



**Department of Economics**  
**ECON 210: Introduction to Econometrics**  
**Paper Outline – Semester 1, 2022**

**Times and Rooms**

**Lectures:** Monday: 10.00-10.50, Tuesday: 10.00-10.50, and Wednesday: 10.00-10.50

(Details of all rooms available on eVision)

**Tutorial:** Tuesday: 9.00-9.50 (starting in semester **week 2** (year week 10))

**Computer labs:** Monday: 9.00-9.50 **or** Monday: 2.00-2.50 (starting in semester **week 2** (year week 10))

**Lecturers**

**Murat Genç**

Room: OBS524

Tel: 479 8644

[murat.genc@otago.ac.nz](mailto:murat.genc@otago.ac.nz)

Office Hours: Tuesday 11.30am-1pm; Wednesday 4-5pm; 9pm-1am most evenings

**Dorian Owen** (Coordinator)

Room: OBS620

Tel: 479 8655

[dorian.owen@otago.ac.nz](mailto:dorian.owen@otago.ac.nz)

Office Hours: See whiteboard outside Rm OBS620 (as these change weekly)

**Reception**

**Donna Cumberbeach**

**Enquiries**

Room: OBS601a

Tel: 479 8725

[donna.cumberbeach@otago.ac.nz](mailto:donna.cumberbeach@otago.ac.nz)

Available 9am to 3.30pm, weekdays

**Prerequisites:** BSNS 102 or BSNS 112 or STAT 110; **Restriction:** FINC 203, STAT 210, STAT 241

(Note that ECON 210 does not have a 100-level MATH or FINQ prerequisite.)

We frequently use examples relating to economic relationships. There are no specific economics prerequisites for this paper, but it is helpful, though not essential, to have at least some basic knowledge of microeconomics and macroeconomics.

## **Overview and Objectives**

ECON 210 is designed to introduce you to some of the statistical and econometric techniques that are widely used in empirical work in economics and other related disciplines. It covers the basics of estimation and inference in the context of the single-equation linear regression model. The main objective of the paper is to learn how to apply relevant econometric methods to analyse data and interpret the results from such analyses. The focus is on conceptual understanding and ‘hands on’ applications using economic data drawn from real-world examples, rather than on formal theoretical proofs. By the end of the paper, you should be able to appreciate and interpret the econometric and statistical analysis reported in many studies in economics and be able to carry out and interpret your own econometric analysis.

ECON 210 is recommended for economics majors with a good background in first-year statistics for whom an appreciation of the econometric and statistical tools in widespread use in economic analysis would be invaluable.

**NB: ECON210 (or equivalent) is one of the required papers that students intending to proceed to postgraduate programmes (MEcon, MSc, Honours, PGDip) in economics must include in their Bachelor’s degree programme.**

## **Lecture Notes**

Electronic copies of overhead slides and other handout material will be posted on *Blackboard*. Overhead slides provide an outline of the lectures but are **not** a substitute for attending and taking your own notes.

## **Tutorials and computer labs**

Tutorials and labs are an important part of the paper and you are strongly advised to attend all of these. A tutorial will be held weekly **beginning in week 2** of the semester (year week 10). There will be fortnightly tutorial assignments. The assessed components of these will require solutions for a specified ‘hand-in’ question to be written up and handed in. For the hand-in questions, a mark of at least 50% will be worth 2% towards the final grade.

You will be given regular computing exercises that supplement the lectures and/or are part of the tutorial exercises. The lab times provide an opportunity to work on these problems under supervision. **Labs start in week 2** (but there will be no labs in week 13; see the timetable below). Note that you may attend either of the two scheduled lab sessions. The lab exercises will require the use of the statistical/econometric software package *Stata*. *Small Stata* version 10, a student version of *Stata*, is available on your student desktop if you are enrolled in ECON 210. *Small Stata* is able to analyse datasets with a maximum of 99 variables on approximately 1,000 observations, which is sufficient for the size of problems that we will examine in ECON 210.

### **Workload**

ECON 210 is an 18-point semester paper. Under the University's points conventions, this corresponds approximately to an average workload of 12 hours per week (including contact hours), or roughly 180 hours in total over a 15-week period (including the end-of-semester exam period).

### **Assessment**

Assessment comprises 4 components:

- Five fortnightly hand-in exercises worth 10% where plussage **does not** apply
- a 50-minute *mid-semester test*, worth 15% where plussage applies (**11 April, 2022**),
- a computing assignment and written report worth 15% where plussage **does not** apply (due at the end of week 12 of the semester ), and
- a two-hour *final examination* worth 60% or 75% depending on your *mid-semester test* result.

*Calculators:* Any model of calculator is allowed in the test and examination provided this is battery powered, silent, truly portable and free of communication capabilities.

