Syllabus

Course Information	ECON 637: Econometrics I Section DL1: Location: Distance Education/Blackboard 　　　　　　Class time: asynchronous Section 001: Location: Fairfax Campus, Lecture Hall, Room 1 　　　　　　Class time: Tuesdays 7:20-10pm
Instructor	Professor Thomas Stratmann Virtual Office Hours Wednesdays 3-4PM, ET via Zoom: https://gmu.zoom.us/j/6512586748 Please refer to your online course here: https://mymasonportal.gmu.edu/
Course Description	This course will deepen your knowledge of multiple regression analysis and 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, 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 up on 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 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 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. Cengage MindTap • You must purchase MindTap for this course. It includes the eBook version of *Introductory Econometrics.* Buying a physical book will not reduce the cost of MindTap. You may purchase MindTap access from the Mason bookstore or through Cengage. When you click on any link to MindTap from Blackboard, you will be prompted to enter an access code and it will display your purchasing options. If you have any questions, please reach out to Maddie Hunt, Maddie.hunt@cengage.com **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 micro data, 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) Respondus LockDown Browser & Monitor (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 by a six month, or an annual, or a 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

LockDown Browser + Webcam Requirement
This course requires the use of LockDown Browser and a webcam for online exams. The webcam can be the type that is built into your computer or one that plugs in with a USB cable. Watch this brief video to get a basic understanding of LockDown Browser and the webcam feature: https://www.respondus.com/products/lockdown-browser/student-movie.shtml

Download Instructions
Download and install LockDown Browser from this link:
https://download.respondus.com/lockdown/download.php?id=133435885

Once Installed
- Start LockDown Browser
- Log into Blackboard Learn

- Navigate to the test

Note: You will not be able to access tests with a standard web browser. If this is tried, an error message will indicate that the test requires the use of LockDown Browser. Simply start LockDown Browser and navigate back to the exam to continue.

Guidelines

When taking an online test, follow these guidelines:
- Ensure you are in a location where you will not be interrupted
- Turn off all other devices (e.g. tablets, phones, second computers) and place them outside of your reach
- Before starting the test, know how much time is available for it, and also that you've allotted sufficient time to complete it
- Clear your desk or workspace of all external materials not permitted - books, papers, other devices
- Remain at your computer for the duration of the test
- If the computer, Wi-Fi, or location is different than what was used previously with the "Webcam Check" and "System & Network Check" in LockDown Browser, run the checks again prior to the exam
- To produce a good webcam video, do the following:
  - Avoid wearing baseball caps or hats with brims
  - Ensure your computer or device is on a firm surface (a desk or table). Do NOT have the computer on your lap, a bed, or other surface where the device (or you) are likely to move
  - If using a built-in webcam, avoid readjusting the tilt of the screen after the webcam setup is complete
  - Take the exam in a well-lit room, but avoid backlighting (such as sitting with your back to a window)
- Remember that LockDown Browser will prevent you from accessing other websites or applications; you will be unable to exit the test until all questions are completed and submitted

Getting Help

Several resources are available if you encounter problems with LockDown Browser:
- The Windows and Mac versions of LockDown Browser have a "Help Center" button located on the toolbar. Use the "System & Network Check" to troubleshoot issues. If an exam requires you to use a webcam, also run the "Webcam Check" from this area
- Respondus has a Knowledge Base available from support.respondus.com. Select the "Knowledge Base" link and then select "Respondus LockDown Browser" as the product. If your problem is with a webcam, select "Respondus Monitor" as your product
- If you're still unable to resolve a technical issue with LockDown Browser, go to support.respondus.com and select "Submit a Ticket". Provide detailed information about your problem and what steps you took to resolve it
- Quick Start Guide: https://web.respondus.com/wp-content/uploads/2019/08/RLDB-Quick-Start-Guide-Bb-Student.pdf

Hardware or software required for your course or program may be available for purchase at Patriot Computers (the University's computer store that offers educational discounts and special deals).

| Course Website | Blackboard will be used for this course. You can access the site at |

	http://mymasonportal.gmu.edu. Login 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 in order to complete the assignments in this course through Blackboard. Note the technology requirements for 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 original 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 own 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)*
Academic Integrity and Inclusivity	This course embodies the perspective that we all have differing 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 in a respectful manner, 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 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 in order 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%

Discussions	The discussion board will primarily be used as an ongoing dialogue or students to pose questions and comments related to the course assignments. Regular participation, through dialogue with your peers and instructor, is encouraged though you will not be graded. The exception will be during Lessons 1, where you must introduce yourself, and it will be graded. The "Ask the Instructor" section may be used for general questions and comments.
Quizzes/Knowledge Checks – 5%	There will be a quiz to test your knowledge of the course syllabus, so please review it fully prior to the first week of class. Brief knowledge check reviews are presented following videos within the course. You will have up to 3 opportunities to complete the knowledge checks, with the average score being counted.
Assignments: Problem Sets, Homework, & Exercises– 20%	A variety of graded assignments will be presented throughout the course, including problem sets and MindTap homework/exercises. Correct answers to problem sets and reading assignments will be posted on this site. 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 Sunday, 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 a closed book exam. 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 closed book. **Since both the Midterm and the Final exams are closed book, Respondus LockDown Browser and Monitor are utilized to deter cheating. You will need to log into Respondus LockDown Browser using your Blackboard login information to access and complete these exams. A webcam is required when using Respondus Monitor.** The Midterm will be during Week 7. I will announce the day of the Midterm during class.

