

ECO372H1F: Data Analysis and Applied Econometrics in Practice
Section L0101 — Fall 2025
Department of Economics, University of Toronto

Instructor information

Instructor: Dina O'Brien
Email address: dina.obrien@mail.utoronto.ca
Office Hours: In-person GE313, Wednesdays 11:30AM - 1:30PM (no OH first week)

Course information

Lectures: Wednesdays 2-4PM, SU B120
Tutorials: Wednesdays 4-5PM, SU B120
Course webpage: Quercus: <https://q.utoronto.ca/courses/398256>

Course Description: *ECO372 Data Analysis and Applied Econometrics in Practice* is an intermediate-level econometrics course offered at the University of Toronto (St. George campus). The course equips students with a modern approach to data analysis and econometric methods, emphasizing the use of data and regression-based techniques to answer causal questions. Students will explore key empirical methods used by economists, including random assignment, linear regression, matching, difference-in-differences, instrumental variables, and regression discontinuity design. Applications of these methods will be illustrated through examples from empirical microeconomic questions and data sources, including labour, development, and public economics. In addition, students will gain hands-on experience applying these techniques using Stata, one of the most widely used statistical software packages in economics.

Textbook

Required:

1. *Causal Inference: The Mixtape* by Scott Cunningham <https://mixtape.scunning.com>
2. Additional weekly readings (mostly research papers) will be posted on Quercus

Supplementary:

1. *Mastering 'Metrics: The Path from Cause to Effect* by Joshua Angrist and Jörn-Steffen Pischke (Princeton University Press, ISBN:978-0-691-15284-4)
2. *Introductory Econometrics: A Modern Approach*, 7th Edition by Jeffrey M. Wooldridge

Software

Required: Stata

One objective of the course is to get students to perform analyses using statistical software. The tutorials will provide hands-on experience to Stata. Each student is expected to come with their own laptop. For the purpose of this course, the simplest Stata/BE is sufficient. Stata provided the students of this class with a 6-month license. I will post the access information on Quercus. Stata is also available on computers of the Map and Data Library at Robarts Library.

Delivery

I will post all materials on our course webpage (Quercus). This includes the required readings (textbook chapters and additional readings), lecture slides, practice problems, along with any data you may need for the week's material. I encourage you to go through the readings ahead of time.

- **Lectures:** In our weekly lecture time slot I will introduce the econometric theory and show you examples, by way of economic research, of the theory being used in practice.
- **Tutorials:** In the tutorial time slot we will discuss readings and put to practice the methods seen in class. The practice problems will include mostly working with data in Stata. You need to bring your laptop for the tutorials. Please note there is no tutorial on the day of the midterm.
- **Office Hours:** There are weekly in-person office hours (see above). If you are unable to attend the scheduled office hours and you need to talk to me, please email me.

Coverage

	Topic	Textbook Chapters
1	Introduction, Probability and Regression Review	Chapters 1 & 2
2	Causal Inference, Potential Outcomes and Randomization	Chapter 4
3	Regression Framework, Randomization Inference, and Matching	Chapters 2, 4 & 5
4	Instrumental Variables	Chapter 7
5	Differences-in-Differences and Panel Data	Chapters 9 & 10
6	Regression Discontinuity Design	Chapter 6

The textbook chapters will be supplemented with research papers which I will post on Quercus with each week's lecture materials. Also, I will let you know which sections of the textbook are particularly relevant.

Evaluation

Tutorial participation: Participation is based on your engagement with tutorial material. You will need to submit your do-file for Stata-based tutorials. You will not be graded on the correctness of your responses; only your participation matters. There is no participation component in the first tutorial.

Empirical Bridging Module: Our course is one of the upper-level ECO courses where students complete an Empirical Bridging Module (EBM) during a two-hour session early in the Fall term.

Assessment	Weight	Due date (tentative)
Tutorial participation	5%	Tutorials other than first
Empirical Bridging Module	3%	September 11, 9:00am - 11am (up to noon)
Assignments (2 in total)	30%	Oct 1, Nov 5
Midterm	22%	Oct 22
Final Exam	40%	TBD

In this session, you practice applying your prerequisite skills to empirical research drawn from academic journals and working paper series by economists. These cases challenge you to apply the empirical tools that you studied in your second-year prerequisite courses and help prepare you for our upper-level empirical course. Your mark is based on demonstrated effort: the goal is active learning, including helping you notice where your prerequisite skills may need some review so that you are set up for your best work in our course. We expect about two hours of your effort, but for those who wish for more time for any reason, including but not limited to accessibility reasons, you may keep working for up to three hours and the EBM support team will continue to be available until noon to help with your questions. (Note: The EBM is an activity, not a test, so Accommodated Testing Services is not relevant.) If you are enrolled in more than one course doing the EBM, credit automatically applies to all relevant courses. For makeup requests for the EBM please complete <https://forms.office.com/r/AtqMrkCfGw>, which is an MS Form, as soon as possible. For any EBM related questions, please contact us directly at: ebm.economics@utoronto.ca. Please read all e-mails from that address, which is how the EBM team communicates with students across many courses, including telling you the room number in the Examination Centre (EX) to report to for the EBM.

Assignments: There will be two assignments, each weighted equally. These assignments will involve both theoretical and practical empirical questions. You must submit your typed answers as a PDF, together with a Stata do-file and the accompanying log file. Submissions will be made online, and you will have until 11:59 PM on the due date to submit. Collaboration is encouraged, but each student must submit their own version of the answers, written in their own words.

Midterm/Final: The midterm exam will be 2 hours long and held during class on Oct 22. The final exam will also be 2 hours long and the date announced later. The final exam will be cumulative.

You may use **generative AI** to help debug your code or to clarify high-level concepts covered in the course. However, be cautious—AI can sometimes provide misleading information, especially regarding causal inference and statistics. Any written work you submit must be entirely your own; you may not include content generated by AI. You are allowed to use AI to edit your text. Including AI-produced text in your assignments is considered the use of unauthorized aid and will be treated as an academic offense. I encourage you to use AI for tasks it excels at—like debugging and generating code syntax—and avoid relying on it for tasks it is less reliable at, such as interpreting model results.

Remark requests

If you believe there was an error in the grading of an assessment, please visit me during office hours or speak to me during a break. Remark requests must be made within one week of receiving your graded assessment. Please note that the entire assignment or test will be re-graded, and the final

grade may be higher or lower than the original grade. This policy does not apply to trivial appeals, such as minor errors in adding points.

Missed Term Work

You are expected to complete all required work as scheduled in the Evaluation section. Assignment dates and instructions are provided well in advance. It is your responsibility to ensure that you have enough time to complete assignments and resolve any issues, including technical difficulties. Failure to submit an assignment on time will result in a grade of zero. Assignments are considered submitted once all required files have been uploaded in the correct format to Quercus, as outlined in the assignment instructions. Late submissions will incur a penalty of 10 percentage points per day, starting immediately at the deadline. Be sure to allow ample time for submission before the deadline.

If you miss the midterm exam, the weight of the midterm will be transferred to the final exam, provided that:

1. You notify me via email in advance of the midterm.
2. You submit documentation that clearly explains the reason for your absence. Acceptable documentation includes an Absence Declaration (via ACORN) or the University's Verification of Student Illness or Injury (VOI) form.

If these conditions are not met, you will receive a grade of zero for the midterm exam.

Communication

I use Quercus extensively for communication with the class, so I recommend checking the announcements regularly. If you have other questions or comments related to the course, feel free to email me.

Accommodations

Well-Being:

University of Toronto aims at giving you an enriching learning experience, and has resources to help you stay healthy and be well: <http://studentlife.utoronto.ca/bewell>. In case of emergency, call 911. For ongoing injury, illness, or personal/family problems, or if you feel you are falling behind in your courses, you must contact your College Registrar immediately. There are also a number of resources in case you are feeling distressed: <http://studentlife.utoronto.ca/feeling-distressed>

Ongoing Learning Disability or Accommodation Requirement:

Students with diverse learning styles and needs are welcome in this course. If you have an ongoing disability issue or accommodation need, you should register with Accessibility Services (AS) (<http://accessibility.utoronto.ca>) at the beginning of the academic term. AS will then assess your medical situation, develop an accommodation plan with you, and support you in requesting accommodation for your course work. Remember that the process of accommodation is private: AS will not share details of your condition with any instructor, and your instructors will not reveal that you are registered with AS.

Accommodations for Religious Observances:

As a student at the University of Toronto, you are part of a diverse community that welcomes and includes students and faculty from a wide range of backgrounds, cultural traditions, and spiritual beliefs. Further to University Policy, if you anticipate being absent from class or missing a major course activity (like a test) due to a religious observance, please let me know following the instructions under Missed Term Work.

Academic Integrity

All students, faculty and staff are expected to follow the University's guidelines and policies on academic integrity. Consult the Code of Behaviour on Academic Matters for a complete outline of the University's policy and expectations: <http://www.governingcouncil.utoronto.ca/policies/behaveac.htm>