

**Faculty of Science Course Syllabus  
Department of Economics  
Econometrics II, ECON 5576  
Winter 2019**

**Instructor:**

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**Timetable:**

Lecture Hours:

- Monday and Wednesday, 14.35-15.55, McCain Arts & Social Sciences 1102

Office Hours:

- Thursday, 13.00-15.30 (or by appointment)

**Course Description:**

This course builds on the material learned in ECON 5575. Its primary objective is to extend the student's capabilities to conduct quantitative research in economics and to examine critically the existing literature based on quantitative research. The topics of this course include instrumental variables, maximum likelihood estimation, time series models, panel data models, and nonparametric methods.

**Course Prerequisites:**

ECON5575

**Objectives of the course:**

This course introduces statistical tools for handling economic and financial data generated in uncontrolled environments, and the techniques involved in their use.

**Learning outcomes and competences:**

The objectives of the course are that the participants can:

- apply efficient estimation in regression models with heteroskedastic innovations
- define, estimate, and perform hypothesis testing for nonlinear regression models
- derive and apply maximum likelihood estimation and specification tests
- derive and apply models for binary dependent variable as well as for multinomial (ordered and unordered) response variables
- estimate and perform hypothesis testing in multiple regression models in a panel data framework, and discuss and apply the difference-in-difference approach
- define the endogeneity issues in estimating regression models, and testing
- discuss the Instrumental Variables approach as a solution to endogeneity problems
- discuss the dependence and stationarity properties of time series data,
- formulate ARMA models, and discuss issues about estimation, statistical inference and forecasting
- describe and apply the testing procedure for unit root processes (Dickey-Fuller test)
- formulate the VAR model, and derive its properties, including the calculation of impulse response functions

- introduce the notion of cointegration, and define and analyze the co integrated VAR model, and the VECM model
- reflect on additional topics within econometrics with a view towards empirical applications

**Format:**

Regular lectures

**Material:**

- Davidson R., and J.G. MacKinnon, (2004). *Econometric Theory and Methods*, Oxford University Press (New York)
- Supplementary Textbooks:
  - + Greene, W. H, (2012). *Econometric Analysis*, 7th ed. Prentice Hall.
  - + Verbeek M., (2012). *A Guide to Modern Econometrics*, 4th ed., Wiley
  - + Wooldridge, J. M. (2010). *Econometric Analysis of Cross Section and Panel Data*, MIT press
- Additional Notes, as required: available via [Brightspace](#).

**Software:**

- **Gretl**
  - + Gretl is freeware econometric software, which can be downloaded in <http://gretl.sourceforge.net/>.
- **R**
  - + R is freeware software used by many researchers for econometrics and statistics. It is available in: <http://www.r-project.org/>
- **STATA**
  - + STATA is available in McCain Bldg computer labs. You can also purchase an individual licence at a student rate: <http://www.stata.com/order/new/edu/gradplans/campus-gradplan/>  
Note that although a cheaper student version is available, it can only handle a limited number of variables and observations.

*A short discussion about the above packages and other statistical software will take place during the first class. Students will be free to choose the statistical package of their preference.*

**Assessment:**

- Assignments: 20%
  - + (approximately) Bi-weekly assignments involving theoretical and computer exercises.
  - + Due in the beginning of the class (20% mark-down for every hour delayed)
- Literature Review- additional topic: 20%
  - + Summary: 10%
  - + Class lecture: 10%
  - + The students will provide a critical summary for a topic of interest not covered in class, which will then be presented in class.
    - Examples: Regression Discontinuity, Threshold Regression Models, Parameter Stability Testing
- Midterm Exam: 20%
- Final Exam (comprehensive): 40%

- Notes:
  - + If you have a valid, verifiable, reason for not submitting an assignment, its weight will be distributed among the remaining ones.
  - + In the event that you are unable to attend the midterm exam, the student must contact the instructor by email prior to the date and time of the exam, and submit a completed Student Declaration of Absence via Brightspace (no medical note is required). The weight of the midterm exam will be added to the final exam.
  - + If a student misses the final exam for a valid reason, (Section 16.8 of the University Calendar), she/he must notify the instructor immediately. The student will have the opportunity to write up a make-up exam within the next week after the end of the class.

