

ECON 644  
Empirical Analysis II: Introduction to Economic Models

**Instructors' Contact Information and Class Logistics:**

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*Office Hours:* Monday 5:30-6:30 pm via appointment on Zoom

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

*Class Time:* Wednesday, 6:45 - 9:30 pm

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

**Course Description:**

This course is an introduction to econometric methods with applications to public policy analysis. Primary focus is on application and interpretation of multiple regression analysis.

**Course Objectives:**

This is the second in the three-course series in empirical analysis required for the Master of Science in Applied Economics. At the end of the course, you should be familiar with:

- OLS simple and multiple regression (estimation and inference)
- Linear transformations in OLS models (polynomials and log-transformations)
- Validity of estimates: omitted variable bias, measurement errors, heteroskedasticity.
- Limited dependent variables
- Thinking critically about the internal and external validity of empirical work

Using Stata be able to:

- Working with do files that automatically over-write log-.les with all the output
- Reading and writing data files (ECN643 review - Mitchell, Ch. 2)
- Creating and working with do-.les and log-.les (Acock Ch. 4)
- Creating New Variables (Mitchell, Ch. 5)
- Model and estimate regressions

Our program has 7 general learning outcomes for students:

- 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 learning outcomes that pertain to this course are: 1, 2, 3, 6

## Course Materials

### Textbooks:

- Introductory Econometrics: A Modern Approach. Jeffrey M. Wooldridge. South-Western College Pub; 7th edition (ISBN-10: 1337558869)
- Data Management Using Stata: A Practical Handbook Second Edition. Michael N. Mitchell (2020), Stata Press (<http://www.stata.com/bookstore/data-management-using-stata/index.html>)

**Course software:** STATA, version 15, 16, 17 or 18

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>

### 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. We do not recommend Small STATA since it is too limited for the coursework in our program. Stata/IC is the least expensive and sufficient version for your coursework. 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/>

Students in our program should probably purchase the "student single-user" perpetual license of STATA/BE for \$225:

<https://www.stata.com/order/new/edu/gradplans/student-pricing/>

The "student single-user" annual license for STATA/BE would be \$94, but you'd have to renew it after 12 months. The perpetual license lasts forever. There are also options for discounted upgrades in the future when STATA comes out with updates. During the checkout process you may be asked to verify your "@umd.edu" email address.

## Course Website:

Copies of the course syllabus, your grades, and other relevant links and documents will be posted on the courses ELMS/Canvas website. You can access the site via [www.elms.umd.edu](http://www.elms.umd.edu). You will need to use your University of Maryland directory ID and password.

## Additional Resources:

- Stata Webbook, UCLA (<https://stats.idre.ucla.edu/other/dae/>)
- Copies of this syllabus, lecture notes, problem sets, and other relevant documents will be made available through the course website.
- Acock, Alan (2014) A Gentle Introduction to Stata, 4th ed, Stata Press.

## Prerequisites

Econ 643 Empirical Analysis I: Foundations of Empirical Research:

- specifically, it is assumed that you are familiar with the Stata topics covered in Chs. 1, 4, 5, and 8 of Acock, Alan (2014) A Gentle Introduction to Stata, 4th ed, Stata Press.

## Course Structure

- **Problems Sets (20%):** There will be six problem sets assigned throughout the quarter. The problem sets are a combination of analytical problems and empirical problems using Stata. They are due at the beginning of class on the designated due date (see below). Stata work must be turned electronically in the form of Stata log files in ELMS. Non-Stata work must also be uploaded to ELMS. Hand-written work must be converted into a PDF for upload. If you don't have a scanner, you can use one of many smartphone applications for creating PDFs. You are encouraged to consult with classmates in completing the problem sets. You are allowed to give and receive help on the problems. However, you are NOT allowed to share problem sets (i.e., written answers, Stata code) with others.
- **Empirical Analysis Projects (15%):** There will be two assigned academic papers to conduct an empirical analysis using STATA. This analysis will involve collecting required data, running regression models, and interpreting the results. You will be required to prepare a 10-minute presentation or write 3-5 pages briefing for each assigned paper to summarize your analysis. Your presentation/briefing must include an introduction summarizing the methodology and the results of the paper; data; relevant descriptive statistics; regression model; estimation results; and conclusion with a focus on the policy implications. Whether you will be submitting a briefing paper or doing a presentation will be determined by scheduling.
- **Online Discussion (5%):** The weekly online discussions are mandatory and will be conducted via online discussion utility in ELMS/Canvas. We will have weekly discussions.

