

Carleton University
Department of Economics

ECON 4002 A
Statistical Analysis in Economics
Fall 2019

Professor Ba Chu

Classes: Tuesdays and Thursdays, 2:35 – 3:55 p.m.
Tutorials: Thursdays, 10:05 – 11:25 a.m.

Location: SA 516
Location: SA 402

Office: B-857 Loeb
Telephone: 613-520-2600 ext. 1546
E-mail: ba_chu@carleton.ca
Office hours: TBA
T.A.: The T.A. will confirm office hours in cuLearn

Prerequisites:

ECON 2210 (or equivalent) with a grade of C+ or higher, and ECON 2220 (or equivalent) with a grade of C+ or higher. Students who believe they have taken a similar background course or courses from another university must provide appropriate documentation to the Department of Economics Undergraduate Advisor (Amanda Wright).

Course Content:

This course covers basic concepts of probability and statistics and their interesting applications in economics as well as other fields. The materials are generally designed to equip students with a sufficient statistical background for their future career in economic and financial analysis or to further their study for an M.A. degree. The course will therefore cover:

- Basic probability
- Continuous random variables
- Quantifying population attributes
- Estimating economic quantities from a sample of data
- Inference in large samples (of data)
- Linear regressions
- Instrumental variables and methods of moments
- Regressions with time-series data

The course exposition is formal and fairly technical, yet the main focus is on applicability.

The course consists of lectures three hours a week and tutorials one and a half hours a week. During the tutorials the T.A. will briefly summarize the main points explained in the lectures, provide further examples or go through problem sets in the lecture notes or the textbook, and implement regression methods using STATA.

Tutorials will start from around the third week and students should attend weekly tutorials. *(Please check cuLearn regularly for further information.)*

Plagiarism:

Please be aware that plagiarism is serious offence at Carleton and should be recognized and avoided. For further information on how to do so, please see “Pammett on Plagiarism and Paraphrasing” at www.carleton.ca/economics/courses/writing-preliminaries.

Course Requirements

Students must fulfill all the requirements described in Course Evaluation right below to achieve a passing grade (D- or higher). Failure to write one or more of the midterm examinations (*without* a documented compelling good reason) will result in a grade of F (‘Failure’). Failure to write the final examination when the student has achieved satisfactory performance during the term will result in a grade of DEF (‘Deferred Final Examination’). Application to write a deferred final examination must be made at the Registrar’s Office. See Academic Regulation 2.3 for the official meanings of these grades, and note that it stipulates that no course grades are final until approved by the Faculty Dean. Note also that course grades may be scaled upwards or downwards in a rank-preserving manner to better fit the relevant departmental distributional norm.

Texts and References:

[HGL18] Hill C., Griffiths W. and Lim G. (2018), *Principles of Econometrics, Fifth Edition*, John Wiley and Sons, Inc. (*material from this book will be used for lectures 5 and above.*)

[NCT12] Newbold, P., Carlson, W. and Thorne, B. (2012). *Statistics for Business and Economics, Eighth Edition*, Pearson. (*This textbook is good for intuition and ‘nice’ empirical applications.*)

Important Notes:

For verification and security purposes, I will not reply to emails originating from non-Carleton e-mail accounts, and which are not signed with a student’s name and student number. Notes, assignments, and changes to schedules will be made available on [cuLearn](#). Please ensure that you check your cuLearn account for updates *at least twice a day* (once in the morning and in the evening).

Classroom teaching and learning activities, including lectures, discussions, presentations, etc., by both instructors and students, are copy protected and remain the intellectual property of their respective author(s). All course materials, including PowerPoint presentations, outlines, and other materials, are also protected by copyright and remain the intellectual property of their respective author(s).

Students registered in the course may take notes and make copies of course materials for their own educational use only. Students are not permitted to reproduce or distribute lecture notes and course materials publicly for commercial or non-commercial purposes without express written consent from the copyright holder(s).

