Fall 2022

ECON 5029 F - Methods of Economic Research

Department of Economics

Carleton University

General Information

Instructor: Matthew Strathearn

Email: mattstrathearn@cunet.carleton.ca

Lecture: Monday, 18h05 - 20h55, Southam Hall 409

Tutorial: Thursday, 18h05 - 19h25, Online

Office Hours: By Appointment

TA: Fabiha Bushra (fabihabushra@cmail.carleton.ca)

Course Description

Formulation, specification, and analysis of economic and econometric models; derivation of policy implications; communication of results and economic methodology. Precludes additional credit for ECON 5006 (no longer offered). Prerequisite(s): ECON 5020 (ECON 5000 if taken before 2012-2013, ECON 5001 if taken before 2007-2008) and ECON 5027 (ECON 5005 if taken before 2012-2013), or permission of the Department.

The objective of this course is to provide students with exposure to the research process through a research paper and the application of an empirical econometric framework. To achieve this objective, students are responsible for executing a research project that satisfies the following key components:

1. formulation of a research question,
2. proposing an econometric framework,
3. data collection, cleaning, and visualization; and statistical analysis,
4. economic analysis and discussion, including; identification of methodological limitations, policy implications, and further research directions, and
5. report writing, oral presentations, and research defense.

The instructor will act as a research advisor and coordinator; students will be responsible for executing steps (1)-(5). At each step of the process, the students will receive formal feedback with the expectation that they incorporate this into the final report. Oral presentations will take the form of a workshop-conference as is usual in economics. Students will present their own work and will also present formal discussions of the work of another team. The final report will take feedback on the proposal and on both oral presentations into consideration. Students will choose their research topic, subject to the approval of the supervising instructor. Class lectures will be held in parallel to address selected econometric special topics which arise in current empirical works. Lectures will focus on identifying problems and applying recent solutions which reflect on-going research in econometrics. A tentative list of topics considered include:

1. Maximum Likelihood (MLE), Method of Moments (MM) and Generalized Methods of Moments (GMM).
2. Count regression analysis and binary choice models.
3. Program evaluation.
4. Time series analysis.
5. Spatial autoregressive models.
6. Panel data models.
7. Special topics (to be determined)

On these issues, this course will introduce technical detail and rigor but will favor intuition with an emphasis on applications in R. **These topics are subject to change depending on how the course proceeds.**

Tutorials

The weekly tutorials will begin on September 15. The purpose of the tutorial is to introduce students to programming with R.

Recommended Text

Class notes will be sufficient. For additional reference, refer to:

Greene W. H. (2012). *Econometric Analysis*, 7th/8th edition, New Jersey: Prentice Hall.

Carleton Bookstore

Programming

The language of instruction for this course is the R programming language (https://www.rproject.org/). Students are highly encouraged to use this throughout the course. R is a free software which has become the industry standard for data science and analytics. In addition, R is easily installed across Windows, Mac, and Linux operating systems. We will use the open source Rstudio integrated development environment (IDE).

Evaluation

- Research question — 5%. Deadline: October 3, 2022
- Poster style presentation — 5%. Deadline: October 17, 2022
- Data review and documentation — 10%. Deadline: October 31, 2022
- Empirical or theoretical framework – 10%. Deadline: November 14, 2022
- An oral presentation — 15%. Deadline: December 5/9, 2022
- An oral discussant presentation — 5%. Deadline: December 5/9, 2022
- A final written report — 30%. Deadline: December 22, 2022
- A final exam — 20%. Held in class on November 28, 2022

Late Assignment and Missed Exam Policy

- If a student misses the final exam, they must work with the instructor to find a convenient time to re-schedule. Failure to write the final exam will result in an F on the exam component of the course.
- In the event you hand in an assignment late, you will lose 25% per day on that component of the course.
- If a student misses the poster style presentation or the final oral presentation, they must work with the instructor to find a convenient time to re-schedule. Failure to present will result in an F on the presentation components of the course.

Academic Accommodations

You may need special arrangements to meet your academic obligations during the term. For an accommodation request, please refer to the Guide on Academic Accommodation.

Academic Integrity

Any form of cheating and plagiarism is inadmissible and will be dealt with according to University policies & guidelines, see Academic Integrity and Offenses of Conduct

Tentative Lecture Schedule

Week	Lecture	Tutorial	Research Objective
Week I *September 5*	**N/A**	**No Tutorial**	
Week II *September 12*	Introduction/Course Expectations	Introduction to programming in R	How to find a research topic?
Week III *September 19*	Maximum Likelihood (MLE), Method of Moments (MM), and Generalized Method of Moments (GMM)	Importing and wrangling data in R	Where to find data?
Week IV *September 26*	Count regression and binary choice models	Describing and visualizing data in R	How to conduct a literature review?
Week V *October 3*	An introduction to program evaluation	Introduction to functions in R	Tools to manage research: Mendeley, Github, and Dropbox
Week VI *October 10*	**No Lecture**	Common econometric models in R	N/A
Week VII *October 17*	Poster style presentations	Scraping data from the web	N/A
Week VIII *October 24*	**No Lecture** **Reading Week**	**No Tutorial** **Reading Week**	N/A
Week IX *October 31*	Time series analysis	Common time series models in R	How to choose a methodology?
Week X *November 7*	Panel data models	Panel data analysis in R	How to structure an economics paper?
Week XI *November 14*	Spatial autoregressive models	Spatial data analysis in R	How to present and explain result?
Week XII *November 21*	Demand estimation and merger simulation	Consultations/additional office hours	How to effectively present economic research?
Week I XIV *November 28*	Final exam	Consultation/additional office hours	
Week XV *December 5*	Seminar Presentation	Parallel computation in R	
December 9 ***Monday Schedule***	Seminar Presentation		

Each lecture will consist of the following elements:

- 30-60min discussing the weekly research objective. Class participation recommended.
- 60-90min lecture on a topic in econometrics
- 30-60min reinforcing the lecture material through simulation