, your grade will reflect this.

Midterm and final exams: Two exams collectively represent 60% of your grade. Exams provide an opportunity to showcase independently your understanding of the material. Each exam will have a written portion and a STATA portion. No outside materials are allowed on exams.

Artificial intelligence policy

Generative AI tools (e.g., ChatGPT, Claude, Gemini, Copilot) can enhance learning, automate tasks, and provide clarity on complex topics. However, overreliance can erode students' independent thinking and hinder the development of critical reasoning skills expected at the graduate level. The purpose of coursework is to develop students' reasoning, technical skills, and subject mastery, not to delegate understanding to AI tools.

AI-generated content must not be submitted as your own original work; proper citation and identification are required. Please note that AI-generated content may be inaccurate or misleading. Independent judgment and verification is vital.

Artificial intelligence is allowed with Disclosure. AI tools may be used for idea generation, grammar assistance, and conceptual clarification. Any AI use must be transparently disclosed in your submission (see below). Failure to do so will be considered a violation of academic integrity.

If the instructor believes a student has used artificial intelligence in violation of class policy, the instructor may refer the incident to the Office of Student Conduct.

Any student using AI must include clear disclosure as part of their submission. This promotes transparency, ethical use, and academic integrity, while also allowing instructors to fairly evaluate how the tool supported the student's learning. At a minimum, the disclosure must include the following:

- Name of AI tool used: (e.g., ChatGPT, Claude, Copilot)
- How the AI was used: Briefly describe the task(s) it supported (e.g., brainstorming, grammar check, conceptual clarification)
- Prompts submitted: Paste or summarize the input prompts provided to the AI
- Modifications and justifications: Explain what parts of the AI output were kept or modified, and why (e.g., validated accuracy, improved clarity)
- Verification: Describe how the quality and accuracy of AI content were checked (e.g., cross-referenced with textbooks, academic articles, lecture slides)
- Record keeping: Instructors may request the AI chat history; students should save all drafts (before and after AI use) and logs of AI interactions for review if needed

Example Disclosure Statement: "I used ChatGPT 4.0 on June 1, 2025, to help brainstorm critiques of the Phillips Curve. The prompt was: 'List criticisms of the Phillips Curve in post-pandemic macroeconomics.' I used three suggestions from the output and verified them against Romer (2022) and lecture slides. I paraphrased the second and third points to align more closely with our course framing."

Each use requires separate disclosure. If AI is used in multiple parts of an assignments, then multiple disclosures are required.

If the instructor suspects inappropriate AI use, the instructor may request a meeting with the student. The student may be asked to explain the content of their work. The instructor may impose grade penalties if the student cannot support their work. Minor uses of AI, such as unattributed phrasing likely aided by AI, may warrant up to a 5% deduction. If larger portions appear AI-generated or copied without credit, a 10–20% deduction may be warranted. Repeated or severe misuse may result in referral for academic misconduct.

Resources:

UMD Counseling Services: All Counseling Center services are completely free for enrolled students. Proactively explore the range of services available at the Counseling Center, including the Counseling Service and Accessibility and Disability Service described at <http://www.counseling.umd.edu>.

Graduate Academic Counselor: The UMD Graduate School also has an academic counselor available to support students who are having difficulty navigating mental health resources on campus, are considering a leave of absence and/or need assistance finding mental health care off campus. The Graduate Academic Counselor also facilitates bi-weekly Graduate Student Circle Sessions which provide an opportunity to learn about resources and connect with other graduate students. Students can learn more about the Graduate Academic Counselor by going to: <https://gradschool.umd.edu/gradcounselor>.

Course Evaluations: Near the end of the term, you will receive an email inviting you to submit a voluntary and anonymous course evaluation. Your feedback on courses will be very helpful in improving the quality of instruction in our program.

Laptop Computer Requirement: Completing some of this course's requirements will require a laptop computer (not a notebook or a tablet!) with at least 1 GB of RAM and at least 5 GB of free space available on the hard-drive. We recommend laptops with a 15-inch screen. Screens smaller than 13 inches are probably not practical.

