Carleton University – Department of Economics

ECON 6027–Econometrics II

Academic year: 2025-2026

Winter 2026

1   The Instructor

Instructor: Clément Yélou, Contract instructor

Email Address: clement.yelou@carleton.ca

Office Location: Loeb building Room B840

Office Hours: Tuesday 6:00 pm - 7:30 pm EST or by appointment

Office Hours Zoom Link (Virtual Attendance):   Zoom Link for Office Hours

2   Teaching Assistant and Tutorial

Teaching Assistant (TA):   Kodjo Djiffa

TA Email Address: KodjoDjiffa@cmail.carleton.ca

TA Office Hours Location: *Virtual sessions, via Zoom*

TA Office Hours: Friday 6:00 pm - 7:00 pm EST

Tutorial Location: *Virtual sessions, via Zoom*

Tutorial Day and Time :   Thursday 6:00 pm - 7:30 pm EST

3   Course Details

Course Location: [Log into Carleton Central to view the class location on your personal timetable.]

Course Day and Time :   Monday 6:05 pm - 8:55 pm EST

Course's Brightspace Page: ECON 6027 Econometrics II Winter 2026 Brightspace.

4   Course Description and Learning Outcomes

The goal of this course is to familiarize PhD students with a wide range of topics in modern econometrics, focusing on what matters for understanding empirical work and applying econometric methods.

Prerequisites include a masters-level course in econometrics [for example, the ECON 5027 course at Carleton] that covers the basics on Regression Analysis, Ordinary and Generalized Least Squares (OLS and GLS), Instrumental Variables (IV) and Maximum Likelihood estimation (MLE). Matrix Algebra and fundamental statistical principles [for example, Appendix A and B of Greene's 2012 or 2018 textbook, or Appendix A of Hansen's 2022 textbook] are assumed known. The course will nevertheless include full review lectures, covering background material on linear regression and inference, several matrix algebra principles and important statistical concepts.

First and second year PhD students may have heterogenous training with regards to masters-level material: the course thus aims to standardize background knowledge and skills before introducing non-linear methods. Within the non-linear class, the Generalized Method of Moments and likelihood-based models for discrete choice and time varying volatility will receive specific attention. The Kalman Filter will be introduced, aiming an application with time-varying parameters or Dynamic Stochastic General Equilibrium models.[1]

The course exposition is formal and technical, and departs from a recipe-book/tool-kit approach. While the focus is on applicability, theory and principles will be emphasized. These include *standard* asymptotic theory. The course sets the minimum requirement in this field at the PhD level, which may be summarized as *understanding* rather than just *using* econometrics. Detailed lecture notes will be available, to bridge the gap between the required theoretical training, relative to the recommended textbook.

This course is required for **all** PhD students, whether they will choose econometrics as a field or not. Instruction will reflect this fact, while students interested in econometrics as a PhD field can sharpen their knowledge particularly on the theory side. Rigor and notational clarity is expected in exams and assignments, which will be reflected in grading. Writing skills will also be assessed through the written assignments (see below).[2]

Some knowledge of econometric software is required. Training sessions are offered on STATA, MatLab and R. In addition to main econometric methods, software training will also cover optimizing non-standard statistical objective functions, some programming principles and an introduction to simulation-based studies and methods. Equal focus on cross-section and time series principles and applications is maintained.

The course includes assignments using well known data sets and econometric problems of recent interest in economics.

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[1]Depending on time and students' backgrounds.

[2]Writing matters in econometrics; many good papers remain unpublished because of poor writing and presentation.

5   Lectures

This course is offered exclusively in person. A virtual or remote attendance option will not be provided. Class attendance is mandatory throughout the semester and cannot be substituted by *e.g.* out-of-class meetings with the course instructor (nor with the TA).

Students can ask questions related to the course through Brightspace email. This is to make sure all questions are properly received. Questions will be answered within 48 hours. If a question is better addressed through direct interaction–for example, if proofs or derivations are required–you will receive a notice within 48 hours to schedule an in-person or online appointment. A Zoom meeting invitation will be sent via Brightspace email for any scheduled online appointment.

6   Software training

Software training sessions, on Stata, Matlab or R, will be offered **by the TA** in addition to the regular class lectures; date and time to be determined at the beginning of the semester. Students are strongly recommended to attend the training sessions.

Further directives will be posted on Brightspace and regularly updated. Students need to verify Email and announcements on Brightspace all through the semester. Brightspace will be used for the following: all course announcements and emails; links to the course slides; online submission of assignments. Unless an urgent and unanticipated problem emerges, changes to the schedule below will be announced within a week notice.

7   Evaluation, Grading Scheme and Exam Policies

Evaluation Activities and Grades

1. **Exam I (25%). February 9. 3 hours. The exam will take place in class.** A pre-exam preparatory session will be offered. Students who can document a compelling reason for missing Exam I will be excused and their final grade will be based on their performance in the rest of the course: the weight (%) of Exam I will be automatically added to Exam II. There will be no deferred midterm exam offered, and the weight of Exam I cannot, **under any condition**, be added to the final take home exam. Without a documented, compelling reason, failure to take exam I will result in a grade of zero (out of 25%).

