ECO 351 H1F: Special Topics – Applied Regression

Fall 2016, L0101

Department of Economics, University of Toronto

Intructor: Prof. Patrick Baude |bōd|
Contact: Max Gluskin House #323, patrick.baude@utoronto.ca
Office hours: Tuesday 12:30-1:30 or by appointment
Lectures: Thursday 10:10am-12pm, SS 1071

TA: Eric Mackay, eric.mackay@utoronto.ca
Office hours: TBA
Tutorials: Thursday 12:10pm-1pm, SS 1071

Course Description & Learning Objectives

This course will introduce applications of the statistical methods learned in prerequisite courses, specifically multiple regression. We will focus on how multiple regression can be used to answer causal questions. You will learn the implications of, and how to interpret, different model specifications and strategies for achieving results that can be considered causal. In the process, you will read and critically evaluate existing research. To further our understanding, we will use the software program Stata to run statistical analyses.

The broad goal of the course is to provide you with the tools to better understand claims based on statistical evidence that you may encounter in the media, on-line, or in academic articles. For students wishing to go down this route, the course will provide you with the tools to make steps towards undertaking your own independent research projects.

There are 5 main learning objectives for this course. By the end of this course, you will be able to:

1. Identify the difficulties faced when using observational data vis-à-vis experimental data.
2. Present and interpret multiple regression results.
3. Critically evaluate research claims based on multiple regression analyses.
4. Critique the benefits and limitations of the differences-in-differences research design in various settings.
5. Use the software Stata at a basic level.

Prerequisites

Prerequisites: ECO200Y1/ECO204Y1/ECO206Y1, ECO220Y1/ECO227Y1/(STA220H1, STA255H1)/(STA257H1, STA261H1)

Exclusions: None

Course Requirements and Grading

Students are expected to come to class on time and be prepared to discuss any required readings and to both ask and answer questions. Please ask questions during class if something is not clear to you. Your overall course grade will be determined based on your performance on the following:

	Weight*
Problem Sets	**60%**
Final Exam	**40%**

- **Problem Sets** – There will be 5 problem sets consisting of mathematical and written questions, statistical exercises, and responses to assigned readings.

  Problem sets are designed to keep you engaged with the course throughout the semester and to prepare you for the types of questions that will be on the final exam. Each problem sets will be graded out of 15 points and your lowest scoring assignment will be dropped. The remaining 4 problem sets/quizzes will each constitute 15% of your overall grade.

  Problem sets must be submitted in paper form in class and electronically on the U of T portal. The electronic version serves as my indisputable record of your submission in case a paper gets lost. The paper version will be used be used for grading and for providing you with feedback about your responses. Detailed submission instructions will be provided with each assignment.

- **Final Exam** – The cumulative final exam will be scheduled during the exam period by the university. The exam is scheduled to last 3 hours.

* An alternate weighting scheme will include a simple average of all 5 problem sets weighted 15% each and the final weighted 25%. This scheme both rewards consistency throughout the term and accommodates students with difficulties writing exams. Course grades using both schemes will be calculated for each student and the higher resulting score will be used.

Any request to have your work regraded must come within 1 week of it being returned. Submit your request formally via email to the instructor (also CC the TA) with a detailed justification for your request. If granted, it is possible that a regrade can result in a lower score.

I understand that unforeseen events happen and that ECO351 is only one slice of your life over these 12+ weeks. It is this appreciation for each student's personal circumstances that resulted in a grading scheme that allows for some term work to be dropped. For this reason, DO NOT skip a problem set thinking that it will be the one that gets dropped. You never know what may come up later on during the course. In the event that you need further accommodations due to

extended health/family issues, contact the College Registrar. If you have known conflicts with the schedule, please contact me before the second class meeting.

Website

Course information including the syllabus, problem sets, solutions, and additional readings will be posted on Portal. Be sure you can access the course via portal and let me know after the first class if you cannot.

Course Readings

The required text and will be supplemented by excerpts from other textbooks and recent academic journal articles which will be posted to Portal. Additional readings/videos may be assigned throughout the course of the semester and will be posted to Portal.

- **Required Textbook –** Please purchase a copy of this book.

  Mastering 'Metrics, by Josh Angrist & Jörn-Steffen Pischke
  (hereafter **MM**).

- **Illustrative Articles –** See the reading list. Don't worry, you won't need to read & understand the entirety of these articles. These are the source material for discussions and you will be asked questions about these articles in the problem sets. Selections cover a wide variety of topics, and use international datasets and domestic data from Canada, China, Brazil, and the US. More papers may be added depending on student interests or if I find any newly published research articles that would be appropriate for our course.

- **Supplementary References** – Purely for background reading or alternative presentations of the material. Any required passages will be photocopied and posted on Portal.

  Business Statistics 3rd Canadian Ed. for ECO220Y, by Sharpe et al.
  (hereafter **BS**)

  Introductory Econometrics: A Modern Approach 4th, 5th, or 6th Ed., by Jeffrey Wooldridge.
  (hereafter **IE**)

  Research Methods in Practice 2nd Ed,, by Dahlia K. Remler & Gregg G. Van Ryzin.
  (hereafter **RMiP**)

  Methods Matter, by Richard J. Murnane & John B. Willett.