Stata Purchasing Options: Students in our program are required to purchase Stata. Stata offers different "flavors" and different lengths of licensing. Price varies according to these two factors. Stata also offers discounted pricing for students. Stata/BE is the least expensive version of Stata, and is a sufficient version for your coursework in this program. With a single-user license, you can install Stata on up to three computers. Description of all the "flavors" are given here: <http://www.stata.com/products/which-stata-is-right-for-me/>

The most cost-effective license duration is to purchase a perpetual license (which never expires). The student price for a perpetual Stata/BE license is \$225. The student price for an annual license is \$94, so more expensive if you end up using Stata for longer than 1 year – which you will do just to graduate from our program. Most of our graduates continue to use Stata even after they graduate, so the \$225 perpetual license is worthwhile. Perpetual license holders are also entitled to discounted Stata upgrades in the future. Here is the link for student single-user purchase: <https://www.stata.com/order/new/edu/gradplans/student-pricing/>

TENTATIVE COURSE OUTLINE

<u>DATE</u>	<u>TOPICS</u>	<u>READINGS</u>
Mon Dec 1 (Class 1)	Intro to Econometrics Stata: Log Files and Do Files	Wooldridge Ch 1, App B&C Acock Ch 4 (to be provided)
Mon Dec 8 (Class 2)	Causality, Counterfactuals, and Experiments Stata: Datafiles	Wooldridge Ch 2 Mitchell Ch 1
Mon Dec 15 (Class 3)	Simple Regression: Identification & Estimation Stata: Reading Data and Saving Data	Wooldridge Ch 2 Mitchell Ch 2
Fri Dec 19 (Class 4)	Multiple Regression: Identification & Estimation Stata: Exporting Data, Merging and Appending (<i>Class may be held via Zoom</i>) Assignment 1 due (Monday, Dec 22)	Wooldridge Ch 3 Mitchell Ch 3
Mon Dec 29	No Class - Winter Break	
Mon Jan 5 (Class 5)	Multiple Regression: Inference I Stata: Simple Significance Tests	Wooldridge Ch 4 Lecture Notes 5
Mon Jan 12 (Class 6)	Multiple Regression: Inference II Stata: Joint Significance Tests Assignment 2 due	Wooldridge Ch 4 Lecture Notes 6
Mon Jan 19	MLK – no class	
Mon Jan 26 (Class 7)	Midterm Exam (Weeks 1 through 5). Written: 1h30min, Stata: 45min	
Mon Feb 2 (Class 8)	Multiple Regression: Modeling Choices Stata: Labeling and Formatting	Wooldridge Ch 6 Mitchell Ch 5
Fri Feb 6 (Class 9)	Dummy Variables (via Zoom) Stata: Converting and Recoding Variables Assignment 3 due (Monday, Feb 9)	Wooldridge Ch 7 Mitchell Ch 6
Mon Feb 9 (Class 10)	Heteroskedasticity Stata: Heteroskedasticity Tests, WLS and FGLS	Wooldridge Ch 8 Lecture Notes 9
Mon Feb 16 (Class 11)	Model Misspecification and Measurement Error Stata: Model Specifications, Data Frames Assignment 4 due	Wooldridge Ch 9 Lecture Notes 10
Mon Feb 23 (Class 12)	Final Exam, Cumulative	

UMD Grad School and Program-level policies

Policies related to all graduate courses at the University of Maryland are posted on this page of the Graduate School's website:

<https://gradschool.umd.edu/faculty-and-staff/course-related-policies>

Please familiarize yourself with these policies related to academic integrity, non-discrimination policy, accessibility, absences and accommodations, grading, academic standing, grievance procedures, and other important policies.

Email: The University has adopted email as the primary means of communication outside of the classroom, and the instructor will use it to inform students of important announcements. The University creates an "@umd.edu" email address for every graduate student. All official UMD communications will be sent to students at their "@umd.edu" email address. Students are responsible for reading their @umd.edu email, including ELMS/Canvas Announcements that are sent to the class. Students should make sure that ELMS/Canvas Announcements and messages are forwarded to an email address that they check regularly. Failure to check email, errors in forwarding email, and returned email due to "mailbox full" or "user unknown" will not excuse a student from missing announcements or deadlines. The instructor will do their best to respond to email within 36 hours.

Contact Hours: Three credit master's-level courses at the University of Maryland require a minimum amount of contact between instructors and students. Our courses' 12 weekly meetings only satisfy 80% of the university's contact requirement. The other 20% is satisfied by weekly mandatory and graded online contact. In principle, the contact hours requirement could be satisfied by scheduling 3 additional 150-minute meetings per term, or 6 additional 75-minute meetings, or 10 additional 45-minute meetings. But in practice the contact hours requirement is satisfied by the weekly online discussion boards. The weekly online discussions are a more flexible way to ensure that our program's courses in DC provide the same level of student-instructor contact as the traditional 15-week face-to-face version of the same course when it is taught on campus in College Park.

Workload: Mastering the material covered in this course requires a significant amount of work outside of class. Students should expect to spend more time outside of class than in class – typically at least twice as much time.

In a regular 15-week semester (as in the College Park version of our program): Taking 3 master's-level courses is supposed to approach the time commitment of a full-time job (~36-39 hours per week, so 12-13 hours per week per course). Taking 3 master's-level courses while simultaneously working at a demanding full-time job during the day is not advisable. Students with questions about the workload in this program should speak with one of the program directors.

