

ECON 644
Empirical Analysis II: Introduction to Economic Models

Instructors' Contact Information and Class Logistics:

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Office Hours: Friday 5:30-6:15 via Zoom

Class Location: All class meetings will be via Zoom

Class Time: Wednesday, 6:45 - 9:30 pm: two online sessions from 6:45-7:30; 8:30-9:15 via Zoom

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-.files and log-.files (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 or 16.

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/IC for \$225:

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

The "student single-user" annual license for STATA/IC 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. 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 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 from multiple online sources, 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. Prior to the final submission, you would be required to submit the first draft of your project analysis for instructor's comments/suggestions. 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 10 online discussions.
- **Midterm Exam (20%):** The midterm exam will be given remotely 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 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 9, 2021 | Due: June 16, 2021 |
| Problem Set #2 | Assigned: June 16, 2021 | Due: June 23, 2021 |
| Problem Set #3 | Assigned: June 23, 2021 | Due: June 30, 2021 |
| <i>Empirical Project #1</i> | Assigned: June 23, 2021 | First Draft Due: July 2, 2021 |
| | | Due: July 7, 2021 |
| Midterm Exam | July 14, 2021 | |
| Problem Set #4 | Assigned: July 21, 2021 | Due: July 28, 2021 |
| <i>Empirical Project #2</i> | Assigned: July 28, 2021 | First Draft Due: August 6, 2021 |
| | | Due: August 11, 2021 |
| Problem Set #5 | Assigned: July 28, 2021 | Due: August 4, 2021 |
| Problem Set #6 | Assigned: August 4, 2021 | Due: August 11, 2021 |
| Final Exam | August 18, 2021 | |

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 sets 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 receives 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+

University of Maryland and Department of Economics Policies

Course Website:

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

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. Students are responsible for updating their current email address via <http://www.registrar.umd.edu/current/> (Under the first major heading of "Online Transactions" there is a link to "Update Contact Information".)

Contact Hours:

Three credit masters-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 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. 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 workload when taking 2 of our 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 program is equivalent to 133% of a full-time load ($8/6 = 1.33$).

Academic Integrity:

The University of Maryland has a nationally recognized Code of Academic Integrity. You should inform yourself about the UMD policies related to academic misconduct:

<https://www.studentconduct.umd.edu/home/current-students>

Cases of academic misconduct, including plagiarism and giving or receiving unauthorized assistance on exams, will be referred to the UMD Office of Student Conduct. If found responsible for academic misconduct, students can be subject to sanctions. The standard sanction for graduate students found responsible for cheating on exams is expulsion from the university.

The exams in this course will ask students to affirm the UMD Honor Pledge: "I pledge on my honor that I have not given or received any unauthorized assistance on this assignment/examination."

Student Conduct:

Students are expected to treat each other with respect. Disruptive behavior of any kind will not be tolerated. Students who are unable to show civility to one another or myself will be referred to the Office of Student Conduct. You are expected to adhere to the Code of Student Conduct.

Excused Absences:

The University of Maryland's policy on excused absences is posted here:

<http://www.president.umd.edu/administration/policies/section-v-student-a.airs/v-100g>

Please note:

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. not the instructors .to get yourself caught up in the course. 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). Since our program is an evening program in downtown Washington, DC, rather than a day program in College Park, we do not always cancel classes on the same days as the College Park campus. The program director will always 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.

UMD Counseling Center:

Sometimes students experience academic, personal and/or emotional distress. The UMD Counseling Center in Shoemaker Hall provides comprehensive 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, Learning Assistance Service, and the Testing Office, all described at <http://www.counseling.umd.edu>

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. Student's 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 have their enrollment in the program terminated 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.

Building Access:

Students should not be coming to the program's suite until after the District of Columbia has lifted social distancing restrictions and after our program has announced that it's OK to begin using the suite again.

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. Students must

bring their computer to class on any day when there is a computer lab, quiz or exam. Because this is an online course, students also need a webcam and a microphone. Students are expected to participate in synchronous class meetings and office hours with their camera on. Please do not record or take screenshots in the in synchronous class meetings to respect the privacy of each student.

Tentative Course Outline

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

| Lectures | Dates | Textbook | Topics |
|------------------------|-----------------|--|---|
| 1 | June 2, 2021 | Ch. 1, Appendix B, C Mitchell, Ch 2 | Review: Probability and Statistics Review Reading and Writing Datasets |
| 2 | June 9, 2021 | Ch. 2 Acock Ch. 4 | Simple Regression Analysis Creating and Working with log-files |
| 3 | June 16, 2021 | Ch. 3 Mitchell, Ch 5 (first half) | Multiple Regression Analysis (MRA) Creating Variables |
| 4 | June 23, 2021 | Ch. 4 | MRA - Inference |
| 5 | June 30, 2021 | Ch. 6 Mitchell, Ch 5 (second half) | MRA – Issues Introduction to frames in STATA 16 |
| 6 | July 7, 2021 | Ch 7. | MRA- Dummy Variables |
| 7. Midterm Exam | July 14, 2021 | | |
| | July 14, 2021 | Ch 7 | MRA- Dummy Variables |
| 8 | July 21, 2021 | Ch 9 Ch 8 | MRA- Measurement Errors Heteroskedasticity |
| 9 | July 28, 2021 | Ch 8 | Heteroskedasticity |
| 10 | August 4, 2021 | Ch 17 | Limited Dependent Variable Models |
| 11 | August 11, 2021 | Ch 17 | Limited Dependent Variable Models Final review |
| 12. FINAL EXAM | August 18, 2021 | | |