Syllabus	
Course Information	ECON 637: Econometrics I Section 001: Location: Fairfax Campus, Enterprise Hall 274 Class time: Tuesdays 7:20-10pm
Instructor	Professor Thomas Stratmann Email: tstratma@gmu.edu Phone: 703.993.4920 Office Hours: Tuesdays 10am to 11am, Mercatus Center, Arlington Campus If you made an online appointment, please connect to https://gmu.zoom.us/j/6512586748 Please refer to online materials for this course here: https://mymasonportal.gmu.edu/
Teaching Assistant	Amberly Dozier - adozier2@gmu.edu - - Zoom office hours: Tuesdays 11am to 12pm https://gmu.zoom.us/j/3422571818?pwd=bWFORDlWSDljMEh1Mndxd3lkZEVYdz09
Course Description	This course will deepen your knowledge of multiple regression analysis and the modern statistical techniques required to analyze data in the social sciences. The emphasis is on empirical applications.
Course Objectives	Upon completion of the course, students will be able to: 1. Interpret statistical information and research results published in economics journals 2. Perform data analysis and statistical tests to answer research questions 3. Apply an appropriate research design to establish causality 4. Demonstrate an ability to utilize statistical software (Microsoft Excel & Stata) 5. Construct appropriate outputs based on empirical analyses
Course Methodology	The class format will combine readings, lectures, problem sets, quizzes, a paper draft, and other learning tools. Every week you will be expected to listen to the lecture, read through the posted material, read the assigned book chapters, and complete listed assignments. It is a fast-paced course where new material builds upon previous material, so you should make all effort to keep up with all the weekly tasks.
Required textbook(s) and/or materials	**Required Text:** Introductory Econometrics - Edition: 7th Author: Jeffrey M. Wooldridge ISBN: 9781337558860 Publication Date: 2020 Publisher: Cengage Mostly Harmless Econometrics: An Empiricist's Companion Authors: Joshua D. Angrist, Jorn-Steffen Pischke ISBN: 9780691120355 Publication Date: 2008 Publisher: Princeton University Press http://mutex.gmu.edu/login?url=http://www.degruyter.com/isbn/9781400829828

	Econometric Analysis - Edition: 8th Author: William H. Greene ISBN: 9780134461366 Publication Date: 2018 Publisher: Pearson All three books provide a very good discussion of issues in modern econometrics. Wooldridge is good for developing an intuition for the underlying theory, Angrist/Pischke focuses on causal inference and identification, and Greene offers a more mathematical approach. William H. Greene has many of his book chapters as PDF files, for free, on his website. **Recommended Reading:** Jeffrey Wooldridge's "Econometric Analysis of Cross Section and Panel Data", MIT Press 2010. It is a more advanced treatment of the analysis of microdata, quite useful, and I require this book in the applied micro-econometrics class I teach in the Fall of 2021. Another useful book is Peter Kennedy's "A Guide to Econometrics" (6th Edition), Wiley-Blackwell, 2008. I found it to be very useful as a graduate student. Other readings and materials will be made available electronically on Blackboard. **Required Software:** Stata/IC (for more details see "Course-specific Hardware/Software" below)
Computer Requirements	**Hardware:** You will need access to a Windows or Macintosh computer with at least 2 GB of RAM and access to a fast and reliable broadband internet connection (e.g., cable, DSL). A larger screen is recommended for better visibility of course material. You will need speakers or headphones to hear recorded content and a headset with a microphone is recommended for the best experience. Finally, you are encouraged to have a webcam. For the amount of Hard Disk Space required taking a distance education course, consider and allow for: 1. the storage amount needed to install any additional software and 2. space to store work that you will do for the course. If you consider the purchase of a new computer, please go to Patriot Tech to see recommendations. **Software:** To access Blackboard, you will need a browser and operating system that are listed compatible or certified with the Blackboard version available on the myMason Portal. See supported browsers and operating systems. Log in to myMason to access your registered courses. Online courses typically use Acrobat Reader, Flash, Java, and Windows Media Player, QuickTime, and/or Real Media Player. Your computer should be capable of running current versions of those applications. Also, make sure your computer is protected from viruses by downloading the latest version of Symantec Endpoint Protection/Anti-Virus software for free here. Note: If you are using an employer-provided computer or corporate office for class attendance, please verify with your systems administrators that you will be able to install the necessary applications and that system or corporate firewalls do not block access to any sites or media types.

