

**University of Maryland – College Park, Department of Economics  
Master of Science in Applied Economics Program – Washington, DC location**

**Course Title:** Empirical Analysis I

**Course Number:** ECON 643

**Term:** Spring 2022

**Credits:** 3

**Course Dates:** 3/2 – 5/18

**Course Times:**

**Wednesdays 6:45-9:30 PM**

15-minute break around 8pm \*\*

**Classroom:** 1400 16th St NW, Suite 140

**Instructor:** Jon Silverman

**Email:** [jsilv56@umd.edu](mailto:jsilv56@umd.edu)

**Office Hours:** Thursday 5:00-6pm virtual

**TA:** Rolando Hernandez

**Email:** [Rolando@umd.edu](mailto:Rolando@umd.edu)

**Office Hours:** Fridays: 6:30-7:30 pm (\*)

(\*) Please make appointment with Rolando in advance of attending his office hours

\*\* We will have to schedule a Saturday session to complete the 12 sessions needed (**March 19**).

**Course Description:** In this course students will learn about the fundamental aspects of data management and statistics. Emphasis is given on practical application rather than theoretical foundations. The course will cover sampling, basic probability theory, basic statistics, an introduction to regression, and an introduction to Stata. The course includes an empirical replication project, which introduces students to the application of statistics and econometrics in published academic research. ECON 643 is the first course in our program's 3-course Empirical Analysis sequence. ECON 643 is the prerequisite for ECON 644, which is the prerequisite for ECON 645.

**Notes:** There will be no class meetings or office hours the week of

**Sunday March 20-Sunday, March 27** (Spring Break).

To make up for the missed class meeting due to Spring Break, there will be a class meeting on

**Saturday March 19 from 11:00-1:00.**

The midterm exam will be on Wednesday, **April 13 at 6:30 PM.**

The final exam is scheduled for Wednesday, **May 18 from 6:30-9:30 PM**

The final course project is due by **noon on Friday, May 20.**

## **Course Objectives**

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, 5, 6 and 7

Students will master basic statistics at a level of rigor befitting a professional master of science degree program in applied economics. Students will be able to perform basic statistical analysis using STATA software. Students will be able to interpret basic statistical results correctly and communicate them professionally in English. Upon completion of the course, students will be prepared to study applied econometrics in ECON 644.

**Course Website:** Copies of the course syllabus, your grades, and other relevant links and documents will be posted on the course's ELMS/Canvas website. You can access the site via <https://elms.umd.edu/>. You will need to use your University of Maryland "directory ID" and password.

## Required Textbooks

**SfBE:** *Statistics for Business and Economics* by Anderson, Sweeney, Williams, Camm, and Cochran, Cengage, 13<sup>th</sup> or 14<sup>th</sup> edition.

**AGIS:** *A Gentle Introduction to Stata* by Acock (Stata Press), 5<sup>th</sup> or 6<sup>th</sup> ed.

Some additional readings will also be provided via the course's ELMS/Canvas website.

**Optional Textbooks:** Introduction to Econometrics by Stock and Watson (Pearson), 3rd edition:

Data Management Using Stata by Mitchell (Stata Press), 2nd edition

**NYT:** Students must purchase an online subscription to the New York Times. Unfortunately, the online access to the New York Times that's available through the UMD library systems will not do. Students need their own individual subscriptions directly with the New York Times so they can see the graphs, and so they can easily search for certain types of articles, as will be explained in class. Fortunately [student subscriptions](#) to the New York Times cost just \$1 per week and can be cancelled at any time.

**Required Statistical 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. Stata also offers discounted pricing for students. 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/>

The most cost-effective license duration is to purchase a perpetual license (which never expires). The student price for a perpetual Stata/IC 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/>

During the checkout process you will be asked to verify your student status. I believe this can be done by uploading a copy of your student ID, your tuition bill or statement, or verifying your "@umd.edu" email address.

**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 at least a 15-inch screen. Screens smaller than 13 inches are probably not practical.

