ECON 645 - Empirical Analysis III: Econometric Modeling and Forecasting

Instructor: Cristina Tello-Trillo
Email: Tellotri@umd.edu
Class Meets: Mondays 6:45-9:30pm, with a 15-minute break around 8:00
Instructor Office Hours: Fridays by appointment, via Zoom.

TA: Luis Jaramillo (LFJ@umd.edu)
TA Office Hours: Thursdays from 5 to 6PM via Zoom https://umd.zoom.us/j/2512744950

Pre requisites: ECON 644

Course description: This is a course in applied econometrics, emphasizing the implementation of modern econometric techniques to analyze concrete economic problems, using real data and recent econometric software. Though not a theoretical course, we will introduce some basic theory and concepts to motivate an appropriate use of the methods.

Our program has 7 general learning objectives:

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, and 7

At the end of the course, you should be able to build, estimate and interpret your own econometric models for concrete economic problems, write professional reports/papers using econometric methods, use STATA software for econometric and statistical analysis, and understand empirical papers in the field of economics and gain sense of what makes an empirical paper convincing.

Textbooks and Software:

Required:
- Introductory Econometrics: A Modern Approach, 7th edition, Jeffrey M. Wooldridge. (5th /6th edition are also acceptable)
• Copies of the syllabus, lecture notes, problem sets and other relevant documents will be made available through the course website.
• We will use STATA for the empirical analysis. You can order a student version which is discounted. Information on how to order STATA is available on the last page of this syllabus.

Recommended:
• Microeconometrics using STATA, Cameron and Trivedi (2009)
• Mostly Harmless Econometrics: An Empiricist’s Companion, Angrist and Pischke (2009)

Grading:
• Midterm Exam: 30%
• Final Exam: 35%
• Problem sets 1-4: 20%
• Paper presentation: 10%
• Online Discussion Sessions: 5%

The problem sets will include theoretical problems and empirical assignments. You will have a week to solve each problem set. I encourage you to discuss the problems with your classmates. From my experience as a student, you can learn a great deal from your fellow students. However, after discussing problems, you should solve the problems on your own. Joint assignments will not be graded.

All problem sets are to be submitted electronically as STATA log files on ELMS and are due before class on Mondays at 6.45pm. Since answers are posted on ELMS the same day, late submissions are not acceptable.

Paper Presentations:

Students in teams of 3 (or 2 depending on enrollment) will chose one research paper that is related to one the topics covered in the course. Please put your name next to the paper that you are interested in presenting in this google sheet. Your job is to create a 15-minute presentation describing the paper, focusing the bulk of the time explaining what econometric techniques were used in their “main” regression, and if possible, critiquing the technique used based on what we’ve covered in the course to that point. Presentations will be scattered throughout the course; they will take place at the beginning of the class. If you know you have to miss a class on a given Monday evening, please do not sign up for that evening’s presentation.

Online Discussions:
I will post a question/series of questions relevant to the course material & presentations every Thursday at 11am. The discussion will be open until Saturday at 11am for you to comment/respond. I will check in twice a day to participate/respond/redirect.

---

1 If some exercises need to be done by hand, students need to scan (or take high quality photos) the solutions and submit them electronically.
Final Course Grades
Students’ grades on each component of the course will be weighed according to the scale above to calculate their numerical course grade. The numerical course grades will be translated into letter grades as follows:

<table>
<thead>
<tr>
<th>Numerical Grade</th>
<th>Letter Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>93-100</td>
<td>A</td>
</tr>
<tr>
<td>90-92</td>
<td>A-</td>
</tr>
<tr>
<td>80-89</td>
<td>B+</td>
</tr>
<tr>
<td>70-79</td>
<td>B</td>
</tr>
<tr>
<td>60-69</td>
<td>B-</td>
</tr>
<tr>
<td>50-59</td>
<td>C+</td>
</tr>
<tr>
<td>40-49</td>
<td>C</td>
</tr>
<tr>
<td>30-39</td>
<td>C-</td>
</tr>
<tr>
<td>20-29</td>
<td>D+</td>
</tr>
<tr>
<td>10-19</td>
<td>D</td>
</tr>
<tr>
<td>0-9</td>
<td>F</td>
</tr>
</tbody>
</table>

The grade A+ is reserved for the top student or two in the course (or maybe no one) – at the instructor’s discretion.

Tentative Course Outline:

<table>
<thead>
<tr>
<th>Class #</th>
<th>Date</th>
<th>Topic</th>
<th>Book Chapter</th>
<th>Problem Set/Presentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>August 29</td>
<td>Introduction, Endogeneity, Omitted Variable Bias, Instrumental Variables</td>
<td>Wooldridge Chapter 3.3, 9.4, 9.5, 15.1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Friday September 9&lt;sup&gt;2&lt;/sup&gt; Via zoom 6:45pm-9:15pm</td>
<td>Instrumental variables, 2SLS</td>
<td>Wooldridge Chapter 15.1-15.5</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>September 12</td>
<td>Panel Data I</td>
<td>Wooldridge Chapter 13, 14.1, first half of Mitchell, Ch. 5</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>September 19</td>
<td>Panel Data II</td>
<td>Wooldridge Chapter 14.1-14.3 &amp; 8 and Mitchell Ch. 6</td>
<td>Pset #1 Due Student’s presentation</td>
</tr>
<tr>
<td>5</td>
<td>September 26</td>
<td>Review + useful commands in STATA</td>
<td>Mitchell Ch. 2-Ch. 4, Ch. 7</td>
<td>Pset #2 Due Student’s presentation</td>
</tr>
<tr>
<td>6</td>
<td>October 3</td>
<td>Midterm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>October 10</td>
<td>Natural Experiments and Difference-in-Differences</td>
<td>Wooldridge Chapter 13.2</td>
<td>Student’s presentation</td>
</tr>
<tr>
<td>8</td>
<td>October 17</td>
<td>Multivariate/Dummy regression analysis + Probit</td>
<td>Wooldridge Chapter 7.1, 7.5, 17.1</td>
<td>Pset #3 Due Student’s presentation</td>
</tr>
</tbody>
</table>

<sup>2</sup> Make-up class since we have no classes on Labor Day Sept 5.
<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Reading</th>
<th>Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 October 24</td>
<td>Logit</td>
<td></td>
<td>Student's presentation</td>
</tr>
<tr>
<td>10 October 31</td>
<td>Intro to Time Series I</td>
<td>Wooldridge Chapter 10-12</td>
<td>Pset #4 part I Due Student’s presentation</td>
</tr>
<tr>
<td>11 November 7</td>
<td>Intro to Time Series II</td>
<td>Wooldridge Chapter 10-12</td>
<td>Pset #4 part II Due (Nov 12)</td>
</tr>
<tr>
<td>12 November 14</td>
<td>Final Exam</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**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](https://www.studentconduct.umd.edu/home/current-students) (Links to an external site.)

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.”

**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](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.

Additional notes that should appear in all MS in Applied Economics program syllabi:

**Email:** The University has adopted email as the primary means of communication outside of the classroom, and the instructor will use it to inform students 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. Students are responsible for reading their @umd.edu email, including ELMS/Canvas Announcements that are sent to the class. Students should make sure that ELMS/Canvas Announcements and messages are forwarded to an email address that they 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. The instructor will do their best to respond to email...
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.

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. Stata/BE is the least expensive version of Stata, and is sufficient version for your coursework in this program. 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/BE 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/

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/](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](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.