

**Carleton University
Department of Economics**

**ECON 3706 A
*APPLIED ECONOMETRICS***

Professor: Ba Chu

Fall 2021

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E-mail: ba.chu@carleton.ca
Classes: Tuesdays (11:35 a.m. – 2:25 p.m.) at UC 231
Tutorials: Fridays (2:35 - 3:55 p.m.) at Health Science Building 1301
Office Hours: TBC

Nature of the Course:

This is an introductory course in Econometrics. The objective of the course is to present and discuss methods for analyzing economic relationships using standard econometric methods. The techniques that you will learn are illustrated using relevant empirical data and are useful in applied research in business, economics, and social science. This course is aimed at a broad audience who wants to learn regression techniques for empirical research (for example, the Fama-MacBeth regression and return predictability in finance or regression with cross-sectional/time series data in economics). Students will learn a popular statistical software (Stata) to run regression and various model diagnostic tests.

Prerequisites

Precludes additional credit for ECON 4706.

Prerequisites: ECON 1000 or FYSM 1003, 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 Administrator (Renee Lortie).

Tutorials will start from the third week and students should attend weekly tutorials. During tutorial, the T.A. will go through problem sets in the textbook and explain about using Stata for regression.

Texts and References:

Main textbook (mandatory): [Hill C., Griffiths W. and Lim G. \(2011\), Principles of Econometrics, Fourth Edition, John Wiley and Sons, Inc.](#)

References: 1) Damodar N. Gujarati (2006), Essentials of Econometrics, 3rd Edition, Published by McGraw-Hill/Irwin; 2) Gujarati, D .N. and Porter, D.O. (2009), Basic Econometrics (5th Edition). New York, NY: McGraw-Hill; 3) Chapters 14 & 15 in Groebner, D., Shannon P., Fry, P., and Smith, K.. Business Statistics, A Decision-Making Approach, Ninth Edition. Upper Saddle River, New Jersey: Pearson Prentice Hall

IMPORTANT NOTE:

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 [Brightspace](#). Please ensure that you check your Brightspace 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).

Grades:

The final grade will consist of the following elements weighted as shown below:

- Midterm Exam I (15%) 80 mins (*approx. date: September 28 at around 1:00 p.m.*)
- Midterm Exam II (15%) 80 mins (*approx. date: October 19 at around 1:00 p.m.*)
- Midterm Exam III (15%) 80 mins (*approx. date: November 23 at around 1:00 p.m.*)
- Final Exam (45%), 180 mins, in December (*will be scheduled by the exam office*).
- Final Assignment (10%)

Policy:

- There will be **no** deferred midterm exam. Students who can document a compelling reason for missing it will be excused and the weight (%) of the midterm will be automatically added to the final exam. If the mark in the final is higher than the third mid-term, I will ignore that midterm. (Also note that, if a student misses both midterms without verifiable good reasons, a mark of **zero** will be assigned to both the midterms.)

- Doctor's note or police report, the documentation provided by students for missed midterm may be subject to verification. *Please always complete then submit [this form](#) with your document.*
- 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 exams 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.
- Midterm exam will last for 80 minutes. I will post a reminder to Brightspace one week before each mid-term. Please note that tests and examinations (**both midterms and final**) in this course will use a remote proctoring service provided by Scheduling and Examination Services. You can find more information at <https://carleton.ca/ses/e-proctoring/#sect1>. To know how to log into the CoMas e-Proctoring platform, please refer to this guide: <https://carleton.ca/ses/wp-content/uploads/CoMaS-Student-Instructions-v.-1.08.pdf>. Students are required to have webcams to use with the e-Proctoring platform.
- The final exam will be cumulative and cover the entirety of the course material. Failure to write the final examination will result in a grade of F. See Academic Regulation 2.3 for the official meanings of these grades. Note that no course grades are final until approved by the Faculty Dean. Application to write a deferred final examination must be made at the Registrar's Office.
- The final assignment will be due TWO WEEKS after they are made available online. I will post the assignment roughly two weeks before the last class. Please submit your assignment by the due date and time. Late assignments will **not** be accepted. If you fail to submit an assignment on time, a mark of zero will be added to your final grade.
- 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 Brightspace. 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 higher or lower after re-marking.*

Note: For your assignments, the best software to use is Stata. First, you need to download Stata/SE 14.0 for Windows from the following link:

<http://carleton.ca/ccs/all-services/computers/site-licensed-software/>

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.

To do regression analysis in Stata, please carefully follow the instructions in the link to a 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

An easy way to run regression is to use Microsoft Excel for Windows. First, you will need to install the Excel add-ins called Data Analysis and PHStat2 version 3.5 into Microsoft Office Excel 2007. I do recommend you to use Microsoft Office Excel 2007 because, in my experience, it is rather stable and looks less complicated than Microsoft Office Excel 2013. PHStat2 version 3.5 can be downloaded from

<https://www.dropbox.com/s/qx6lfqpfkc5ygri/PHStat2.zip?dl=0>

After you have downloaded PHStat2, please carefully follow the instructions in the link to a video below to install both Data Analysis and PHStat2 add-ins. Note that my installation method works perfectly for Windows 7 Professional 64 bits.

https://www.dropbox.com/s/m0x2py7nwz9pzub/Install_Excel_add-ins.mp4?dl=0

To know how to run a simple linear regression using Excel, please watch this video:

<https://www.dropbox.com/s/kbjokeyq4n25qt5/regression.mp4?dl=0>

Please keep a copy of your assignment, as your graded assignment may not be available for pick-up prior to the final examination.

Course Structure:

1. Introduction to Econometrics and Basic Probability Concepts
2. The Simple Linear Regression Model: Specification and Estimation, Properties of Least Squares
3. Inference in the Simple Linear Regression Model: Interval Estimation, Hypothesis Testing and Prediction
4. Prediction, Goodness of Fit and Modeling Issues
5. The Multiple Regression Model
6. Inference in the Multiple Regression Model
7. Using Indicator Variables
8. Heteroskedasticity and Serial Correlation

Course Requirements

Students must fulfill all the requirements described in Course Evaluation above in order to achieve a passing grade (D- or higher). Failure to write the three midterm exams (without documented compelling good reasons) may 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.

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.

Plagiarism

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

Classroom Conducts:

Carleton University is committed to providing a safe environment conducive to learning. It is a violation of the standards of academic integrity for a student registered in a class to disrupt the class or other period of instruction with any action or behaviour reasonably judged by the instructor or teaching assistant to be detrimental to the class (Academic Integrity Policy, Section VI.8). Instructors are required to report all alleged cases of violation of these standards to the Faculty Dean.

Please follow the provincial and city rules regarding face mask and social distancing in all indoor classes: <https://ottawa.ca/en/health-and-public-safety/covid-19-ottawa/provincial-and-city-rules>

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 problems and questions, please do not hesitate to ask me for assistance.