- Midterm Exam (20%):** The midterm exam will be given in person and will be 90 minutes length. During the exam you will be allowed to use your notes, textbook, calculator, and Stata's help menu. You will be asked to conduct statistical and econometric analyses using Stata and explain your findings. The midterm must be completed in the form of the Stata log file and submitted in ELMS
- Final Exam (40%):** The final exam will be given on the last day of class in person and will be 120 minutes in length. The exam will be a comprehensive exam covering ALL material discussed throughout the course, including lecture slides, textbook and other reading material, in-class assignments and problem sets. During the exam you will be allowed to use your notes, textbook, calculator, and Stata's help menu. The final exams must be completed in the form of the Stata log file and submitted in ELMS.

**Assignment and Test Dates:**

Problem Set #1	Assigned: June 7, 2023	Due: June 14, 2023
Problem Set #2	Assigned: June 14, 2023	Due: June 21, 2023
Problem Set #3	Assigned: June 21, 2023	Due: June 28,2023
<i>Empirical Project #1</i>	Assigned: June 28,2023	First Draft Due: July 14, 2023
		Due: July 19, 2022
<b>Midterm Exam</b>	July12, 2022	
Problem Set #4	Assigned: July 19, 2023	Due: July 26, 2023
<i>Empirical Project #2</i>	Assigned: July 26, 2023	First Draft Due: August 4,2023
		Due: August 9, 2023
Problem Set #5	Assigned: July 26, 2023	Due: August 2,2023
Problem Set #6	Assigned: August 2,2023	Due: August 11, 2023
<b>Final Exam</b>	August 16, 2023	

Contact me immediately if you foresee a problem with the dates of the midterm. Final cannot be rescheduled unless a student has a valid excuse with documentation.

**Final Grade**

Based on the course work your grade will be calculated based on the following absolute scale scores:

93-100	90-92	80-89	70-79	60-69	50-59	40-49	30-39	20-29	10-19	0-9
A	A-	B+	B	B-	C+	C	C-	D+	D	F

The points will be allocated as follows:

- Each problem set will earn a maximum of 50 points for a total of 300 points. *Example:* if your total problem set receives 250 points, your problem set score is 17.

- Each discussion will earn a maximum of 5 points for a total of 35 points. *Example:* if your total online discussions receive 30 points, your online discussion score is 4.3
- Each empirical paper analysis will earn a maximum of 30 points for a total of 60 points. *Example:* if your total empirical paper analysis receives 50 points, your empirical paper analysis score is 12.5
- The midterm exam will earn a total of 100 points. *Example:* if you earn 86 points on the midterm, your midterm score is 16.8.
- The final exam will earn a total of 120 points. *Example:* if you earn 114 points on the final, your final score is 38.

Based on these hypothetical examples, the total score for the course is:  $17 + 4.3 + 12.5 + 16.8 + 38 = 88.6$  which translates into a grade B+

## **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.

**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.

**Work Load:** 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. The courses in our DC program 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 ( $15/12 = 1.25$ ). The normal full-time load in a master's program is 3 courses per semester, or 6 courses per year. The weekly work load when taking 2 of our DC courses per term is equivalent to the load from 2.5 "normal" 15-week courses - so  $2.5/3.0=83\%$  of a full-time load. Students who take 2 courses per quarter in our 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, including the Counseling Service, Accessibility and Disability Service, and the Testing Office, all 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>

**Covid-19 Information:** Up-to date information about UMD Covid-19 policies and guidance are posted at <https://umd.edu/4Maryland>. Given the evolving nature of the pandemic, the guidance and policies are subject to change. The plans are always coordinated with state and county health officials, with additional guidance provided by the University System of Maryland. The focus will always be on the health and well-being of our entire campus community. We thank you all for your individual efforts to help protect the collective health of our entire community.

**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.

## Tentative Course Outline

This outline may be revised during the semester. For the latest version, check the course webpage.

Lectures	Dates	Textbook	Topics
1	May 31, 2023	Ch. 1, Appendix B, C Mitchell, Ch 2	Review: Probability and Statistics Review Reading and Writing Datasets
2	June 7, 2023	Ch. 2 Acock Ch. 4	Simple Regression Analysis Creating and Working with log-files
3	June 14, 2023	Ch. 3 Mitchell, Ch 5 (first half)	Multiple Regression Analysis (MRA) Creating Variables
4	June 21, 2023	Ch. 4	MRA - Inference
5	June 28, 2023	Ch. 6 Mitchell, Ch 5 (second half)	MRA – Issues Introduction to frames in STATA 17/18
6	July 5, 2023	Ch 7.	MRA- Dummy Variables
<b>7. Midterm Exam</b>	July 12, 2023		
	July 12, 2023	Ch 7	MRA- Dummy Variables
8	July 19,2023	Ch 9 Ch 8	MRA- Measurement Errors Heteroskedasticity
9	July 26, 2023	Ch 8	Heteroskedasticity
10	August 2, 2023	Ch 17	Limited Dependent Variable Models
11	August 9,2023	Ch 17	Limited Dependent Variable Models Final review
<b>12. FINAL EXAM</b>	August 16, 2023		