Communication

For questions about the course please contact my via email. I will respond to emails within two business days. This means that an email received on a non-holiday-weekend Friday at 4pm, may not receive a reply until the following Tuesday at 4pm. For certain questions, I will direct you to material on the course website, or ask you to see me in person. Be sure to include "**ECO 351**" (no quotes) in the subject or you may not get a response.

Software

Regression analysis is closely linked to and aided by the use of statistical computer software. We will use a statistical software program called Stata in this course. This is the software that I use almost exclusively when conducting empirical research. There are several versions of Stata. For our purposes you will need Stata IC, version 12 or higher. Do NOT buy Small Stata. You can buy a six-month license of Stata 14 IC directly from StataCorp for $75 USD at: https://www.stata.com/order/new/edu/gradplans/student-pricing/.

Stata is available on a few computers in specialized labs on campus.[1] Access may or may not be available to you, please check with the appropriate administrators. Several resources for learning to use Stata:

Official:	http://www.stata.com/support/documentation/
Tutorials:	http://www.ats.ucla.edu/stat/stata/modules/
	http://data.princeton.edu/stata/
Forum:	http://www.statalist.org/forums/
General:	http://www.google.com/

For saving your work, I suggest using an online file hosting service (e.g. Dropbox, Google Drive, Box). Due to the ubiquity of such services, a lost flash drive will not be an acceptable excuse for late work. See the instructor or TA before the second class if you are not familiar with these services.

Academic Integrity

Academic integrity is essential to the pursuit of learning and scholarship in a university, and to ensuring that a degree from the University of Toronto is a strong signal of each student's individual academic achievement. As a result, the University treats cases of cheating and plagiarism very seriously. The University of Toronto's Code of Behaviour on Academic Matters (www.governingcouncil.utoronto.ca/policies/behaveac.htm) outlines the behaviours that

[1] MDL Computer Lab, 5-053 Robarts Library; Mini-Data Analysis Lab, OISE Tech Lounge

constitute academic dishonesty and the processes for addressing academic offences. Potential offences include, but are not limited to:

In papers and assignments:
- Using someone else's ideas or words without appropriate acknowledgement.
- Submitting your own work in more than one course without the permission of the instructor.
- Making up sources or facts.
- Obtaining or providing unauthorized assistance on any assignment.

On tests and exams:
- Using or possessing unauthorized aids.
- Looking at someone else's answers during an exam or test.
- Misrepresenting your identity.

In academic work:
- Falsifying institutional documents or grades.
- Falsifying or altering any documentation required by the University, including (but not limited to) doctor's notes.

All suspected cases of academic dishonesty will be investigated following procedures outlined in the Code of Behaviour on Academic Matters. If you have questions or concerns about what constitutes appropriate academic behaviour or appropriate research and citation methods, you are expected to seek out additional information on academic integrity from your instructor or from other institutional resources (see http://academicintegrity.utoronto.ca/).You are responsible for upholding the academic integrity of this course, and for abiding by the Faculty of Arts & Science.

Rules & Regulations, and Policies are available here:
- http://www.artsci.utoronto.ca/osai
- http://calendar.artsci.utoronto.ca/Rules_&_Regulations.html.

Accessibility & Accommodations

The University provides academic accommodations for students with disabilities in accordance with the terms of the Ontario Human Rights Code. This occurs through a collaborative process that acknowledges a collective obligation to develop an accessible learning environment that both meets the needs of students and preserves the essential academic requirements of the University's courses and programs. For more information on services and resources available to instructors and students, please contact Tanya Lewis, Director, Director of Academic Success and Accessibility Services, at (416) 978-6268; tanya.lewis@utoronto.ca.

Accessibility services:

- http://studentlife.utoronto.ca/as/

Accommodations for Religious Observances:

- http://www.viceprovoststudents.utoronto.ca/publicationsandpolicies/guidelines/religiousobservances.htm

Schedule

While we will cover the topics in the order shown, the exact dates may change if we get ahead or fall behind schedule. I strongly recommend familiarizing yourself with the readings noted prior to their scheduled lecture date.

Date	Topic	Readings	Due
15-Sep-2016	Causation & Regression Review	BS Chapter 20: 20.1-20.4 IE Chapter 3: 3.1-3.3,3.6	
22-Sep-2016	Random Assignment	MM Chapter 1	
29-Sep-2016	Random Assignment	MM Chapter 1	**PS1 Due**
6-Oct-2016	Random Assignment	Randomization Papers	
13-Oct-2016	Multiple Regression	MM Chapter 2	**PS2 Due**
20-Oct-2016	Multiple Regression	MM Chapter 2	
27-Oct-2016	Multiple Regression	Multiple Regression Papers	**PS3 Due**
3-Nov-2016	In Class Activity		
10-Nov-2016	Natural/Quasi Experiments Differences-in-differences	RMiP Chapter 15 (Excluding Instrumental Variables)	**PS4 Due**
17-Nov-2016	Differences-in-differences	MM Chapter 5	
24-Nov-2016	Differences-in-differences	Diff-Diff Papers	
1-Dec-2016	TBD - Continue Diff-Diff or Sharp RD & Fixed Effects	Bonus Papers	**PS5 Due**
Dec. 9-20		**Final Exam - Date TBA**	