Carnegie Mellon University
Heinz College

94-835 Applied Econometrics II
Course Syllabus
Spring Semester 2017, Mini 3

INSTRUCTOR

Edson Severini, Assistant Professor of Economics and Public Policy
Office: 2212 Hamburg Hall (HBH)
Office Hours: Wednesdays 10:20-11:50am and by appointment
E-Mail: edsons@andrew.cmu.edu
Phone: 412-268-2329

COURSE ORGANIZATION

Class meets for lecture and discussion each Monday and Wednesday, January 18 through March 6. Classes are scheduled 1:30 – 2:50pm at HBH 1006. Recitations are scheduled for Fridays 1:30 – 2:50pm at HBH 1006.

Teaching assistants will hold regular office hours, conduct recitations, and assist in grading assignments and exams. TAs will also be available for appointments at your mutual convenience. We will announce office hours and locations during the first week of class.

TA: Ciprian Domnisoru (cdomniso@andrew.cmu.edu)

PREREQUISITE

You are presumed to have taken 94-834 (Applied Econometrics I), and to have a solid grounding in basic statistics, at the level of 90-711 (Empirical Methods for Public Policy and Management), 90-786 (Intermediate Empirical Methods) or 95-796 (Statistics for IT Managers). We will make good use of the material covered in those courses.

READINGS

There is a set of readings from Mastering Metrics: The Path from Cause to Effect by Joshua D. Angrist and Jorn-Steffen Pischke (Princeton University Press, 2015). This is a relatively simple but sophisticated book. It is fun to read and is also very short (and inexpensive!). If you like the style of the book we suggest you follow up with a more advanced book by the same authors, Mostly Harmless Econometrics (Princeton University Press, 2009).
We will also be assigning papers from the academic literature for you to read. Some of these are listed below. Other papers may be added as the course progresses. You will be kept up to date on the Course Blackboard web page.

You will likely find it useful to have a basic statistics textbook at hand. The book you used in your preparatory statistics class (90-711, 90-786, 95-796, or similar course) will be fine. In addition, many of you may find it helpful to have a standard econometrics textbook available to provide additional material on the topics we are covering. One good choice is *Introduction to Econometrics* by James H. Stock and Mark W. Watson (Pearson). You can buy a used version of the 1st or 2nd edition, which should be quite inexpensive at this point.

**COURSE CONTENT AND OBJECTIVES**

Econometrics has an important place in the data sciences. As your textbook authors say, the purpose of econometrics is to “untangle cause and effect in human affairs.” Econometrics is essential for advancing understanding in the social sciences, conducting public policy evaluation, and assessing the impact of business practice.

*Applied Econometrics I* was the first course in a two-course sequence designed to teach the essentials of econometric methodology.

During the first course you:

- Learned why *random assignment* is so useful for the purpose of sorting out cause and effect.
- Developed a clear understanding of *bivariate* and *multiple regression*, and come to appreciate the value and limitations of regression methods.
- Acquired an appreciation for the use of *instrumental variables* for the purpose of evaluating causality in complex real-world applications.

*Applied Econometrics II* follows up by pursuing other methods and applications. In this course you will:

- Learn how *regression discontinuity* is used to draw inferences about causal effects from rules constraining human behavior.
- Use *difference-in-differences techniques* to study causality when experiments happen naturally in society.
- Apply *event study analysis* and *synthetic control methods* to tackle causal questions when there are multiple natural experiments, or small sample sizes.
Both *Applied Econometrics I* and *Applied Econometrics II* are “hands on” courses in which you will not only learn to read and interpret existing studies, but will also conduct econometric analyses of your own. The goal is to help you take your first few steps toward becoming a “Metrics Master”! One of those steps is becoming competent and confident in the use of Stata to conduct empirical analyses.

**GRADING AND ACADEMIC INTEGRITY**

Your grade depends on the extent to which you demonstrate the capacity to solve problems and think critically about econometric practice.

There will be five graded problem sets. You are encouraged to work in groups on the problem sets (and to visit TAs in groups). While the problems may be worked on in groups, you should hand in paper copies of the answers written *in your own words*. Problem sets are due at the beginning of the recitation on January 27, February 3, 10, and 24, and March 3. Only assignments that are submitted on time will be graded. However, as an accommodation, the lowest assignment grade will be dropped when calculating your final grade.

The final grade is based on two exams (30 percent for the first exam, 38 percent for the final exam), and problem sets (32 percent).

Class attendance at *all lectures and recitations* is expected. Please let your instructor know in advance if you are unable to attend.

Exams are scheduled for February 13 and March 8. Students may be excused from exams only if arrangements are made in advance or in the event of an emergency.

A grade of 0 will be assigned for any assignment or exam that does not conform to University policies regarding academic integrity, and other penalties may also pertain, including termination from enrollment at Carnegie Mellon. See the Heinz College Student Handbook.

**CLASS POLICY ON LAPTOPS**

Please do not use laptops, cell phones, or other electronic communication devices during class. For those of you who like to have typed material, we will provide all lecture slides on Blackboard.
THOUGHTS FOR THE SEMESTER

Your graduate-school experience might prove to be mostly enjoyable and carefree, but it is likely to entail stress as well. The University Provost provides the following thoughts for students. They seem very sensible to us:

*Take care of yourself. Do your best to maintain a healthy lifestyle this semester by eating well, exercising, avoiding drugs and alcohol, getting enough sleep and taking some time to relax. This will help you achieve your goals and cope with stress.*

*All of us benefit from support during times of struggle. You are not alone. There are many helpful resources available on campus and an important part of the college experience is learning how to ask for help. Asking for support sooner rather than later is often helpful.*

*If you or anyone you know experiences any academic stress, difficult life events, or feelings like anxiety or depression, we strongly encourage you to seek support. Counseling and Psychological Services is here to help: call 412-268-2922 and visit their website at [http://www.cmu.edu/counseling/](http://www.cmu.edu/counseling/). Consider reaching out to a friend, faculty or family member you trust for help getting connected to the support that can help.*

TENTATIVE COURSE OUTLINE AND SCHEDULE

You should read the textbook carefully, and may find the following papers useful.

**Topic 1. Regression Discontinuity Designs** (January 18 – February 1)

Core Ideas

- Angrist and Pischke, Chapter 4.

Applications


• Solis, Alex. (Forthcoming). "Credit Access and College Enrollment." *Journal of Political Economy*.

**Topic 2. Difference-in-Differences (February 6 – 20)**

**Core Ideas**

• Angrist and Pischke, Chapter 5.

**Applications**


**Topic 3. Event Study and Synthetic Control (February 22 – March 6)**

**Core Ideas**


Applications


