

**Dalhousie University**  
**Economics 5575 Section 01**  
**Course CRN: 13507**  
**Econometrics I**  
**Fall 2022**

Dalhousie University is located in Mi'kma'ki, the ancestral and unceded territory of the Mi'kmaq. We are all Treaty people.

**We acknowledge the histories, contributions, and legacies of the African Nova Scotian people and communities who have been here for over 400 years.**

**Instructor:** Kuan Xu

**Time & Location:** Monday & Wednesday 1435–1555, Studley MCCAIN ARTS & SS 2198

**Office Location:** 6220 University Ave. C-23

**Office Hours:** Tuesday 1630–1800, Collaborate Ultra (or by appointment)

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**• Course Description:**

This course is designed to introduce students to commonly used econometric concepts and methods in economic research. It will examine both the classical linear regression model and linear models under more general assumptions (heteroscedasticity, autocorrelation, multicollinearity), with a focus on estimation, inference, and forecasting. It also provides an introduction to asymptotic theory and maximum likelihood approach.

**• Prerequisites:** The students registered for this course are expected to have a good knowledge of matrix algebra, calculus, probability theory, and statistics, and a good grasp of intermediate macroeconomics and microeconomics.

**• Course Objectives/Learning Outcomes:** Having taken this course, students should be able to apply relevant econometrics methods to their research questions and continue to learn more advanced topics in ECON 5576 Econometrics II.

- **Course Materials:**

1. Greene, W. H., *Econometric Analysis*, 8th ed. Prentice Hall, 2018.  
[Greene]
2. Hanck, Christoph, Martin Arnold, Alexander Gerber, and Martin Schmelzer, *Introduction to Econometrics with R*, <https://www.econometrics-with-r.org/> [Hanck]
3. Lecture notes and research papers will distributed on Brightspace at:  
<https://dal.brightspace.com/d2l/login>

- **Econometrics Software Packages:**

Student Stata/SE 17 license has been made available to Dalhousie University students. Please visit

<https://software.library.dal.ca/>

Many researchers and students prefer open-source software packages for mathematics, statistics, and econometrics.

(1) One such open-source software package in econometrics is Gretl. For information and download, please visit

<http://gretl.sourceforge.net>.

Gretl is completely free and user-friendly. It also has a link to a more advanced open-source software package R.

(2) R is a powerful and flexible software package for various kinds of statistics work and data analysis. For information and download, please visit

<http://www.r-project.org>.

R can be used alone or with a friendly user-interface RStudio.

(3) RStudio is an integrated development environment (IDE) for R. For information and download, please visit

<http://www.rstudio.com>

RStudio has a console similar to that of Stata in the sense that the console demonstrates the input scripts, output window, environment and memory, and help/graph/packages.

(4) wxMaxima is a free symbolic mathematical software package. For information and download, please visit

<https://wxmaxima-developers.github.io/wxmaxima/>

It is similar to its commercial counterparts such as Mathematica and Maple. Maple for Windows is available to Dalhousie University students at no cost.

- **Course Assessment:**

Due Date	Location	Assignment/Exam	Grade
Sept. 14, 22	Classroom	Assignment 1	5%
Sept. 28, 22	Classroom	Assignment 2	5%
Oct. 12, 22	Classroom	Assignment 3	5%
Oct. 19, 22	Classroom	Midterm Exam	20%
Nov. 2, 22	Classroom	Assignment 4	5%
Nov. 16, 22	Classroom	Assignment 5	5%
Nov. 30, 22	Classroom	Assignment 6	5%
TBA	TBA	Final Exam	50%

(1) Each assignment will be distributed via Brightspace one week prior to the due date.

(2) The midterm and final exams will be in-class and closed-book exams.

The grading scheme in this course is as follows:

A+	90–100
A	85–89
A–	80–84
B+	77–79
B	73–76
B–	70–72
F	less than 70

## **Course Contents:**

1. Introduction to econometrics and research methodology  
Lecture Notes; Greene Ch. 1; Zellner (1992)
2. Data Sources, Measurement, and Structure  
Lecture Notes; Dehejia and Wahba (2002)
3. Matrix Algebra, Probability Theory, and Statistics  
Lecture Notes; Greene, App. A–D
4. The Classical Linear Regression Models: Estimation and Inference  
Lecture Notes; Greene, Ch. 2–5
5. Multicollinearity, Functional Forms, Nonlinearity, and Specification  
Lecture Notes; Greene, Ch. 6–7
6. Generalized Regression Models  
Lecture Notes; Greene, Ch. 9 and 20
7. Asymptotic Theory and Maximum Likelihood Estimation  
Lecture Notes; Greene, App. D and Ch. 14



## DALHOUSIE UNIVERSITY

### University Policies and Statements

**This course is governed by the academic rules and regulations set forth in the University Calendar and by Senate**

#### **Academic Integrity**

At Dalhousie University, we are guided in all of our work by the values of academic integrity: honesty, trust, fairness, responsibility and respect (The Center for Academic Integrity, Duke University, 1999). As a student, you are required to demonstrate these values in all of the work you do. The University provides policies and procedures that every member of the university community is required to follow to ensure academic integrity.