### *Internal assessment – plussage*

The aim of plussage is to enable anyone who performs poorly on an internal assessment covering a particular content or skill area, but who demonstrates substantial improvement in that area during the final exam, to obtain an overall grade that reflects their capabilities at the end of the paper. It should **not** be taken as an invitation to avoid doing the mid-semester test.

You should also be aware that – aside from providing feedback on how you are coping with the paper and some insurance against a poor performance on the final exam – your internal assessment grade is also an important factor in determining eligibility for ‘Final Examination Only’ (FEO) enrolment (should you fail the paper), and the form of Special Consideration that might be offered (should you be ill or otherwise impaired during the final exam).

### *Special consideration*

If you consider your performance in the end-of semester examination to be seriously impaired, or if you are too ill to sit an examination, you can apply for Special Consideration. See <http://www.otago.ac.nz/study/exams/otago062916.html> for full details on the criteria and procedures for Special Consideration in the final examination.

### **Academic Integrity and Academic Misconduct**

Academic integrity means being honest in your studying and assessments. You are expected to be aware of, and act in accordance with, the University’s Academic Integrity Policy. Academic Misconduct, such as plagiarism or cheating, is a breach of Academic Integrity and is taken very seriously by the University. Types of misconduct include plagiarism, copying, unauthorised collaboration, taking unauthorised material into a test or exam, impersonation, and assisting someone else’s misconduct. It is your responsibility to be aware of and use acceptable academic practices when completing your assessments. To access the information in the Academic Integrity Policy and learn more, please visit the University’s Academic Integrity website at [www.otago.ac.nz/study/academicintegrity](http://www.otago.ac.nz/study/academicintegrity) or ask at the Student Learning Centre.

### **Class Representatives**

The class representative system provides students with a vehicle for communicating their views on matters associated with the teaching and delivery of their paper or course of study. It provides staff with the opportunity to communicate information to and gain constructive feedback from students. It contributes to the development of a sense of community within a Department/School/Faculty and it adds a further dimension to the range of support services

that the University of Otago offers its students. The School of Business and the Department of Economics fully supports the class representative system.

Volunteers to act as class representatives for this paper will be called for early in the semester. OUSA then invites all class representatives to a training session, conducted by OUSA, about what it means to be a class representative and some of the possible procedures for dealing with issues that arise. They also provide information on the services that OUSA offers and the role OUSA can play in solving problems that may occur. OUSA also provides ongoing support to class representatives during the semester. A senior member of the Department will meet during the semester with the class representatives for this and other ECON papers to discuss general issues or matters they wish to have considered.

### **Responses to Covid Developments**

While every effort has been made to ensure that the information contained in this document is accurate, the information is subject to change, especially in response to changes in New Zealand's pandemic status. Given the inevitable spread of the Omicron variant, changes to lecture, lab and tutorial arrangements, as well as assessment details, are possible, indeed likely. Any changes will be notified in class and posted on Blackboard, so please make sure to look out for updates as the semester proceeds.

### Timetable of lectures, tutorials and labs for 2021

<b>Week beginning</b>	<i>Monday</i>	<i>Tuesday</i>	<i>Wednesday</i>	<i>Tutorial</i>	<i>Lab</i>
1 28 February	Lecture 1 ♦	Lecture 2 ♦	Lecture 3 ♦		
2 7 March	Lecture 4 ♦	Lecture 5 ♦	Lecture 6 ♦	Tutorial 1	Lab 1
3 14 March	Lecture 7 ♦	Lecture 8 ♦	Lecture 9 ♦	Tutorial 2	Lab 2
4 21 March	Lecture 10 ♦	Lecture 11 ♦	Lecture 12 ♦	Tutorial 3	Lab 3
5 28 March	Lecture 13 ♦	Lecture 14 ♦	Lecture 15 ♦	Tutorial 4	Lab 4
6 4 April	Lecture 16 ♣	Lecture 17 ♣	Lecture 18 ♣	Tutorial 5	Lab 5
7 11 April	<b>Test</b>	Lecture 19 ♣	Lecture 20 ♣	Tutorial 6	Lab 6
18 April	Mid-semester break				
8 25 April	<b>ANZAC</b>	Lecture 21 ♣	Lecture 22 ♣	Tutorial 7	
9 2 May	Lecture 23 ♣	Lecture 24 ♣	Lecture 25 ♣	Tutorial 8	Lab 7
10 9 May	Lecture 26 ♣	Lecture 27 ♣	Lecture 28 ♣	Tutorial 9	Lab 8
11 16 May	Lecture 29 ♣	Lecture 30 ♣	Lecture 31 ♣	Tutorial 10	Lab 9
12 23 May	Lecture 32 ♣	Lecture 33 ♣	Lecture 34 ♦	Tutorial 11	Lab 10
13 30 May	Lecture 35 ♦	Lecture 36 ♦	Overflow	Tutorial 12	

Lecturers: ♦: Murat Genç (18 lectures) ♣: Dorian Owen (18 lectures)

### **Course Materials and Texts:**

The essential text is Jeffrey M. Wooldridge, *Introductory Econometrics: A Modern Approach*, 7<sup>th</sup> Edition, Cengage Learning, 2020.