### Course Outline

Date	Topic	Deliverable
Class # 1 March 2	Meet each other and introduce the course  TA presentation on how to submit HW electronically via ELMS  Introduction to online discussion utility in ELMS  SFBE Ch. 1: Data and Statistics	

	SFBE Ch. 2: Descriptive Statistics: Tabular and Graphical Display	
Class # 2 March 9	SFBE Ch. 3: Descriptive Statistics: Numerical Measures AGIS Ch. 1-3, Mitchell, Ch. 2: Intro to Stata, Importing Data	Follow the instructions in chapter 2 of AGIS; build database "surveychapter4"  Assignment #1 Due
Class # 3 March 16	SFBE Ch. 4: Introduction to Probability AGIS Ch. 4: Stata: Log Files and Do Files	Assignment #2 Due
Class #4 <b>Saturday</b> March 19: 11AM-1:00PM	SFBE Ch. 5: Discrete Probability Distributions AGIS Ch. 5: Descriptive Analysis Using Stata	Project Proposal (1 page) description of the project should be submitted
Class #5 March 30	SFBE Ch. 6: Continuous Probability Distributions  SFBE Ch. 7: Sampling and Sampling Distribution	Assignment #3 Due
Class #6 April 6	SFBE Ch. 8: Confidence Interval Estimation  SFBE Ch. 9: Hypothesis Testing	Assignment #4 Due
Class #7 April 13	Midterm Exam	
Class #8 April 20	SFBE Ch. 10: Inference about Means and Proportions with Two Populations AGIS Ch. 7: Tests for or two means	Assignment #5 Due

Class #9 April 27	SFBE Ch. 11: Inference about Population Variances (skim) SFBE Ch. 13: Analysis of Variance (ANOVA) AGIS Ch. 9: Analysis of Variance	Assignment #6 Due  First Draft of Data Project Due April 30
Class #10 May 4	SFBE Ch. 14: Simple Linear Regression AGIS Ch. 8: Linear Regression	
Class #11 May 11	Stock and Watson, Ch. 6: Introduction to Omitted Variable Bias and Omitted Regression Material that might be covered if time permits:  Interpreting regression coefficients	
<b>Saturday</b> May 14	10AM-12PM Practice Exam and <b>Optional</b> Final Exam Review Session  9:30-11:30: Optional Practice Exam 11:30-12:30: Lunch break 12:30-1:30: Optional online Review Session  Solution for practice exam will be posted on ELMS after the review session	
Class #12 May 18	Final Exam	
May 20		Final Draft of Data Project Due

Note: This is a tentative schedule, and subject to change as necessary – monitor the course ELMS page for current deadlines. In the unlikely event of a prolonged university closing, or an extended absence from the university, adjustments to the course schedule, deadlines, and assignments will be made based on the duration of the closing and the specific dates missed. As we go through the course material, I may rebalance or move around the lecture contents depending on in class progress.

## Grading Structure

Description	Percentage
Homework	20%
Online Discussion	5%
Midterm	20%
Course Data Project	20%
Presentations	10%
Final Exam	25%

### Homework (20 course points)

ECON 643 has six assignments which cover the material most recently covered in class. Homework assignments will always be posted to the Assignments section of the course ELMS/Canvas page. Student are strongly encouraged to submit a scanned copy of their homework assignment but can also hand in a physical copy. Each homework assignment will be graded out of 100 and a student's overall score of the homework assignments will be determined by taking an average of all the assignments. Each assignment is due before the class starts. There is a 20% penalty for a late assignment. If you believe you have a legitimate reason for missing an assignment due date, please contact the instructor.

### Online Discussions (5 course points)

We will not have enough time for lengthy discussions in the class time. Most of the discussions will happen online. Each week after class, I will open one or several discussion threads related to that weeks' course material. I will open the online discussions by 11:59 PM after class each week. The students will have until 12:00 noon on Friday to participate in the discussion. **To create an active discussion, students are encouraged to participate as soon as possible and to not wait until the Friday deadline.** I and occasionally your TA will read what's being posted, respond to some things, and redirect the discussion as necessary. The students are expected to address the questions and also comment on each other's answers. Online discussions will be graded for both participation and content (5 course points). The participation grade will be based on the proportion of online discussions to which a student has contributed. Every student can miss one online discussion without consequence. Missing 2 or more online discussions will hurt a student's participation grade. At the end of the term, each student will have multiple weekly online discussion grades (each between 0 and 5). Each student's course grade for the online discussions will be the average of the online discussion grades, after dropping the lowest of the scores. More information on the approach to these discussions will be posted to ELMS.

### Midterm Exam (20 course points)

The midterm exam will test everything covered in the course through the previous week. Some or all of the midterm will consist of a series of empirical problems to be solved using Stata and submitted electronically and hence students are required to bring a laptop equipped with Stata to the exam session.

### **Course Data Project (20 course points)**

Students are required to apply the skills they learn in the course to an empirical replication project. Students will work in pairs on the project, with one group of 3 if we have an odd number of students. To complete the project students will find a published paper of interest that also has accessible data. They will read at least some of the data into Stata, organize and summarize the data appropriately, and perform some analysis of the data. The final draft of the course project will include a thorough descriptive analysis and a small regression analysis.