**Information:** [https://www.dal.ca/dept/university\\_secretariat/academic-integrity.html](https://www.dal.ca/dept/university_secretariat/academic-integrity.html)

#### **Accessibility**

The Advising and Access Services Centre is Dalhousie's centre of expertise for student accessibility and accommodation. The advising team works with students who request accommodation as a result of a disability, religious obligation, or any barrier related to any other characteristic protected under Human Rights legislation (Canada and Nova Scotia).

**Information:** [https://www.dal.ca/campus\\_life/academic-support/accessibility.html](https://www.dal.ca/campus_life/academic-support/accessibility.html)

#### **Student Code of Conduct**

Everyone at Dalhousie is expected to treat others with dignity and respect. The Code of Student Conduct allows Dalhousie to take disciplinary action if students don't follow this community expectation. When appropriate, violations of the code can be resolved in a reasonable and informal manner—perhaps through a restorative justice process. If an informal resolution can't be reached, or would be inappropriate, procedures exist for formal dispute resolution.

**Code:** [https://www.dal.ca/dept/university\\_secretariat/policies/student-life/code-of-student-conduct.html](https://www.dal.ca/dept/university_secretariat/policies/student-life/code-of-student-conduct.html)

#### **Diversity and Inclusion – Culture of Respect**

Every person at Dalhousie has a right to be respected and safe. We believe inclusiveness is fundamental to education. We stand for equality. Dalhousie is strengthened in our diversity. We are a respectful and inclusive community. We are committed to being a place where everyone feels welcome and supported, which is why our Strategic Direction prioritizes fostering a culture of diversity and inclusiveness

**Statement:** <http://www.dal.ca/cultureofrespect.html>

#### **Recognition of Mi'kmaq Territory**

Dalhousie University would like to acknowledge that the University is on Traditional Mi'kmaq Territory. The Elders in Residence program provides students with access to First Nations elders for guidance, counsel and support. Visit or e-mail the Indigenous Student Centre (1321 Edward St) ([elders@dal.ca](mailto:elders@dal.ca)).

**Information:** [https://www.dal.ca/campus\\_life/communities/indigenous.html](https://www.dal.ca/campus_life/communities/indigenous.html)

#### **Important Dates** in the Academic Year (including add/drop dates)

<https://academiccalendar.dal.ca/Catalog/ViewCatalog.aspx?pageid=viewcatalog&catalogid=117&chapterid=-1&topicgroupid=31821&loaduserredits=False>

#### **University Grading Practices**

[https://www.dal.ca/dept/university\\_secretariat/policies/academic/grading-practices-policy.html](https://www.dal.ca/dept/university_secretariat/policies/academic/grading-practices-policy.html)



## Student Resources and Support

### Advising

**General Advising** [https://www.dal.ca/campus\\_life/academic-support/advising.html](https://www.dal.ca/campus_life/academic-support/advising.html)

**Science Program Advisors:** <https://www.dal.ca/faculty/science/current-students/undergrad-students/degree-planning.html>

**Indigenous Student Centre:** [https://www.dal.ca/campus\\_life/communities/indigenous.html](https://www.dal.ca/campus_life/communities/indigenous.html)

**Black Students Advising Centre:** [https://www.dal.ca/campus\\_life/communities/black-student-advising.html](https://www.dal.ca/campus_life/communities/black-student-advising.html)

**International Centre:** [https://www.dal.ca/campus\\_life/international-centre/current-students.html](https://www.dal.ca/campus_life/international-centre/current-students.html)

### Academic supports

**Library:** <https://libraries.dal.ca/>

**Writing Centre:** [https://www.dal.ca/campus\\_life/academic-support/writing-and-study-skills.html](https://www.dal.ca/campus_life/academic-support/writing-and-study-skills.html)

**Studying for Success:** [https://www.dal.ca/campus\\_life/academic-support/study-skills-and-tutoring.html](https://www.dal.ca/campus_life/academic-support/study-skills-and-tutoring.html)

