

Carleton University
ECON 5027: Econometrics I
Fall 2022

Professor Thomas Russell

General Information

Instructor: Thomas Russell

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TA: TBA

Lectures: Tuesday 2:35 pm - 5:25 pm EST, Loeb Building Room B146.

Tutorials: Thursdays 7:35 pm - 8:55 pm EST, Southam Hall Room 315.

Office Hours: By appointment.

Course Webpage: Brightspace.

Course Objectives: The goal of this course is to provide students with the technical background required to responsibly use a variety of common econometric methods. The focus of the course is primarily theoretical, although students will apply the material learned in class to analyze data and conduct simulation studies in the assignments. The course will cover both linear and non-linear models. Introductory concepts related to simple and multiple regression models are assumed to be known; however, it is not assumed that these concepts are known in a matrix algebra context. The course will introduce fundamentals of econometric theory underlying ordinary least squares before studying instrumental variables models, simultaneous equations models, and discrete choice models.

Course Preclusions: Precludes additional credit for ECON 5005 (no longer offered).

Course Prerequisites: None (MA status).

Lectures

This course is considered an “in-person” course: attendance of lectures is mandatory, and lecture recordings will not be available.

Programming Requirements

Students will be required to use R for the assignments. Programming in R will be taught in tutorial. R is open-source and freely available. Students may also find it useful to install Rstudio. Instructions on how to install R and RStudio will be posted on the course website before the first lecture. These programs should be installed before the first class.

Tutorials

Tutorials will be given by either the teaching assistant or the course instructor, starting [September 15, 2022](#). The first tutorials will provide an introduction to programming using R, which will be used substantially throughout the course. After introducing the basics of programming in R, the tutorials will use R to explore the theoretical material taught in class.

Office Hours

Office hours will be by appointment only. Email the course instructor to set up an appointment.

Evaluation

- Assignment I — 15%. To be posted on the course website on [September 27, 2022](#). Due on [October 18, 2022](#), at 11:59 pm EST. To be submitted via the course website.
- Midterm — 30%. The midterm will take place in class on [October 18, 2022](#).
- Assignment II — 15%. To be posted on the course website on [November 15, 2022](#). Due [December 6, 2022](#), at 11:59 pm EST. To be submitted via the course website.
- Final Exam— 40%. The final exam will be administered during the exam period, sometime between [December 10 - 22, 2022](#). The final exam will be scheduled later in the term and more details will be released at that time.

Assignments

Students can work in groups of one or two individuals. Only one assignment per group needs to be submitted – list all groups members on your assignments. Assignments will require students to apply programming skills learned in class to a mix of theoretical and applied questions. All assignments will be submitted via the course website. Students will submit both a written portion of the assignment (containing any mathematical derivations or explanations required to answer the assignment questions), as well as meticulously labelled R code used to answer any of the programming-based questions. Assignment marks may be deducted if any supporting code is not clearly labelled and/or explained. **Late assignments will be penalized 1 mark for each minute they are late (e.g. 5 minutes late means a 5 mark deduction from your total assignment score).**

Midterm Exam

The midterm will be administered in class on [October 18, 2022](#), and will cover lecture material up to and including the lecture on [October 11, 2022](#).

There will not be a make up exam for those who miss a midterm. Those unable to complete the midterm for a valid reason will have the weight of the midterm shifted to the final exam, resulting in a final exam worth 70%. However, for those unable to complete a midterm, documentation is required, e.g. a doctors note or a police report. The documentation provided by students for missed or incomplete midterms will be subject to verification by the instructor. Submitting a forged note is regarded as a serious academic offense. Students who miss the midterm exam and fail to provide sufficient documentation will receive a score of zero.

Final Exam

The final exam will be administered during the final exam period from [December 10 - 22, 2022](#). The final exam will cover lecture material up to and including the final lecture on [December 6, 2022](#). The exam will be scheduled later in the term, and relevant details for the final exam will be announced at that time.

For those unable to complete the final exam in the scheduled time, documentation is required, e.g. doctors note or police report. The documentation provided by students for missed or incomplete final exams will be subject to verification by the instructor. Submitting a forged note will be regarded as a serious academic offense. Students who miss the final exam and fail to provide sufficient documentation will receive a score of zero. Application to write a deferred final examination must be made at the Registrars Office.

Important Dates

Table 1 displays a list of important dates. The evaluation dates below are subject to change.

Dates	Event
September 13	First Class
September 15	First Tutorial
September 27	Assignment I Posted
October 18	Assignment I Due at 11:59 pm EST
	Midterm (in class)
October 24 - 28	Fall Break, no classes.
November 15	Assignment II Posted
December 6	Assignment II Due at 11:59 pm EST
	Last Class
December 10 - 22	Final Exam Period

Table 1: Important dates for ECON 5027.

Textbooks and Reading Materials

Although we will use a variety of references in this course, our main reference (not required) will be:

- (W) Wooldridge, J. M. (2010). *Econometric Analysis of Cross Section and Panel Data*. MIT Press.

Other references that may be useful throughout the course include:

- Angrist, J. D. and Pischke, J. (2008). *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton University Press.
- Anton, H., and Rorres, C. (2013). *Elementary linear algebra: applications version*. John Wiley & Sons.
- Cameron, A. C. and Trivedi P. K. (2005). *Microeconometrics: Methods and Applications*. Cambridge University Press.
- Davidson, R., and MacKinnon, J. G. (1993). *Estimation and inference in econometrics*. Oxford University Press.
- Davidson, R., and MacKinnon, J. G. (2004). *Econometric theory and methods*. New York: Oxford University Press.
- Hayashi, F. (2000). *Econometrics*. Princeton University Press.
- Train, K. (2009). *Discrete Choice Methods with Simulation*. Cambridge University Press.
- White (1984). *Asymptotic Theory for Econometricians*. Academic Press.