2. **Exam II (35%). March 23. 3 hours. The exam will take place in class.** A pre-exam preparatory session will be offered. Failure to write Exam II will result in a grade of zero (out of 35%). In order to write a deferred exam II, students who can document a compelling reason for missing Exam

II must contact the Economics department. The weight of exam II cannot, **under any condition**, be added to exam I nor to the final take home exam.

3. **Final Exam, Take-home (20%), Due April 23, 10h00 pm.** Submitted by uploading your work on Brightspace as a pdf document. Failure to submit the final take-home exam on time will result in a grade of zero (out of 20%).

4. **Bi-weekly assignments (20%)**: Assignments consisting of small questions and exercises will be given every two weeks and will be due two weeks later. At the due date, students must give me their completed assigments at the beginning of the class at 6h05 PM. Solutions to the assignment questions will be posted on Brightspace and may or may not be discussed in class. Office hours offer a good opportunity to discuss students' questions related to the assignment questions and exercises. The first assigment will be given on the first class, and the entire schedule of assigments over the term is as follows:

Assignment #	Date given	Due date
1	January 5	January 19
2	January 19	February 2
3	February 2	February 23
4	February 23	March 9
5	March 9	March 23
6	March 23	April 6

- **Late Submissions:** Failure to submit the Assignments or Final Take-home exam on time will result in a grade of zero.

- **Expectations and Rules for Collaboration and Group Work:** The Assignments and the Final Take-home exam are not designed to be closed-book, so it is acceptable to use available resources, to cooperate or to consult (with others or with each other). However, the submission of identical or nearly identical assignments by two students will be treated as a case of plagiarism.

Exam Policies

- **Missing an Exam:** If you are absent for Exam I or Exam II, email me as soon as possible to reschedule. I reserve the right to request a Academic Consideration Coursework Form or PMC Letter of Accommodation depending on the length of incapacitation.

- Students are not to make travel plans during the Final Take-Home Exam period as that is not a valid reason for missing the Take-Home Exam.

- **Deferred Final Exam:** For those unable to complete the Final Take-Home Exam in the scheduled time, documentation is required, e.g. doctor's note or police report. The documentation provided

by students for missed or incomplete Final Take-Home 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 Registrar's Office.

- Any deferred examination will be in person, and relevant details for the deferred examination, including the location, will be communicated in due time to the student(s) writing the exam.

- In the event that a student writes a deferred examination, the deferred examination will carry the same weight as the Final Take-Home Exam in determining the course grade.

Final Grade Approval

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.

E-Proctoring

E-proctoring will not be used for evaluations in this course.

8   Textbooks and Course Materials

Basic Textbooks

- Class notes will be available to guide readings. **As noted above, all student or instructor materials created for this course–including posted notes, assignments and exams–remain the intellectual property of their author(s). These are provided for personal use only and may not be reproduced or redistributed without prior written consent from the author(s).**

- Other reference materials will be posted on Brightspace.

- Students are not required to purchase textbooks or other learning materials for this course.

- Two basic references:

1. Hansen B. (2022) [HB22]. *Econometrics.* Details available on the textbook website. Directives to access available E-resources will be provided.

2. Greene W. H. (2018) [GW18]. *Econometric Analysis,* Eighth edition, Publisher Pearson; refer to the author's website for details.

Other General Reference Manuals

- **Graduate level textbook**

Cameron A. C. and Trivedi (2022). Microeconometrics Using Stata. Stata Press.

- **Introductory level (review) textbook**

Stock J. H. and Watson M. W. (2020). *Introduction to Econometrics*, 4th edition. Pearson.

9 Proposed Course Calendar

This outline is tentative. Adjustments may be needed, particularly for the post Exam I sessions.

1. January 5: *Background unifying training: basic principles, the linear model, asymptotic theory, time series regressions.* Ref: GW18-Chapters 2-3-4-5 and some sections of chapter 9; HB22-Chapters 2-8. [over three lectures].

2. January 12: *Background unifying training, continued.*

3. January 19: *Background unifying training, continued.*

4. January 26: *Deviations from the i.i.d. case.* [over two lectures]

5. February 2: *Deviations from the i.i.d. case,continued.*

6. **February 9: Exam I**

7. February 16: Carleton University Winter Break. No classes.

8. February 23: *Likelihood: general principles, inference (hypothesis testing); time series; discrete choice applications; and optimizing non-linear functions.* Ref: GW18-Chapters 12.2, 14, some sections of chapters 18, 20 and 21; HB22-Chapters 5, 9, some sections of 26. [over three lectures].

