

School of Economics and Finance

## QUAN 201 INTRODUCTION TO ECONOMETRICS

Trimester One 2012

### COURSE OUTLINE

---

#### Names and Contact Details

Course coordinator & lecturer:

Prof. Dean Hyslop

Office:

RH 310, Ph. 463-6964

Email:

[Dean.Hyslop@vuw.ac.nz](mailto:Dean.Hyslop@vuw.ac.nz)

Office hours: Thursday 2.30 – 4.30pm or by appointment

Administration:

Alice Fong, RH 318, Ph. 463-5353

[Alice.Fong@vuw.ac.nz](mailto:