

Department of Economics
ECON 5576
Econometrics II
Winter 2023

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: Prof. Yulia Kotlyarova yulia.kotlyarova@dal.ca

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Lectures (in-person) Tuesday and Thursday 10:05 – 11:25 am McCain 2190

Office hours: to be determined

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

ECON 5575

Course Objectives/Learning Outcomes

The course covers a broad range of parametric, semiparametric and nonparametric methods. Students will study the statistical foundations of these econometric methods and will learn how to apply them in practice using statistical packages STATA and R.

Students will learn how to derive, interpret, and analyze finite-sample and/or asymptotic properties of ordinary least squares estimators, generalized least squares estimators, maximum likelihood estimators, instrumental variables, and kernel-based nonparametric estimators. The estimators will be considered in cross-sectional, time-series and panel data settings.

Students will learn how to select, estimate, test for misspecification, and use for forecasting the appropriate econometric models based on research questions and available data; they will also analyze existing studies that use quantitative methods.

Course Materials

Required textbook: Greene, W. H. “Econometric Analysis”, Pearson, 8th ed.

Additional reading materials will be distributed in class or posted on Brightspace.

Other useful textbooks:

R. Davidson and J. MacKinnon “Econometric Theory and Methods”, Oxford University Press, 2004

Heij, C., P. de Boer, P. H. Franses, T. Kloek, H. K. van Dijk “Econometric Methods with Applications in Business and Economics”, Oxford University Press, 2004 (available online for DAL users)

Johnston, J. and J. DiNardo “Econometric Methods”, McGraw-Hill, 1997

Wooldridge, J. M. “Econometric Analysis of Cross Section and Panel Data”, MIT Press, 2010

Software: statistical packages STATA and R (open source). Stata/SE 17 can be downloaded at <https://software.library.dal.ca/>.

Course Assessment

| Component | Weight (% of final grade) | Date |
|-----------------------------|----------------------------------|---------------------------|
| <i>Midterm</i> | 25% (in class) | 2 March, 2023 (tentative) |
| <i>Final exam</i> | 35% (3 hours, in person) | Scheduled exam period |
| <i>5 assignments</i> | 40% | to be determined |

Conversion of numerical grades to Final Letter Grades follows the Dalhousie Faculty of Graduate Studies Scale:

A+ (90-100) A (85-89) A- (80-84) B+ (77-79) B (73-76) B- (70-72) F (<70)

Course Policies

There will be no make-up midterm exam. If students miss the midterm for a valid reason, they must inform the instructor by email on the day of the exam (or earlier). Their final exam will count for 60% of the final grade.

If a student cannot submit an assignment on time for a valid reason, the student must contact the instructor prior to the assignment deadline to discuss alternative arrangements.

If a student misses the final exam for a valid reason, the student must notify the instructor immediately and provide the appropriate documentation. The student will have an opportunity to write a make-up final exam.

Students are not allowed to collaborate on the assignments and exams. The full text of the Dalhousie Policy on Intellectual Honesty and Faculty Discipline Procedures is available here:

http://www.dal.ca/dept/university_secretariat/academic-integrity/academic-policies.html

Course Content

1. Elements of asymptotic theory
2. Review of OLS, generalized least squares estimators and panel data models
3. Maximum likelihood estimation (properties, three classical testing procedures, MLE in linear regressions and binary-choice models)
4. Time series models: stationary and nonstationary processes
5. Instrumental variables and generalized method of moments
6. Computationally-intensive methods: the bootstrap, kernel density estimation, nonparametric regression