1. Course evaluation:

- Midterm Examination I (15% weight, 80 minutes) — *after completing lectures 1 and 2.*
- Midterm Examination II (15% weight, 80 minutes) — *after completing lectures 3,4 and 5.*

- Midterm Examination III (15% weight, 80 minutes) — *after completing lecture 6.*
- Final Examination (45% weight, 3 hours in length) — *to be scheduled by the Registrar's office.*
- Assignment (10% weight, individual work) — due during the last week of this term.

2. Policy:

- Midterm examinations will be held in class and will last 80 minutes. I will post a reminder to cuLearn one week before each mid-term. **There will be *no* deferred midterms.** If you miss a midterm exam and provide a valid medical certificate or a verifiable compassionate reason within one week of the missed exam, the assigned weight (of 15%) will be added to your final exam. Note that I will ignore the last midterm, *which you attend and pass*, if the mark in the final is higher than that in this last midterm.
- Doctor's note or police report, the documentation provided by students for missed midterm may be subject to verification.
- A maximum of one missed midterm is permitted.
- A maximum weight of 60% will be given to the final examination in the event that a midterm is missed.
- All midterms are closed book examinations and students are not allowed to bring in any materials except non-programmable calculators and tables of statistical distributions. I will also provide review classes before midterms.
- The final exam will be cumulative and cover the entirety of the course material.
- **Re-grading policy:** If you feel that there is a marking error in your work, you can always make an appeal. The procedure is as follows: 1) write one page detailing where you should deserve extra points - please remember to provide a good justification as well; 2) submit this page to the T.A. within *two weeks* after grades are announced on cuLearn. If you are still not happy with the T.A.'s decision, you can bring this page to me. *It is important to keep in mind that your grade may be more or less as a consequence of re-marking.*
- No course grades are final until approved by the Faculty Dean.

3. Assignment:

- The final assignment requires you to use STATA to run regression projects. Please keep a copy of your assignment, as your graded assignment may not be available for pick-up prior to the final examination. I do encourage you all to use STATA as it is one of the most popular software packages for statistical analysis, which is currently being used in many governmental institutions and the private sector.
- You can download Stata/SE 14.0 for Windows from the link below. Note that the university has a volume license for Stata, so you can download it to your computer for personal use as long as you study at Carleton.
- <https://carleton.ca/its/all-services/computers/site-licensed-software/stata/>
- To do regression analysis in STATA, please carefully follow the instructions in the video below. You will need Windows Media Player 2009 to play this MP4 media file.
- https://www.dropbox.com/s/5tsddt8cd5g7hw9/Stata_Regression_Lecture_01.mp4?dl=0

- It is very important to keep in mind that the assignment will be due TWO WEEKS after it is made available online. I will post the assignment on cuLearn roughly two weeks before the last class. The assignment must be submitted within *15 minutes* of the beginning of the class on the due date. No late or deferred assignment will be accepted. If a student fails to submit the final assignment on time (*without* a verifiably good reason), a mark of zero (with a weight of 10%) will be added to final grade

Course Outline:

- 1) Lecture 1: Mathematical preliminaries and interpretation of probability (lecture notes).
- 2) Lecture 2: Continuous random variables (lecture notes)
- 3) Lecture 3: Quantifying population attributes (lecture notes)
- 4) Lecture 4: Estimation with large samples: part 1 and part 2 (lecture notes)
- 5) Lecture 5: Simple linear regression (chapters 2 and 3 of HGL18)
- 6) Lecture 6: Multiple linear regression (chapter 5 of HGL18).
- 7) Lecture 7: Random regressors and moment-based estimation (chapter 10 of HGL18)
- 8) Lecture 8: Regression with time-series data (if we still have time, chapter 9 of HGL18)
- 9) Lecture 9: Final review class.

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:

Pregnancy obligation:

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: carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf

Religious obligation:

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: carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf

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.

carleton.ca/pmc

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 its 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. <https://carleton.ca/senate/wp-content/uploads/Accommodation-for-Student-Activities-1.pdf>

For more information on academic accommodation, please contact the departmental administrator or visit: students.carleton.ca/course-outline.

If you have any problem or question, please do not hesitate to contact me for help!