**Grading scheme:**

The following table describes the grading scale to be applied in the course.

**Grading Scale as per Dalhousie Faculty of Graduate Studies Calendar  
Regulation 7.6.2 Grading Policy**

Letter Grade	Numerical % equivalent
A+	90 - 100
A	85 - 89
A-	80 - 84
B+	77 - 79
B	73 - 76
B -	70 - 72
F	0-69

Notes:

1. As per FGS regulations students must obtain a final course grade of 70% (B-) or higher to pass the course (study carefully the grading scale).

**Important Dates (midterm date is tentative):**

- Last Day to Change and Add Classes for registered students: January 18<sup>th</sup>
- Last Day to Drop without “W”: February 4<sup>th</sup>
- Last Day to Drop with “W”: March 11<sup>th</sup>
- Winter study break: February 18<sup>th</sup>-22<sup>nd</sup>
- **Additional Topic Summary:** March 25<sup>th</sup>
- **Midterm Exam:** February 13<sup>th</sup> (**in class**)
- **Final Exam:** April 9<sup>th</sup>

**Email Policy:**

- Weekdays: emails received by 18.00 would be responded by the end of the day. Anything after that time would be responded in the following day.
- Weekends: emails are to be checked sporadically and you should not expect a response within the same day.
- Lengthy questions are easier and preferable to be answered during office hours.
- Make sure that you have checked the course outline and all material available in Brightspace prior to asking a question.

**Course contents:**

<b>Dates</b>	<b>Topic</b>	<b>Material</b>
January 7 <sup>th</sup> , 9 <sup>th</sup> , 14 <sup>th</sup>	<b>Review/ Nonlinear Regression</b>	Notes Ch. 6
January 16 <sup>th</sup> , 21 <sup>st</sup> , 23 <sup>rd</sup>	<b>Maximum Likelihood Estimation</b>	Notes, Ch. 10
January 28 <sup>th</sup> , 30 <sup>th</sup> February 4 <sup>th</sup>	<b>Discrete and Limited Dependent Variables</b>	Notes, Ch. 11
February 6 <sup>th</sup> , 11 <sup>th</sup>	<b>Generalized Least Squares- Serial Correlation</b>	Notes, Ch. 7.6-7.9

**February 13<sup>th</sup>: Midterm Exam**

February 25 <sup>th</sup> , 27 <sup>th</sup>	<b>Panel Data</b>	Notes, Ch. 7.10
March 4 <sup>th</sup> , 6 <sup>th</sup> , 11 <sup>th</sup>	<b>Instrumental Variables</b>	Notes, Ch. 8
March 13 <sup>th</sup> , 18 <sup>th</sup> , 20 <sup>th</sup> , 25 <sup>th</sup> , 27 <sup>th</sup>	<b>Time Series Models</b>	Notes, Ch. 13, 14
April 1 <sup>st</sup> , 3 <sup>rd</sup>	<b>Additional Topics: Students' Lectures</b>	Student's Summaries

**April 9<sup>th</sup>: Final Exam**

## 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://www.dal.ca/academics/important\\_dates.html](https://www.dal.ca/academics/important_dates.html)

### 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)

### Missed or Late Academic Requirements due to Student Absence (policy)

[https://www.dal.ca/dept/university\\_secretariat/policies/academic/missed-or-late-academic-requirements-due-to-student-absence.html](https://www.dal.ca/dept/university_secretariat/policies/academic/missed-or-late-academic-requirements-due-to-student-absence.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/academic-advising.html>

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

**Black 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/services-support/student-health-and-wellness.html](https://www.dal.ca/campus_life/health-and-wellness/services-support/student-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

#### Research Lab Safety

[https://www.dal.ca/content/dam/dalhousie/pdf/dept/safety/lab\\_policy\\_manual\\_2007.pdf](https://www.dal.ca/content/dam/dalhousie/pdf/dept/safety/lab_policy_manual_2007.pdf)

**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>

## **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&loadusercredits=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.”