We will focus on Part 1 of Wooldridge's text in this paper, but later chapters will be useful for ECON 375. Print and e-book versions of this text are available. The 4<sup>th</sup>, 5<sup>th</sup> or 6<sup>th</sup> Editions are mostly just as good if you have access to them.

There are several alternative texts at a similar level that will be referred to occasionally and are also useful:

Christopher Dougherty, *An Introduction to Econometrics*, 5<sup>th</sup> Edition, Oxford University Press, 2016 (or Fourth Edition, 2011).

R. Carter Hill, William E. Griffiths and Guay C. Lim, *Principles of Econometrics*, 5<sup>th</sup> Edition, Wiley, 2018.

Michael A. Bailey, *Real Econometrics*, Oxford University Press, 2017.

James H. Stock and Mark W. Watson, *Introduction to Econometrics*, 4th Edition, Pearson Addison-Wesley, 2019.

A. H. Studenmund, *A Practical Guide to Using Econometrics*, 7<sup>th</sup> Edition, Pearson, 2017.

Damodar N. Gujarati and Dawn C. Porter, *Basic Econometrics*, 5<sup>th</sup> Edition, McGraw-Hill, 2009.

The following is a useful complementary text, which concentrates more on an intuitive overview and less on technical detail; many students find it more accessible:

Peter Kennedy, *A Guide to Econometrics*, 6<sup>th</sup> Edition, Blackwell, 2008.

Another easy-to-read non-technical introduction to econometrics is:

Gary Koop, *Analysis of Economic Data*, 4<sup>th</sup> Edition, Wiley, 2013.

Lecture slides, outlines, data files, computing exercises, tutorial sheets and other information relating to this course will be posted on *Blackboard* under ECON210. Login access is available at <https://blackboard.otago.ac.nz/webapps/login/>

## **Outline/Lecture Programme**

### **Week 1: Introduction**

The nature of econometrics and why it is useful, causality, economic data, experimental versus non-experimental data; economic models and empirical modelling

Reading: Wooldridge, Chapter 1  
Kennedy, Chapter 1

### **Weeks 2-3: The simple regression model**

Specification of the simple regression model, ordinary least squares (OLS) estimation, fitted values and residuals, goodness-of-fit, units of measurement and functional form, statistical properties of OLS estimators, Stata basics and regression analysis in Stata

Reading: Wooldridge, Chapter 2; Appendix B and Appendix C  
Kennedy, Chapter 3

### **Weeks 4-5: Multiple regression analysis: estimation**

Motivation, mechanisms and interpretation of multiple regression models, ordinary least squares (OLS) estimation, fitted values and residuals, goodness-of-fit, units of measurement and functional form, probabilistic model assumptions and statistical properties of OLS estimators, ‘overspecifying’ and ‘underspecifying’ models, variance of OLS estimators, the Gauss-Markov theorem

Reading: Wooldridge, Chapter 3  
Kennedy, Chapter 3

### **Weeks 6-7: Multiple regression analysis: inference**

Sampling distributions of the OLS estimators, testing hypotheses about a single population parameter: the  $t$ -test, economic versus statistical significance, confidence intervals, testing hypotheses about a single linear combinations of the parameters, testing multiple linear restrictions: the  $F$ -test, reporting regression results, large-sample inference. Discussion of these topics will also include revision of the normal distribution and related distributions (chi-squared,  $t$ - and  $F$ -distributions).

Reading: Wooldridge, Chapters 4, 5

Kennedy, Chapter 4

**Week 8: Multiple regression analysis: further issues**

Effects of data scaling, more on functional form, more on goodness-of-fit, model selection, prediction and residual analysis

Reading: Wooldridge, Chapter 6  
Kennedy, Chapter 6

**Week 9: Binary (or Dummy) Variables**

Formulating and interpreting coefficients on dummy explanatory variables, interactions involving dummy variables, binary dependent variables: the linear probability model

Reading: Wooldridge, Chapter 7  
Dougherty, Chapter 5  
Kennedy, Chapter 15

**Week 10: Heteroskedasticity**

Consequences of heteroskedasticity for OLS, testing for heteroskedasticity, heteroskedasticity-robust inference, weighted least squares estimation

Reading: Wooldridge, Chapter 8  
Dougherty, Chapter 7

**Weeks 11-12: Specification and Data Problems**

Reading: Wooldridge, Chapter 9

**Week 12-13: Pooled Cross Sections across Time**

Reading: Wooldridge, Chapter 13