

University of Waterloo
Department of Economics
ECON 321: Introduction to Econometrics (section 002)
Course outline-Winter term 2016

Class hours and room: Mondays and Wednesdays 2.30pm-3:50pm at DWE 3522.

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Office hours: Thursdays from 1pm to 3:30pm at HH 162.

About e-mail communication:

You are required to use your University of Waterloo email account to send me an email.

Always write your Full Name, Student ID and “ECON 321” in the subject line of your email.

This course outline will be posted on LEARN (use your UW *user id and password*)

<http://learn.uwaterloo.ca> You can also get it from the Department of Economics, University of Waterloo website at: <http://economics.uwaterloo.ca/courses>

The Art computing lab (PAS 1237 room) schedule will be posted on LEARN. That means some of your Wednesday’s regular classes will be held at PAS 1237.

Description of the course (ECON 321):

This course provides an introduction to the theory and application of econometrics, with an emphasis on providing students with an intuitive command of the classical multivariate linear regression model. Considerable attention will be given during classes and assignments including effective participation in computer based problem solving using econometric software. Students are expected to have a background knowledge of basic statistics, including sampling distributions and hypothesis testing.

Primary text book:

Jeffrey M. Wooldridge, Introductory Econometrics: A Modern Approach (5th edition), South-Western: Mason, Ohio, 2013.

Secondary reference texts:

Kennedy, Peter, A Guide to Econometrics, 6th edition, The MIT Press, 2008.

Verbeek, Marno, A Guide to Modern Econometrics, 2nd edition, John Wiley & Sons, 2004.

Evaluation:

Three assignments (each having a 5% mark on your final grade) will be given over the term and these will be posted on your course website (UW LEARN) with specified due dates. They will be distributed on **January 20**, **February 07**, and **February 29**. Their due dates are **February 2**, **February 21**, and **March 21**, respectively. Late assignments will be assigned a grade of zero with no exceptions. Each assignment will involve using a statistical software package called STATA. This software is available in the Arts computing labs. The software can also be ordered from: <http://www.stata.com/order/new/edu/gradplans/campus-gradplan/>.

STATA has an excellent online user's guide for any question you might encounter while using the software. In addition, the internet is an invaluable resource for learning to program STATA effectively and efficiently. One useful resource to learn and use STATA is found in this link: <http://www.ats.ucla.edu/stat/stata/>. You are not required to have prior knowledge of STATA but you should be eager to learn.

There will be two term tests (each having a 20 % mark on your final grade) and a final exam (45% mark on your final grade) based on lecture material. The term tests will be held during the regular lecture time on January 27 and March 2, respectively. The format of the tests, will be discussed in class. The final exam will be scheduled by the Registrar's Office.

Topics to be covered:

1. The Nature of Econometrics and Econometric Data:

What is econometrics?; the economic and econometric model; sampling distributions; data structures; causality in econometrics

(Wooldridge, Chapter 1)

2. The Simple Linear Regression (SLR) Model:

Defining the simple linear regression model; the OLS estimator; units of measurements and functional forms; properties of the OLS estimators; Gauss-Markov theorem for SLR

(Wooldridge: Chapter 2)

3. The Multiple Linear Regression (MLR) Model:

Defining the multiple linear regression model; mechanics and interpretation of estimates; unbiasedness; variance of OLS estimator; Gauss-Markov theorem for MLR

(Wooldridge: Chapter 3)

4. Inference:

Sampling distribution of the OLS estimator; t test; confidence intervals; F test

(Wooldridge: Chapter 4)

5. OLS Asymptotics:

Consistency; asymptotic normality; large sample inference; asymptotic efficiency

(Wooldridge: Chapter 5)

6. MLR Models: Further issues (additional topics):

Scaling; functional form; goodness-of-fit; prediction; using qualitative/discrete data

(Wooldridge: Chapters 6 and 7)

7. Heteroskedasticity:

Consequences of heteroskedasticity; robust inference; testing for heteroskedasticity; weighted least squares (WLS)

(Wooldridge: Chapter 8)

8. Instrumental Variables (IV) Estimation and Two Stage Least Squares (if time permits)

Identification problems in econometrics; omitted variable bias; tests for endogeneity and over identifying restrictions; relevance and validity of instruments

(Wooldridge: Chapter 15)

Economics Department Deferred Final Exam Policy

Deferred Final Exam Policy found at <https://uwaterloo.ca/economics/current-undergraduates/policies-and-resources/deferred-final-exam-policy>.

Cross-listed course

Please note that a cross-listed course will count in all respective averages no matter under which rubric it has been taken. For example, a PHIL/PSCI cross-list will count in a Philosophy major average, even if the course was taken under the Political Science rubric.

Avoidance of Academic Offences:

Academic Integrity

Academic Integrity: In order to maintain a culture of academic integrity, members of the University of Waterloo are expected to promote honesty, trust, fairness, respect and responsibility.

Discipline: A student is expected to know what constitutes academic integrity, to avoid committing academic offences, and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offence, or who needs help in learning how to avoid offences (e.g., plagiarism, cheating) or about “rules” for group work/collaboration should seek guidance from the course professor, academic advisor, or the Undergraduate Associate Dean. When misconduct has been found to have occurred, disciplinary penalties will be imposed under Policy 71 – Student Discipline. For information on categories of offenses and types of penalties, students should refer to [Policy 71 - Student Discipline](https://uwaterloo.ca/secretariat-general-counsel/policies-procedures-guidelines/policy-71) (https://uwaterloo.ca/secretariat-general-counsel/policies-procedures-guidelines/policy-71)

Grievance: A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read [Policy 70 - Student Petitions and Grievances](https://uwaterloo.ca/secretariat-general-counsel/policies-procedures-guidelines/policy-70) (https://uwaterloo.ca/secretariat-general-counsel/policies-procedures-guidelines/policy-70), Section 4.

Appeals: A student may appeal the finding and/or penalty in a decision made under Policy 70 - Student Petitions and Grievances (other than regarding a petition) or Policy 71 - Student Discipline if a ground for an appeal can be established. Read [Policy 72 - Student Appeals](https://uwaterloo.ca/secretariat-general-counsel/policies-procedures-guidelines/policy-72) (https://uwaterloo.ca/secretariat-general-counsel/policies-procedures-guidelines/policy-72).

Other sources of information for students:

[Academic Integrity website \(Arts\)](https://uwaterloo.ca/arts/current-undergraduates/student-support/ethical-behaviour)

<https://uwaterloo.ca/arts/current-undergraduates/student-support/ethical-behaviour>

[Academic Integrity Office \(UWaterloo\)](https://uwaterloo.ca/academic-integrity/)

<https://uwaterloo.ca/academic-integrity/>

Accommodation for Students with Disabilities

Note for students with disabilities: The [AccessAbility Services](https://uwaterloo.ca/disability-services) office (https://uwaterloo.ca/disability-services), located on the first floor of the Needles Hall extension (NH 1401), collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If

you require academic accommodations to lessen the impact of your disability, please register with the AS office at the beginning of each academic term.