

**University of Maryland
Department of Economics**

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Office hours: Mon 5.00-6.00 pm.

Class location: Online meetings via Zoom.
Class time: Thu 6.35-7.40pm & 7.55-9.00pm.

**SYLLABUS
ECON 644 Empirical Analysis II**

Course 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, 6, and 7.

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.

The course teaches statistical methods and statistical software used to organize and analyze data. The main goal is to *quantify* how one economic variable (such as someone’s education) is related to another variable (for instance their wage), apart from other factors like ability, gender, race, marital status. These techniques are used in academic, policy, and business research.

Course Description: 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 with applications to public policy analysis. 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 2025, 8th Ed.).
Data Management Using Stata, by M. Mitchell. (Stata Press 2020, 2nd Ed.).
A Gentle Introduction to Stata, by A. Acock. (Stata Press 2023, Rev 6th Ed).
Stata 18. (StataCorp 2023). See page 5 below for how to obtain this software.

Grading:

Grade Breakdown		Letter Grades	
Online Discussions	10%	A: 93-100%	C: 40-49%
Home Assignments	15%	A-: 90-92%	C-: 30-39%
Replication Project	20%	B+: 80-89%	D+: 20-29%
Midterm Exam	25%	B: 70-79%	D: 10-19%
Final Exam	30%	B-: 60-69%	F: 0-9%
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TOTAL:	100%		

Expectations: (1) prepare for class, (2) attend class, and (3) do assigned work by deadlines.

CLASS SCHEDULE

<u>DATE</u>	<u>TOPICS</u>	<u>READINGS</u>
Thu Jun 5	1) Intro to Econometrics Stata: Log Files and Do Files	Wooldridge Chapter 1 Acock Chapter 4
Thu Jun 12	2) Causality, Counterfactuals, and Experiments Stata: Datafiles Assignment 1 due	Wooldridge Chapter 2 Mitchell Chapter 1
Thu Jun 19	No Class – Juneteenth Holiday	
Thu Jun 26	3) Simple Regression: Identification & Estimation Stata: Reading Data and Saving Data Assignment 2 due	Wooldridge Chapter 2 Mitchell Chapter 2
Thu Jul 3	4) Multiple Regression: Identification & Estimation Stata: Exporting Data, Merging and Appending Assignment 3 due	Wooldridge Chapter 3 Mitchell Chapter 3
Thu Jul 10	5) Multiple Regression: Inference I Stata: Simple Significance Tests Assignment 4 due	Wooldridge Chapter 4 Lecture Notes 5
Thu Jul 17	6) Multiple Regression: Inference II Stata: Joint Significance Tests Assignment 5 due	Wooldridge Chapter 4 Lecture Notes 6
Thu Jul 24	Midterm Exam Stata Practice Session	1h30min 0h45min
<u>Fri Jul 25</u> Nonstandard Class Time	7) Multiple Regression: Modeling Choices Stata: Labeling and Formatting Variables Replication Project (Partial) due	Wooldridge Chapter 6 Mitchell Chapter 5
Thu Jul 31	8) Dummy Variables Stata: Converting and Recoding Variables Assignment 6 due	Wooldridge Chapter 7 Mitchell Chapter 6
Thu Aug 7	9) Heteroskedasticity Stata: Heteroskedasticity Tests, WLS and FGLS Estimates Assignment 7 due	Wooldridge Chapter 8 Lecture Notes 9
Thu Aug 14	10) Model Misspecification and Measurement Error Stata: Model Specifications, Data Frames Assignment 8 due	Wooldridge Chapter 9 Lecture Notes 10
Mon Aug 18	Replication Project (Full) due	
Thu Aug 21	Final Exam , Cumulative	2h00min

Weekly Online Discussions: After every class meeting, the instructor opens an interactive discussion on Elms. The content is a follow-up on class topics. Students are expected to contribute to the discussion and will be graded on their contribution. The instructor will monitor and guide the discussion. Student answers are due by the next day Friday at 9pm.

Replication Project: Throughout the term, students are expected to work on replicating the results of a published research paper that uses real-world data. The project provides the opportunity to practice data management, graphing, and analysis methods taught in the class. The paper and the dataset will be provided at the beginning of the course. The first half of the project is due after the Midterm. The full project is due the last week of classes.

Assignments and Exams: These graded components will test knowledge of econometric methods and the application of these methods to data, as well as Stata-based data management and data visualization skills. Good understanding of statistical methods and practical implementation in Stata are both necessary for competent data analysis.

Deadlines: All assignments are to be submitted electronically on Elms and are due at the beginning of class Thursday 6.45pm. Since answers are posted at the beginning of class, late submissions are not acceptable. Graded work, including exams, cannot be rescheduled except in exceptional and documented circumstances; see “Excused Absences” policy below.

Other Standard Policies for the Program and the University of Maryland

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 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 the classroom, and I will use it to inform you 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. You are responsible for reading your @umd.edu email address, including ELMS/Canvas Announcements I send to the class. You should make sure ELMS/Canvas Announcements and messages are forwarded to an email address that you 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. I will do my best to respond to email within 36 hours.

Course Website: Copies of the course syllabus, student’s grades, and other relevant links and documents will be posted on the course’s ELMS/Canvas website. Students can access the site via www.elms.umd.edu. They will need to use their University of Maryland “directory ID” and password.

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 week

ly online discussions. 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, it is your responsibility to work with 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're 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 free, comprehensive, and confidential counseling / mental health services that promote personal, social, and academic success.

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.

Required Statistical Software: STATA, version 16 or later. Note: Stata is not available through Terpware, but many other software packages, including the Microsoft Office suite which includes Microsoft Excel, are available for free or at a discount to University of Maryland students via Terpware: <https://terpware.umd.edu/Windows> or <https://terpware.umd.edu/Mac> There are two ways for students to access Stata: 1. Via the UMD Virtual Workspace, or 2. Purchasing Stata license.

1. UMD Virtual Workspace: UMD students have access to a Windows virtual desktop with university-approved software applications, including Stata SE. Keep in mind that it does have limitations such as limited temporary storage space (although you can open and save files from cloud-based storage services like Box and Google) and an automatic disconnect after 15 minutes of inactivity. For more information and access instructions, visit: https://itsupport.umd.edu/itsupport?id=kb_article_view&sysparm_article=KB0015413

2. Stata License: Stata offers various "flavors" and licensing options. Prices vary based on these two factors. Stata/BE is the least expensive and most suitable version for your coursework. All the flavors are described here: <https://www.stata.com/products/which-stata-is-right-for-me/>. Students who are currently enrolled can purchase Stata at student rates. You can install it on your personal computer and do not need to use a virtual environment. If you want to purchase a 6-month license (\$48 for Stata/BE), an annual license (\$94 for Stata/BE), or a perpetual license (\$225 for Stata/BE), you must do so using the following link: <https://www.stata.com/order/new/edu/profplus/student-pricing/>. The perpetual license does not expire and is the most cost-effective option if you plan to stay in the program for at least 15 months. There are also upgrade discounts provided to perpetual license holders. During the checkout process you will be asked to verify your "@umd.edu" email address.

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.