**Copyright Office:** <https://libraries.dal.ca/services/copyright-office.html>

**Fair Dealing Guidelines** <https://libraries.dal.ca/services/copyright-office/fair-dealing.html>

### Other supports and services

**Student Health & Wellness Centre:** [https://www.dal.ca/campus\\_life/health-and-wellness.html](https://www.dal.ca/campus_life/health-and-wellness.html)

**Student Advocacy:** <https://dsu.ca/dsas>

**Ombudsperson:** [https://www.dal.ca/campus\\_life/safety-respect/student-rights-and-responsibilities/where-to-get-help/ombudsperson.html](https://www.dal.ca/campus_life/safety-respect/student-rights-and-responsibilities/where-to-get-help/ombudsperson.html)

### Safety

**Biosafety:** <https://www.dal.ca/dept/safety/programs-services/biosafety.html>

**Chemical Safety:** <https://www.dal.ca/dept/safety/programs-services/chemical-safety.html>

**Radiation Safety:** <https://www.dal.ca/dept/safety/programs-services/radiation-safety.html>

**Scent-Free Program:** <https://www.dal.ca/dept/safety/programs-services/occupational-safety/scent-free.html>

**Dalhousie COVID-19 information and updates:** <https://www.dal.ca/covid-19-information-and-updates.html>

## DEPARTMENT OF ECONOMICS STATEMENT ON ACADEMIC INTEGRITY

At Dalhousie University, we respect the values of academic integrity: honesty, trust, fairness, responsibility, and respect. As a student, adherence to the values of academic integrity and related policies is a requirement of being part of the academic community at Dalhousie University.

### **What does academic integrity mean?**

Academic integrity means being honest in the fulfillment of your academic responsibilities, thus establishing mutual trust. Fairness is essential to the interactions of the academic community and is achieved through respect for the opinions and ideas of others. "Violations of intellectual honesty are offensive to the entire academic community, not just to the individual faculty member and students in whose class an offence occurs."  
<http://academiccalendar.dal.ca/Catalog/ViewCatalog.aspx?pageid=viewcatalog&catalogid=1&chapterid=89&topicgroupid=381&loaduserredits=False>

### **How can you achieve academic integrity?**

- Make sure you understand Dalhousie's policies on academic integrity.
- While discussion with your fellow students is valuable, do not submit an assignment or essay that is essentially identical to an assignment or essay submitted by another individual or group.
- In assignments or essays, use an approved method of citation for any material taken directly from an existing source or any material that is a paraphrase of an existing source.
- Do not download the work of another from the Internet and submit it as your own.
- Do not submit work that has been completed through collaboration or previously submitted for another assignment without permission from your instructor.
- Do not have someone else write a test for you, or write a test for someone else.
- During a test, do not talk with other students and do not try to copy the work of another student.

### **What will happen if an allegation of an academic offence is made against you?**

Instructors are required to report any suspected offence. The full process is outlined in the Discipline flow chart (found at <http://academicintegrity.dal.ca>) and includes the following:

- Each Faculty has an Academic Integrity Officer (AIO) who receives allegations from instructors.
- The AIO decides whether to proceed with the allegation and you will be notified of the process.
- If the case proceeds, you will receive a PENDING grade until the matter is resolved.
- If you are found guilty of an academic offence, a penalty will be assigned ranging from a warning to suspension or expulsion from the University and can include a notation on your transcript, failure of the assignment, or failure of the course. All penalties are academic in nature.

### **Where can you turn for help?**

- If you are ever unsure about ANYTHING, contact your instructor.
- See <http://academicintegrity.dal.ca> for links to policies, definitions, online tutorials, and tips on citing and paraphrasing.
- See <http://writingcentre.dal.ca> for assistance with proofreading, writing styles, and citations.
- See <http://libraries.dal.ca/research.html> for a set of research tools including Subject Guides, Assignment Calculator, and RefWorks.
- See <http://studentservices.dal.ca> for assistance with appeals and discipline procedures.
- See <http://senate.dal.ca> for a list of Academic Integrity Officers, a discipline flow chart, and the Senate Discipline Committee.

The [Policy on Student Submission of Assignments & Use of Originality Checking Software](#) states that "any instructor may require student assignments to be submitted in both written and electronic (computer-readable) form, e.g., a text file or as an email attachment, as defined by the instructor. Use of third-party originality checking software does not preclude instructor use of alternate means to identify lapses in originality and attribution. The results of such assessment may be used as evidence in any disciplinary action taken by the Senate."