	Course-specific Hardware/Software This course will include applied computing, using Microsoft Excel and Stata. Stata software is probably the most favored statistical package used by applied economists. You will be required to utilize Stata/IC which is available through the university and for purchase. Here are some Mason links to Stata, how to access Stata on Campus and off Campus, and purchasing options. https://infoguides.gmu.edu/software/stata https://its.gmu.edu/service/virtual-computing-lab/ https://its.gmu.edu/service/virtual-private-network-vpn/ To access Stata, go to https://its.gmu.edu/service/virtual-computing-lab/. This gets you to the virtual computing lab to access Stata. If you are off-campus, you will have to use a VPN connection. Sometimes, even on campus, you'll need a VPN connection to access the virtual computing lab. For details on how to stall a VPN on your laptop or computer, go to https://its.gmu.edu/service/virtual-private-network-vpn/ Alternatively, or in addition, you can buy a six-month annual or perpetual license. For students, the cheapest option is Stata/IC which you can rent for six months at **$48**. A perpetual license costs Stata/IC costs **$225**, and you have the option to upgrade to Stata/SE. Stata/SE allows for larger data sets, and there are flavors of Stata, such as Stata/MP which are faster than the other two versions and allow for even larger data sets. You will find more details here: https://www.stata.com/order/new/edu/gradplans/student-pricing/ Your instructor has no financial interest in what type of option you chose and whether you chose to purchase this software at all. The book *Statistics with Stata* by Lawrence C. Hamilton might be useful for you to learn about using Stata, but this book is not required. A helpful reference developed by GMU may be found here: https://infoguides.gmu.edu/software/stata
Course Website	Blackboard will be used for this course. You can access the site at http://mymasonportal.gmu.edu. Log in and click on the "Courses" tab. You will see ECON 637. NOTE: Username and passwords are the same as your Mason email account. You must have consistent access to an internet connection to complete the assignments in this course through Blackboard. Note the technology requirements for the College of Humanities and Social Sciences in your Blackboard course menu—it contains details of minimum technology requirements.
Rules and Expectations	In correspondence/communication students will be expected to: a) Be professional and respectful b) Make reasonable requests of the instructor. I will be happy to clarify course material and answer legitimate questions; however, please exhaust other information sources (e.g., syllabus, Blackboard) for answering your question before contacting me and remember, "Poor planning on your part does not constitute an emergency on my part" Regarding honesty in work, students will be expected to: a) Review the University integrity and honesty policies in the student handbook for guidelines regarding plagiarism and cheating (summarized below). I will gladly clarify my stance on any questionable or "grey area" issues you may have.

	b) Refrain from dishonest work as it will receive a minimum penalty of zero on the assignment and a maximum penalty of a zero for the course with a report to the Honor Committee. The GMU Honor Code requires that faculty submit any suspected Honor Code violations to the Honor Committee. Therefore, any suspected offense will be submitted for adjudication.
Mason Honor Code	**The complete Honor Code is as follows:** *To promote a stronger sense of mutual responsibility, respect, trust, and fairness among all members of the George Mason University community and with the desire for greater academic and personal achievement, we, the student members of the university community, have set forth this honor code:* **Student members of the George Mason University community pledge not to cheat, plagiarize, steal, or lie in matters related to academic work.** *(From the Catalog – catalog.gmu.edu)*
Cheating Policy	Any form of cheating on an activity, project, or exam will result in zero points earned. "Cheating" includes, but is not limited to, the following: reviewing others' exam papers, having ANY resources utilized when not allowed, collaborating with another student during an individual assignment. If you have questions about when the contributions of others to your work must be acknowledged and appropriate ways to cite those contributions, please talk with the professor or utilize the GMU writing center.
Plagiarism and the Internet	Copyright rules also apply to users of the Internet who cite from Internet sources. Information and graphics accessed electronically must also be cited, giving credit to the sources. This material includes but is not limited to e-mail (don't cite or forward someone else's e-mail without permission), newsgroup material, information from Web sites, including graphics. Even if you give credit, you must get permission from the source to put any graphic that you did not create on your web page. Shareware graphics are not free. Freeware clipart is available for you to freely use. If the material does not say "free," assume it is not. Putting someone else's Internet material on your web page is stealing intellectual property. Making links to a site is, at this time, okay, but getting permission is strongly advised since many Web sites have their requirements for linking to their material. Review the Honor Code here.
Individuals with Disabilities	Students with documented disabilities should contact the Office of Disability Services (703) 993-2474) to learn more about accommodations that may be available to them. *(From the 2019-2020 Catalog – catalog.gmu.edu)*
Research Integrity Policy and Procedures	All members of the George Mason University community are expected to pursue their research and scholarly activities in a manner that is consistent with the highest standards of ethical, scientific, and scholarly practice. All research with human subjects must be reviewed prior to a project's initiation. Ethical review of projects will either be conducted by Mason's Office of Research Integrity and Assurance (ORIA) or the Institutional Review Board (IRB). The primary goal of this review is to assure that the rights and welfare of human research subjects in activities conducted at and/or under the auspices of George Mason University are adequately protected.