	The final exam is on Tuesday, May 4. – I will make it available at 9am EDT, and you can turn it in until 11pm EDT. This is a timed exam. .
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 by the end of the week in which they are assigned. For the purposes of this course, a week is defined as **beginning at 12:01 am each Monday EST**, and **ending at 11:59 pm on the following Sunday EST.**

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 about an assignment, please contact me immediately so we can discuss and work out a resolution.

Tentative Schedule:

Weeks	Lessons	Assignments
Week 1	Lesson 1: Introduction to Excel and Stata	Take quiz on content of the syllabus Participate in the introductory discussion Complete the MindTap tutorials (optional) Review Microsoft Excel lecture Review Stata lecture Review Summation lecture Read Wooldridge "Appendix A" Watch 3 Stata videos ("How to Use Stata", "Commands", & "Variables") & complete knowledge checks Complete Excel assignment (problem set) Complete Stata assignment (problem set) Complete Summations & Derivatives assignment (problem set)
Week 2	Lesson 2: Moving from Correlation to Causation	Review Correlation & Covariance lecture Read Wooldridge Chapter 1 Complete Descriptive Statistics Problem Set Participate in the Problem Set discussion
Week 3	Lesson 3: The Simple Regression Model	Review OLS Derivations & Reading Results lecture Read Wooldridge Chapter 2 (Sections 2-1 to 2-4) Complete MindTap assignment (homework) Complete Stata assignment (problem set) Participate in the Problem Set discussion
Week 4	Lesson 4: Unbiasedness and Variance of OLS Estimators	Review Unbiasedness & Variance lecture Read Wooldridge Chapter 2 (Sections 2-5 and 2-6) Complete the Unbiasedness & Variance assignment (problem set) Complete the Stata assignment (problem set) Participate in the Problem Set discussion
Week 5	Lesson 5:	Review the Multiple Regression Model lecture

		Read Wooldridge Chapter 3
	Multiple Regression Model	Read Greene Chapter 4 (sections 4.1 – 4.3)
		Complete the Multiple Regression Model assignment (problem set)
		Complete the MindTap assignment (homework)
		Participate in the Problem Set discussion
Week 6	Lesson 6: Regression, Matching, and Causality	Review Regression, Matching, and Causality lecture notes
		Read Wooldridge Chapter 2 (section 2.7)
		Read Angrist and Pischke Chapters 1 & 2 (PDF)
		Watch video "Ceteris Paribus" & complete knowledge check
		Watch video "Selection Bias" & complete knowledge check
		Watch video (portion) "Mastering Mostly Harmless Econometrics"
		Complete the Matching and Causality assignment (problem set)
		Complete the ungraded Practice Quiz in preparation for the Midterm Exam
		Participate in the Problem Set discussion
Week 7	Lesson 7: Midterm Exam	Complete the Midterm Exam
		Send your paper proposal to 2 students in the class for feedback
Week 8	Lesson 8: Statistical Inference	Review the Statistical Inference lecture
		Read Wooldridge Chapter 4
		Read Greene Chapter 4 (section 4.5) & Chapter 5
		Complete the Regression assignment (problem set)
		Provide feedback to 2 paper proposals by other students
		Participate in the Problem Set discussion
Week 9	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 MindTap assignment (homework)
		Complete the Heteroskedasticity problem set
		Submit your revised paper proposal
		Participate in the Problem Set discussion
Week 10	Lesson 10: Difference-in-Differences Estimation	Review the Difference in Differences lecture
		Read Wooldridge Chapter 13
		Read Greene Chapter 11
		Watch video "An intuitive introduction to Difference-in-Differences"
		Watch video "Difference in Differences Estimation in Stata"
		Complete the Difference in Differences assignment (problem set)
		Participate in the Problem Set discussion
Week 11	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)
		Complete the MindTap assignment (homework)
		Participate in the Problem Set discussion
Week 12	Lesson 12:	Review the Maximum Likelihood, Logit, Probit lecture

		Read Wooldridge Chapter 17
	Maximum Likelihood, Logit, Probit	Read Greene Chapter 17
		Complete the MindTap assignment (homework)
		Participate in the Problem Set discussion
Week 13	Lesson 13:	Review the Time Series lecture
	Time Series (Part 1)	Read Wooldridge Chapter 10
		Complete the Time Series assignment (problem set)
		Participate in the Problem Set discussion
Week 14	Lesson 14:	Review the Time Series (Part 2) lecture
	Time Series (Part 2)	Read Wooldridge Chapters 11 and 18 (Sections 18.1-18.4)
		Read Greene Chapter 20 Watch video "What Is the Efficient Market Hypothesis?" & complete knowledge check
		Complete the Time Series assignment (problem set)
		Participate in the Problem Set discussion
Week 15	Lesson 15:	Complete the Final Exam
	Final Exam	Submit your term paper