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1. Course Information

Instructor:	Erich Battistin https://erichbattistin.weebly.com/ Room 2212, Symons Hall ebattist@umd.edu
Office Hours:	We 1:00pm – 2:30pm (by appointment only)
TA:	Alejandro Lopez Aguilar lopeza@terpmail.umd.edu
Lectures:	TuTh 11:00am – 1:30pm (SYM 0209)
Discussion:	Fr 11:00am – 1:00pm (SYM 0209, taught by Alejandro Lopez Aguilar)

2. Course Description, Goals, and Expectations

2.1 Aims

I offer a modern introduction to empirical strategies in applied micro research in fields like public policy, development economics, labor economics, education, marketing, and corporate finance. This is an applied course intended for first-year Ph.D. students with a background in introductory statistics or econometrics. You should expect some theory, but the emphasis is on causal reasoning and design-driven identification in the social sciences. I will focus on intuition, without spending a lot of time on the formal derivation of the theoretical aspects of probability and statistics beyond what is strictly necessary. The core of assumptions needed to assess causal relationships will drive our journey across methods. My agenda includes the approximation of the conditional expectation function through a linear predictor (Ordinary Least Squares), the effects of omitted variables and the usefulness of research designs that resemble the outcome of a randomized experiment (Instrumental Variables and other quasi-experimental methods), as well as some extensions to the high-dimensional, big-data counterparts of these ideas (if time allows). I will also discuss fundamental concepts in sampling theory to assess design-based vs sampling-based uncertainty. All ideas will be taken to real data with the help of Stata.

2.2 Learning Outcomes

Students completing the course will be able to critically appraise the appropriateness of simple empirical strategies for applied micro research questions. The topics covered represent the toolkit to carry out independent Ph.D. research at a reasonable level of technical difficulty, and to read and understand the econometric methods that are used in most empirical work in the social sciences. Students will also learn to use Stata, and to communicate empirical results in ways that are illuminating, persuasive and rigorous. The materials covered set the stage for further training in causal inference, as in [AREC829](#) (which is the natural continuation of this course).

2.3 Requirements for Students

Before the semester starts. Students are expected to be comfortable with college-level algebra and calculus. Although we will develop together the main concepts of statistical inference and probability, lack of any introductory statistics and probability background may make this course more difficult than necessary. You are therefore asked to acquire good working knowledge of basic mathematical tools, fundamentals of probability, fundamentals of mathematical statistics and matrix algebra prior to the beginning of classes. A general discussion on these topics can be found, for example, in Appendix A, B, C and D in: Jeffrey M. Wooldridge (2016), “[Introductory Econometrics: A Modern Approach \(6th Edition\)](#)”, Cengage. You are invited to look at past exams and problem sets to familiarize with learning outcomes and expectations for this course.

After the semester starts. You are invited to spend time reading course materials and lecture slides before coming to class. You will internalize the concepts much more clearly if you spend time struggling with the material before class starts. You are also warmly encouraged to familiarize yourself with Stata throughout the course. Help for new Stata users will be given in discussion classes, although these classes are not aimed at developing coding skills. Most of the Stata commands used in classes are discussed, for example, in Colin Cameron, and Pravin K. Trivedi (2010), “[Microeconometrics Using Stata - Revised Edition](#)”, Stata Press. However, many introductory manuals to Stata are available on the web.

2.4 Course Website and Contents

Lecture slides, course program and reading materials are at the course [website](#). Each block of slides will be made available approximately one week before being used in lectures. Reading materials can be accessed through the UMD library network. Problem sets will be available through [Canvas](#), where you will find solutions to past problem sets and exams as well. Stata codes, data and materials for the discussion sections will be available through [Canvas](#).

2.5 Course Readings

We will mix traditional approaches to micro-econometrics with more modern tools used in several empirical literatures. For this reason, it is impossible to identify one textbook, and readings are primarily articles and working papers listed in the course website. Lecture slides are self-contained and may be enough to understand the topics discussed. However, you are strongly invited to not limit your study to slides, and it is in your interest to familiarize with the additional readings suggested in the course website and during lectures. Although we are not going to follow one textbook, our reasoning will follow selected chapters of the following two manuals, which you may find useful in the remainder of your Ph.D. as well.

- Joshua D. Angrist, and Jorn-Steffen Pischke (2009). “[Mostly Harmless Econometrics. An Empiricist’s Companion](#)”, Princeton University Press.
- Jeffrey M Wooldridge (2010). “[Econometric Analysis of Cross Section and Panel Data \(2nd Edition\)](#)”, MIT Press.

2.6 Exams and Grading

Exams. Your final grade will be computed as weighted average of three components.