	All researchers must receive written approval from ORIA prior to conducting a research project involving human subjects. Failure to receive this written approval will be considered noncompliance.
Academic Integrity and Inclusivity	This course embodies the perspective that we all have different perspectives and ideas and we each deserve the opportunity to share our thoughts. Therefore, we will conduct our discussions with respect for those differences. That means, we each have the freedom to express our ideas, but we should also do so keeping in mind that our colleagues deserve to hear differing thoughts respectfully, i.e. we may disagree without being disagreeable. http://oai.gmu.edu/
Student Privacy Policy	George Mason University strives to fully comply with FERPA by protecting the privacy of student records and judiciously evaluating requests for the release of information from those records. Please see George Mason University's student privacy policy https://registrar.gmu.edu/students/privacy/
E-Mail Policy	Web: masonlive.gmu.edu Mason uses electronic mail to provide official information to students. Examples include notices from the library, notices about academic standing, financial aid information, class materials, assignments, questions, and instructor feedback. Students are responsible for the content of university communication sent to their Mason e-mail account and are required to activate that account and check it regularly. Students are also expected to maintain an active and accurate mailing address to receive communications sent through the United States Postal Service. *(From the 2017-18 Catalog – catalog.gmu.edu)*
Late Work Policy	Late assignments will not be accepted without prior written approval from the instructor. Emergency, unforeseen, and/or serious extenuating circumstances will be handled on a case-by-case basis.
Course Grading & Evaluation	Grades will be assigned as follows: A: 93.00-100% A-: 89.50-92.99% B+:87.00-89.49% B:83.00-86.99% B-:80.00-82.99% C+:77.00-79.99% C:73.00-76.99% C-:70.00-72.99% D:60.00-69.99% F:0-59.99%
Quizzes – 5%	There will be a quiz to test your knowledge.
Assignments: Problem Sets – 20%	Be sure to check Blackboard frequently for updates on problem sets, lecture notes, reading assignments, announcements, etc. You may work on the problem sets in small groups. You must, however, write up your answers

	individually and in your own words. If you choose to work in a small group, include the names of your study group members on your problem set. Duplicate answers will not receive credit. Each week assignments are required to be uploaded to Blackboard. Assignments are due by Tuesday, 11:59 PM, ET unless otherwise stated. Refer to the course schedule and weekly overviews for details.
Term Paper – 20%	You are required to write a paper for this class. The paper can be short. State your hypothesis, and present results. Look at the AER, JPE, and QJE how results are presented (tables, description of results). You will not be graded on whether you do find or do not find statistically significant results but on clarity of exposition and the innovation of your paper relative to the existing literature on the topic of your choosing. By the **week of the Midterm**, you are required to send the proposal for your paper to two other students in the class requesting feedback. Each student will be responsible for a peer review of two proposals. Your revised paper proposal, along with a description of the data that you will be using in your paper, is due the week after you have received comments from your peers. The revised proposal will count as twenty percent of your paper grade. For your paper, please review policies issued by the GMU Office of Research Assurance and Integrity, which you can find here: https://economics.gmu.edu/graduate/policies/research-integrity)
Exams – 55% (Midterm 25%, Final 30%)	There will be one midterm exam and one final exam. Both exams are closed-book exams. There will be no makeup midterm. If you miss the midterm with a valid excuse, its weight will be shifted to the final. The final exam will be cumulative and is also a closed book. The final exam is on Tuesday, May 16, 2023, 7:30pm, Enterprise 275
Need Help?	Utilize the “Course Q&A” discussion forum or email your instructor directly.

Expect to work at least 7-10 hours per week on assignments and readings for this course.

Unless otherwise stated, all assignments are due and to be submitted on Blackboard **on Tuesdays at 11:59 pm, the** week after they are assigned.