The courses in our DC and online programs are 12-week courses that cover all the same material as a traditional semester-long 3-credit course (15 weeks). The compressed schedule makes it possible to complete our degree in just 15 months if you take 2 courses each term. But the compressed schedule also implies an accelerated pace with an average of 25% more work per week in a given course ($15/12 = 1.25$). So maybe about 15 hours of work per week per course. The weekly workload when taking 2 of our DC courses per term is equivalent to the weekly load from 2.5 "normal" 15-week courses - so maybe about 30 hours per week. Students who take 2 courses per quarter in our DC program complete 8 courses per year. So over the course of a year, taking 2 courses per quarter in our DC program is equivalent to 133% of a full-time load ($8/6 = 1.33$).

Academic Progress: The graduate school requires that students maintain a GPA of at least 3.0. Students whose cumulative GPA falls below 3.0 will be placed on academic probation by the graduate school. Students on academic probation must ask the program's director to petition the graduate school if they want to remain in the program. The petition must include a plan for getting the student's GPA up to at least 3.0. Students who do not live

up to their plan can be forced to leave the program without having earned the degree. Note: a grade of "B" corresponds to a GPA of 3.0. A grade of "B-" corresponds to a GPA of 2.7.

Excused Absences: If you miss any class meetings for any reason, you are still responsible for all material covered during the meeting you missed. It is your responsibility to work with study partners, the teaching assistant, and the instructor to make sure you catch up on the missed material. Instructors routinely facilitate things by posting lecture notes, etc.

If you need to miss an exam or other graded course requirement because of illness, injury, or some other emergency: Follow doctor's orders and get documentation. Get in touch with the instructor as soon as you're able – preferably prior to missing the exam or deadline. Communicate with the instructor to make up the course requirement as soon as possible. You are entitled to recover before you make up the course requirement, but you are not entitled to extra days to study beyond the time the doctor's note says you've been incapacitated. If you are incapacitated for more than a week or so beyond the end of the term, your grade in the course will be an "Incomplete." In such cases you must negotiate a plan with your instructor for completing the course requirements. Once you make up the course requirement the instructor will change your "I" to the appropriate letter grade.

School Closings and Delays: Information regarding official University closing and delays can be found on the campus website and the snow phone line: (301) 405-SNOW (405-7669) The program director will also announce cancellation information to the program as an announcement on the program's ELMS/Canvas site. This will generally be done by 1:00 p.m. on days when weather or other factors are an issue. When classes need to be canceled during the semester, we make every effort to schedule makeup classes.

UMD Counseling Center: Sometimes students experience academic, personal and/or emotional distress. The UMD Counseling Center in Shoemaker Hall provides comprehensive and confidential support services that promote personal, social, and academic success. The cost of these services is covered by the fees you already paid when you registered for classes, and there is no additional charge if you use the services. Proactively explore the range of services available at <http://www.counseling.umd.edu/>

UMD Accessibility & Disability Service: The University of Maryland is committed to creating and maintaining a welcoming and inclusive educational, working, and living environment for people of all abilities. The University of Maryland is also committed to the principle that no qualified individual with a disability shall, on the basis of disability, be excluded from participation in or be denied the benefits of the services, programs, or activities of the University, or be subjected to discrimination. The Accessibility & Disability Service (ADS) provides reasonable accommodations to qualified individuals to provide equal access to services, programs and activities. ADS cannot assist retroactively, so it is generally best to request accommodations several weeks before the semester begins or as soon as a disability becomes known. Any student who needs accommodations should contact ADS as soon as possible so that they have sufficient time to make arrangements. For assistance in obtaining an accommodation, contact Accessibility and Disability Service at 301-314-7682, or email them at adsfrontdesk@umd.edu. Information about sharing your accommodation letter, discussing accommodation logistics and getting assistance from ADS staff and more can be found on the ADS website.

Graduate Academic Counselor: The UMD Graduate School also has an academic counselor available to support students who are having difficulty navigating mental health resources on campus, are considering a leave of absence and/or need assistance finding mental health care off campus. The Graduate Academic Counselor also facilitates bi-weekly Graduate Student Circle Sessions which provide an opportunity to learn about resources and connect with other graduate students. Students can learn more about the Graduate Academic Counselor by going to: <https://gradschool.umd.edu/gradcounselor>

Course Evaluations: Near the end of the term, you will receive an email inviting you to submit a voluntary and anonymous course evaluation. Your feedback on courses will be very helpful in improving the quality of instruction in our program.

Building Access: There is a smartphone app that can be used to enter our building after normal business hours. The program coordinator will provide information about this. We will also provide information about the code for entering the front door of our suite. Please make sure you are receiving the ELMS-Announcements that we send out to the program about these and other important matters.