- A mandatory midterm (40% of the final grade).
- A final during exam week (40% of the final grade).
- 4 regular problem sets (20% of the final grade).

All parts may include questions with an analytical component, or exercises with real data testing your ability to understand and interpret numbers. Problem sets may ask you to replicate the empirical analysis in published papers. Some problem sets may require group work and presentations in groups that will be formed at random. Your answers to problem sets must be

prepared in Latex, printed, and handed over to me at the beginning of the class when solutions are due. You are encouraged to work together on the problem sets, but each student should turn in their own answers to the problems. All solutions to problem sets must be submitted on time to receive credit. If a problem set is not turned in or not turned in on time, it will be graded as zero. I will publish solutions to all problem sets soon after each deadline. All deadlines will be communicated in class.

Grading. I grade exams question by question, rather than exam by exam. I have a checklist of items to look for in your answers. I make this checklist explicit in my solutions. You should be able to grade your exam by looking at the solutions. I read answers to each question twice. The first time I read through everyone's answer to get a sense for the overall quality. For example, at times the tools required for solutions are not mastered well because I have not asked my questions well enough. I want to take this into account by reading all solutions first. The second time, I grade using the checklist. I start with what I think was the best answer after my first reading and read through all exams. I do this to make sure that I appropriately differentiated quality in the first round. Once all answers are graded, I read again your exam and look for the overall control you have over the subject matter of each the question. At the end of this process, I assign grades following the UMD's official marking system. The standards for letter grades are as follows:

- A+, A, A- denote excellent mastery of the subject and outstanding scholarship.
- B+, B, B- denote good mastery of the subject and good scholarship.
- C+, C, C- denote acceptable mastery of the subject.
- D+, D, D- denote borderline understanding of the subject, marginal performance, and it does not represent satisfactory progress toward a degree.
- F denotes failure to understand the subject and unsatisfactory performance.

My assignments and exams are graded on a point scale (out of 30). I use the following scale to relate percentage scores to letter grades:

- A+ 100%-98%.
- A 97%-94%.
- A- 93%-90%.
- B+ 89%-85%.
- B 84%-80%.

- B- 79%-75%.
- F 74% or below.

2.7 Important Dates

First class: August 31, 2021.

Last class: December 9, 2021.

No class on: November 25, 2021

Midterm exam: October 19, 2021.

Problem sets: you should expect 2 sets before and after the midterm, with deadlines to be defined depending on how our discussion in lectures unfolds.

3. Course Related Policies

3.1 Academic Integrity

The University of Maryland, College Park has a nationally recognized Code of Academic Integrity, administered by the Student Honor Council. This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. As a student you are responsible for upholding these standards for this course. It is very important for you to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism. For more information on the Code of Academic Integrity or the Student Honor Council, please visit <http://www.shc.umd.edu>.

3.2 Honor Pledge

To promote academic honesty on campus you will be asked by your course instructors to write by hand and sign the following pledge on every examination, paper or other academic exercise. Writing this pledge will serve as a reminder of your commitment to academic integrity.

“I pledge on my honor that I have not given or received any unauthorized assistance on this examination.”

3.3 CourseEvalUM

Your participation in the evaluation of courses through CourseEvalUM is a responsibility you hold as a student member of our academic community. Your feedback is confidential and important to the improvement of teaching and learning at the University as well as to the tenure and promotion process. You can go directly to the website (www.courseevalum.umd.edu) to complete your evaluations. By completing all of your evaluations each semester, you will have the privilege of accessing the summary reports for thousands of courses online at Testudo.

3.4 Absences and Other Matters

The University policy regarding attendance and other matters can be found at <https://gradschool.umd.edu/faculty-and-staff/course-related-policies>. The University states that *“An excused absence is an absence for which the student has the right to receive, and the instructor has the responsibility to provide, academic accommodation. Students are expected to take full responsibility for their own academic work and progress. Students, to progress satisfactorily, must meet all of the requirements of each course for which they are registered. Students are expected to attend classes regularly. Consistent attendance offers students the most effective opportunity to gain command of course concepts and materials. Excused absences must be requested promptly and must be supported by appropriate documentation. Excused absences do not alter the academic requirements for the course”*. Under the policy, the student must notify the instructor in a timely manner. The notification should be provided either prior to the absence or as soon afterwards as possible. A template for a self-signed note for medical excused absence is available [here](#).

3.5 Basic Needs Security

If you have difficulty affording groceries or accessing sufficient food to eat every day, or lack a safe and stable place to live and believe this may affect your performance in this course, please visit <http://go.umd.edu/basic-needs> for information about resources the campus offers you and let me know if I can help in any way.