Students will submit the course project work (see the Schedule for due dates):

- Topic Proposal (2 points)
- Complete first draft of course project, including descriptive analysis (13 points)
- Final draft of completed course project (5 points)

Additional details and guidance related to all components of the course project will be provided in class and on the course's ELMS/Canvas website.

### **Presentations (10 points)**

Each student will (with a partner) give a short (10-minute) presentation at some point during the term. Depending on the number of students, we will have 1 or 2 student presentations some weeks. The presentations will focus on the research paper that the students are using as the basis for their course replication project, and will feature at least one graph depicting some empirical evidence.

Students will work in pairs on the course project (with 1 group of 3 if we have an odd number of students). Online discussions will be used in the first couple weeks of the course to help students find partners based on mutual interests. **(Note: With about a dozen students working in pairs, there would be about 6 presentations to schedule.)**

The presentations will be graded on a scale of 0-to-6. Students will also receive a grade between 0 and 2 based on how well they handle post-presentation questions from the instructor and their fellow students. A presentation grading rubric is posted on the course ELMS/Canvas website.

Students must also engage with the presentations of other students. We do not have enough time for lengthy live discussions in class of all the student presentations, but audience members will be asked to formulate written reactions to presentations. Each week the non-presenting students are required to discuss the student presentation with their own course project partner. Each non-presenting pair must send an email to the instructor (one email per pair of students). The email will suggest a constructive

question/observation/suggestion that could serve as the opening of an online discussion thread about one of that week's student presentations. The instructor will provide private feedback on the emails, and open discussion threads based on the non-presenting students' questions/observations/suggestions. At the end of the term, each student project pair will receive a grade on a 2-point scale for the quality of their engagement with the presentations of other students. Project pairs who submit questions/observations/suggestions that are constructive and insightful will get grades of 1.8 or higher (A/A-). Questions/observations/suggestions that are less so will get lower grades. My feedback on the presentation emails will help students learn what's expected over the course of the term. The end-of-term grade will be based on the quality of engagement attained by the end of the term.

So, the 10 course points related to presentations are: 6 for the presentation itself, 2 for the quality of your response to post-presentation questions, and 2 for the quality of engagement with other people's presentations.

Presenters are required to send complete first drafts of their PowerPoint slides to me via email at [jsilv56@umd.edu](mailto:jsilv56@umd.edu) by noon on the Friday before they present. I will reply with feedback by noon on Sunday. The actual presentation must include revisions that address the feedback. Final drafts are due at the same email address by noon on Monday. Presenters can also schedule a Zoom call with me to discuss my feedback on their presentation slides.

### **Final Exam (25 course points)**

I will prepare an exam that I think students should be able to complete in 2 hours, though students are welcome to use 3 hours from 6:30-9:30. The final exam will be cumulative. Some or all of the exam will consist of a series of empirical problems to be solved using Stata and submitted electronically.

The midterm and final exams will be posted to the course website at 6:30 PM (see course schedule for dates). Both exams will be open book, open note. I will personally proctor the exams and be available to address clarifying questions during the exam. Students can use whatever notes they like, including online resources. But communication with anyone else by any means is prohibited while taking an exam. Communication with anyone by phone, email, text message, online chat, or any other means would be cheating. Students are advised to prepare a compact sheet or two of the most important formulas for quick reference. Students who spend a lot of time leafing through books and web pages will run out of time.

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### **Grades**

All assessment scores will be posted on the course ELMS page. If you would like to review any of your grades (including the exams), or have questions about how something was scored, please email me to schedule a time for us to meet and discuss. Late work will not be accepted for course credit so please plan to have it submitted well before the scheduled deadline. I am happy to discuss any of your grades with you, and if I have made a mistake, I will immediately correct it. Any formal grade disputes must be submitted in writing and within one week of receiving the grade. Final letter grades are assigned based on the percentage of total assessment points earned. To be fair to everyone, I have to establish clear

standards and apply them consistently, so please understand that being close to a cutoff is not the same as making the cut (89.99  $\neq$  90.00). It would be unethical to make exceptions for some and not others. At the end of the semester, I will add up each student's course points. This will be a number between 0 and 100. I may grade on a curve depending on the overall performance of the students.

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

### **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](http://www.elms.umd.edu). They will need to use their University of Maryland "directory ID" and password.

**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 workload 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. However, the DC program takes just 1 week off between terms. 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 "normal" full-time load in the traditional semester-based program ( $8/6 = 1.33$ ).

**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.

**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.

**COVID Policies:** 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 strongly urge all students, staff and faculty to read announcements they receive about COVID related guidance and policy, and to stay familiar with the information. We thank you all for your individual efforts to help protect the collective health of our entire community.