

**Carleton University**  
**Department of Economics**  
**ECON 2220 A**  
**Introductory Econometrics**  
Summer 2023  
**Professor Ba Chu**

Classes: Tuesdays and Thursdays, 06:05 - 08:55 p.m.

Place: [Zoom](#)

Tutorials: Tuesdays and Thursday, 04:05 - 05:35 p.m. (details: TBC)

Place: [Online](#)

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Office Hours: TBA

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T.A.: The T.A. confirms her/his office hours in [Brightspace](#)

Welcome to Introductory Econometrics!

### **Calendar Description:**

Introductory Econometrics is a continuation of [2210](#) with focus on regression methods to study the relationship between two or more economic variables. Topics covered include ordinary least squares (OLS), hypothesis testing in linear regression models, choosing functional forms for regression, multicollinearity, serial correlation, heteroskedasticity, and practical implementation of regression models.

**Pre-requisites:** ECON 2210 (or equivalent) with a grade of C- or higher, and ECON 1402 (or equivalent) with a grade of C- or higher.

A grade of C+ or higher is required to qualify for ECON 3706, 3900, 3920, 4002, and 4706. DEF(erred final grade) status at the end of this course precludes (continued) registration in any other course for which the former is a prerequisite. 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).

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 course textbook, and implement regression methods using STATA.

Some lectures are synchronous (recordings will be posted as well), and some are pre-recorded (further details will be announced on [Brightspace](#)). Tutorials will start from around the third week and students should attend weekly tutorials (TAs will also post recordings of tutorials). (***Please check Brightspace regularly for further information.***)

**Required Textbook:** Available at the Carleton Bookstore

A. H. Studenmund - [Using Econometrics: A Practical Guide, 7th Edition 2017](#), *Pearson*. (If not, you can also use the 6th edition.)

### **Course Outline**

#### **Topic I: Estimation and Hypothesis Testing for Regression**

Chapter 1: An overview of regression analysis

- Chapter 2: Ordinary least squares
- Chapter 3: Learn to use regression analysis
- Chapter 4: The classical model
- Chapter 5: Hypothesis testing

**Topic II: Model Specification**

- Chapter 6: Specification: Choosing the independent variables
- Chapter 7: Specification: Choosing a functional form

**Topic III: Diagnostics for Regression**

- Chapter 8: Multicollinearity
- Chapter 9: Serial correlation
- Chapter 10: Heteroskedasticity

**Topic IV: Practical Implementation**

- Chapter 11: Running your own regression project

**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).

**Practice Problems**

- There are tutorials one and one half hours per week. The TA will present more examples and/or illustrations using STATA.
- Students are encouraged to work through as many textbook problems as possible, as these are the best way to learn the course and prepare for the exams as well.

**Course Evaluation**

Three 80 minute online midterms worth 15% each	45%
One take-home assignment	10%
One final examination – 3 hours	45%
	100%

- The first midterm examination will be held after finishing Chapter 3 (approx. date: *July 13, 2023*)

- The second midterm examination will be held after finishing Chapter 5 (approx. date: *July 25, 2023*)
- The third midterm examination will be held after finishing Chapter 7 (approx. date: *August 8, 2023*)

**\*\*\*IMPORTANT EVALUATION CRITERION\*\*\***

- Midterm examinations will last for 80 minutes. I will post a reminder to Brightspace one week before each mid-term. Please note that tests and examinations (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>. 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.-1.06.pdf>. Students are required to have **webcams** to use with the e-Proctoring platform.
- **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. *Please always complete then submit [this form](#) with your document.*
- A maximum of one missed midterm is permitted.
- All midterms are closed book examinations and students are not allowed to use any materials except non-programmable calculators and tables of statistical distributions. I will also provide review classes before midterms.
- The final exam will be **in-person**. Students will be writing this exam in class via Brightspace.
- The final exam will be cumulative and cover the entirety of the course material.
- Please note that students have the option to write a distance exam if they will be more than 160 km away from Carleton on the exam day. Students who are living/studying outside of the Ottawa area may apply to Scheduling and Exam Services to write the exam at a distance. You can find information about the deadline for applying for a distance exam this term and the application here: <https://carleton.ca/ses/distance-exams/>

**Three Midterm Examinations (45%)**

Practice questions will be posted, and I will also explain the solutions in class at least one week before each test/midterm, and reflect the type of questions you can expect. Study groups are useful to discuss solutions.

**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 more or less as a consequence of re-marking.*

### **One Assignment (10%)**

This 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](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 Brightspace 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

### **Final Examination (45%)**

The final exam covers the entire course material, lasts 3 hours, and is scheduled by the Registrar's Office to take place during the official final examination period. Failure to write the final examination results in a grade of DEF (provided you have met the conditions described in the Course Requirements below). In order to write a deferred final exam, students must contact the Registrar's Office as soon as possible after the missed exam.

### **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](http://www.carleton.ca/economics/courses/writingpreliminaries)

### **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](http://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](http://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](mailto: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](http://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 is 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](http://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](https://students.carleton.ca/course-outline)

If you have any problems and questions, please do not hesitate to ask me for assistance.