9. March 2: *Likelihood, continued.*

10. March 9: *Likelihood, continued; and Exam preparation review.*

11. March 16: *: IV regression and GMM.* Ref: GW18-Chapter 8, some sections of Chapters 12 and 13; HB22-Chapters 12 and 13. [over three lectures].

12. **March 23: Exam II**

13. March 30: *IV regression and GMM, continued.*

14. April 6: *IV regression and GMM, continued..*

   Note that on Wednesday, April 8, classes follow a Friday schedule, so there will be no classes for this course.

15. April 23: **Deadline, Take-home final examination.**

10 Important instructions, regulations and academic support

The following are important: (i) instructions for any submitted material for this course including assignments, in-class exams and take home exams, and (ii) references to official information about plagiarism, Carleton University resources, and academic accommodations. Students who need clarifications about the information below are invited to raise the question either by Email or directly during an office hours session.

1. **Generative Artificial Intelligence (AI):** On the use of Generative Artificial Intelligence tools (e.g. ChatGPT), while you may consult available resources (electronic or not), any *textual and direct* use of generative AI tools to produce any document you submit for this course is considered a violation of academic integrity standards as per the university's statement on Plagiarism. By *textual and direct*, the usual standards on plagiarism apply. Students are responsible to access resources related to citing Generative AI on the MacOdrum Library website. Also, As our understanding of the uses of AI and its relationship to student work and academic integrity continue to evolve, students are required to discuss their use of AI in any circumstance not described here with the course instructor to ensure it supports the learning goals for the course.

2. **Intellectual Property Copyright:** Student or instructor materials created for this course–including presentations and posted notes, assignments and exams–remain the intellectual property of their author(s). They are provided for personal use only and may not be reproduced or redistributed without prior written consent from the author(s).

3. **Re-use of (own) work:** (i) previously submitted for credit in another course, (ii) conducted for any previous purpose such as a masters paper or thesis, or (iii) is currently performed and intended for another course or for other purposes (*e.g.* current research, material submitted for work outside the university), is **not** considered plagiarism.[3] But you are required to cite such work and seek the instructor's permission **before** using it with proper citation. If the work is current and is intended for another course, the permission of the professor in charge of the other course will be required in writing (by official university Email); this also applies to courses taken at the university of Ottawa.

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[3] If the work was submitted for work outside the university, it is the responsibility **of the student** to ensure confidentiality rights are respected.

4. **The Academic Integrity and Plagiarism at Carleton University:** You are responsible for reading and knowing the information about The Academic Integrity Policy of Carleton University found at https://carleton.ca/registrar/academic-integrity/.

   The University Academic Integrity Policy defines **plagiarism** as '*presenting, whether intentionally or not, the ideas, expression of ideas or work of others as one's own.*' This includes reproducing or paraphrasing portions of someone else's published or unpublished material, regardless of the source, and presenting these as one's own without proper citation or reference to the original source. Examples of sources from which the ideas, expressions of ideas or works of others may be drawn from include but are not limited to books, articles, papers, literary compositions and phrases, performance compositions, chemical compounds, artworks, laboratory reports, research results, calculations and the results of calculations, diagrams, constructions, computer reports, computer code/software, material on the internet and/or conversations.

   Please be aware that plagiarism is serious offence at Carleton University and should be recognized and avoided. *Plagiarism is a serious offence that cannot be resolved directly by the course's instructor.* The Associate Dean of the Faculty follows a rigorous process for academic integrity allegations, including reviewing documents and interviewing the student, when an instructor suspects a violation has been committed. *Penalties for violations are not trivial and may include a final grade of "F" for the course.*

5. **Student Mental Health:** As a student you may experience a range of mental health challenges that significantly impact your academic success and overall well-being. If you need help, please speak to someone. There are numerous resources available both on- and off-campus to support you. For more information, please visit https://wellness.carleton.ca/ for access to a range of available resources and services.

6. **Requests for Academic Accommodation:** Carleton is committed to providing academic accessibility for all individuals. You may need special arrangements to meet your academic obligations during the term. The accommodation request processes, including information about the Academic Consideration Policy for Students in Medical and Other Extenuating Circumstances, are outlined on the Academic Accommodations website (https://students.carleton.ca/course-outline/).

7. **Policy on Classroom Recording:** Unauthorized student recording of classroom or other academic activities (including advising sessions or office hours) is prohibited. Unauthorized recording is unethical and may also be a violation of University policy. Students requesting the use of assistive technology as an accommodation should contact the Paul Menton Centre. Unauthorized use of classroom recordings – including distributing or posting them – is also prohibited. Under the University's Copyright Policy, faculty own the copyright to instructional materials – including those resources created specifically for the purposes of instruction, such as lectures slides, lecture notes, and presentations. Students cannot copy, reproduce, display, or distribute these materials or otherwise circulate these materials without the

instructor's written permission. Students who engage in unauthorized recording, unauthorized use of a recording, or unauthorized distribution of instructional materials will be referred to the appropriate University office for follow-up.