To help you manage your schedule and time to complete the assignments in this course, please follow the recommended timeline below. If you have a question or concern or encounter a problem with an assignment, please contact the teaching assistant or me so we can discuss and work out a resolution.

Tentative Schedule:

Weeks	**Lessons**	**Assignments**
Week 1	Lesson 1: Introduction to Excel and Stata The Simple Regression Model	Review Summation lecture Review Correlation & Covariance lecture Read Wooldridge “Appendix A” Complete Excel assignment (problem set) Complete Stata assignment (problem set) Complete Summations & Derivatives assignment (problem set)

		Review OLS Derivations & Reading Results lecture Read Wooldridge Chapter 1 Read Wooldridge Chapter 2 (Sections 2-1 to 2-4) Complete Descriptive Statistics Problem Set Complete Stata assignment (problem set)
Week 2	Lesson 2: Unbiasedness and Variance of OLS Estimators	Review Unbiasedness & Variance lecture Complete the Unbiasedness & Variance assignment (problem set) Complete the problem set
Week 3	Lesson 3: Multiple Regression Model	Review the Multiple Regression Model lecture Read Wooldridge Chapter 3 Complete the Multiple Regression Model assignment (problem set) Complete the Omitted Variable Bias assignment (problem set)
Week 4	Lesson 4: Potential Outcomes	Review Potential Outcomes lecture notes Read Wooldridge Chapter 2 section 2-7 Read *Mostly Harmless Econometrics* Chapter 2 (PDF) Read *Mastering 'Metrics: The Path from Cause to Effect* Chapter 1 (PDF) Watch video "Ceteris Paribus" & complete knowledge check Watch video "Selection Bias" & complete knowledge check Watch Part 1 of 2020 AEA Continuing Education Webcast & complete knowledge check Complete the Potential Outcomes assignment (problem set)
Week 5	Lesson 5: Midterm Exam	Midterm Exam Send your paper proposal to 2 students in the class for feedback
Week 6	Lesson 6: Matching and Causality	Review Paper Writing Guide Read *Mastering Metrics: The Path from Cause to Effect* Chapter 2 (PDF) Read Dale, S.B. & Krueger, A.B. (2002). Estimating the payoff to attending a more selective college: An application of selection on observables and unobservables. *The Quarterly Journal of Economics,* 117(4), 1491-1527. (PDF) Watch Part 2 of 2020 AEA Continuing Education Webcast Complete the Matching and Causality assignment (problem set) Provide feedback to 2 students on their paper proposals
Week 7	Lesson 7: OLS in Matrix Form	Review the Matrix Algebra Review lecture Review the OLS in Matrix Form lecture Read Greene 2019, 8th Edition, Appendix A Read Greene 2019, 8th Edition, Chapter 3 Read Wooldridge, 2020, 7th Edition, Appendix E Complete the OLS in Matrix Form problem set

		Submit your paper proposal
Week 8	Spring Break	
Week 9	Lesson 8 Inference	Review the Statistical Inference lecture Read Wooldridge Chapter 4 Read Greene Chapter 4 (section 4.5) & Chapter 5 Complete the Inference assignment (problem set)
Week 10	Lesson 8 Inference – cont.	Review the Statistical Inference lecture Read Wooldridge Chapter 4 Read Greene Chapter 4 (section 4.5) & Chapter 5 Complete the Inference assignment (problem set)
Week 11	Lesson 9: Binary Variables & Additional Regression Topics	Review the Additional Regression Topics lecture Review the Binary Variables lecture Review the Heteroskedasticity lecture Read Wooldridge Chapters 6, 7 & Chapter 8 (Sections 8-1, 8-2 (excl. 8-2a), 8-4a) Read Greene Chapter 6 Complete the Heteroskedasticity problem set Submit your revised paper proposal
Week 12	Lesson 10: Difference-in-Differences Estimation	Review the Difference in Differences lecture Read Wooldridge Chapter 13 Read Greene Chapter 11 Watch the video “An intuitive introduction to Difference-in-Differences" Watch the video “Difference in Differences Estimation in Stata” Complete the Difference in Differences assignment (problem set)
Week 13	Lesson 11: Instrumental Variables & Two-stage least squares	Review the Instrumental Variables lecture Read Wooldridge Chapter 15 Read Greene Chapter 8 Complete the Instrumental Variables assignment (problem set)
Week 14		
Week 15	Lesson 13: Final Exam	Complete the Final Exam Submit your term paper