Tentative Course Outline

The tentative course outline is displayed in Table 2. Depending on the pace of the lectures, this course outline may be subject to modification.

Topic #	Lecture Dates	Topic	Readings
1	September 13	Introduction, Math Review, Linear Models	(W): Ch. 3.
2	September 20 September 27 October 4	Properties of OLS	(W): Ch. 4.
3a	October 11	Misspecification and IV Methods	(W): Ch. 4.
—	October 18	Midterm Exam	
—	October 24 - October 28	Winter Break: No classes	
3b	November 1	Misspecification and IV Methods (cont'd)	(W): Ch. 4.
4	November 8 November 15	SEMs	(W): Ch. 7, 8, 9.
5	November 22 November 29 December 6	Maximum Likelihood and Discrete Choice	(W): Ch. 13, 15.

Table 2: A tentative course outline for ECON 5027.

Additional Information

Email Communication

Communication outside of class, tutorials and office hours will be done through email. **For security purposes, please communicate only using your carleton.ca email address.** Please include the course name “ECON 5027” in the subject line of your email. You can expect to receive a response to your email within 48 hours. However, communication outside of class hours should occur only in exceptional cases; in particular, email is not the appropriate medium to ask questions about course material. Students who request clarification on course material through email will be directed to ask their question during class, tutorial or office hours.

Course Standing

Standing in a course is determined by the course instructor subject to the approval of the Faculty Dean. This means that grades submitted by the instructor may be subject to revision. No grades are final until they have been approved by the Dean. Application to write a deferred final examination must be made at the Registrars Office.

Academic Misconduct and Plagiarism

Please be aware that plagiarism is serious offence. For information on policies surrounding academic misconduct, visit the following link to [Carleton University Academic Integrity Policy](#). For information on how to avoid academic misconduct, visit the following link to [Academic Integrity and Offenses of Conduct](#).

Copyright of Course Materials

The lectures and course materials (including all slides, handouts, recorded lecture videos, exams, tutorial materials, and other similar materials) are protected by copyright. The course instructor is the exclusive owner of the copyright and intellectual property of all course materials. You may take notes and make copies of course materials for your own educational use. You may not reproduce or distribute lecture notes, videos, or other course materials publicly without the express written consent of the instructor.

Requests for Academic Accommodation

You may need special arrangements to meet your academic obligations during the term. For an accommodation request, the processes are as follows (copied and pasted from the [Academic Accommodations Website](#)):

Pregnancy

Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit the [Equity Services website](#).

Religious Obligations

Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit the [Equity Services website](#).

Academic Accommodations for Students with Disabilities

If you have a documented disability requiring academic accommodations in this course, please contact the Paul Menton Centre for Students with Disabilities (PMC) at 613-520-6608 or pmc@carleton.ca for a formal evaluation or contact your PMC coordinator to send your instructor your Letter of Accommodation at the beginning of the term. You must also contact the PMC no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with your instructor as soon as possible to ensure accommodation arrangements are made. For more details, visit the [Paul Menton Centre website](#).

Survivors of Sexual Violence

As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and where survivors are supported through academic accommodations as per Carleton's Sexual Violence Policy. For more information about the services available at the university and to obtain information about sexual violence and/or support, visit: carleton.ca/sexual-violence-support

Accommodation for Student Activities

Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation must be provided to students who compete or perform at the national or international level. Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, see [the policy](#).

Covid-19 Information

It is important to remember that COVID is still present in Ottawa. The situation can change at any time and the risks of new variants and outbreaks are very real. There are [a number of actions you can take](#) to lower your risk and the risk you pose to those around you including being vaccinated, wearing a mask, staying home when you're sick, washing your hands and maintaining proper respiratory and cough etiquette.

Feeling sick? Remaining vigilant and not attending work or school when sick or with symptoms is critically important. If you feel ill or exhibit COVID-19 symptoms do not come to class or campus. If you feel ill or exhibit symptoms while on campus or in class, please leave campus immediately. In all situations, you must follow Carleton's [symptom reporting protocols](#).

Masks: Carleton has paused the [COVID-19 Mask Policy](#), but continues to strongly recommend masking

when indoors, particularly if physical distancing cannot be maintained. It may become necessary to quickly reinstate the mask requirement if pandemic circumstances were to change.

Vaccines: Further, while proof of vaccination is no longer required as of May 1 to attend campus or in-person activity, it may become necessary for the University to bring back proof of vaccination requirements on short notice if the situation and public health advice changes. Students are strongly encouraged to get a full course of vaccination, including booster doses as soon as they are eligible, and submit their booster dose information in [cuScreen](#) as soon as possible. Please note that Carleton cannot guarantee that it will be able to offer virtual or hybrid learning options for those who are unable to attend the campus.

All members of the Carleton community are required to follow requirements and guidelines regarding health and safety which may change from time to time. For the most recent information about Carleton's COVID-19 response and health and safety requirements please see the [University's COVID-19 website](#) and review the [Frequently Asked Questions \(FAQs\)](#). Should you have additional questions after reviewing, please contact covidinfo@carleton.ca.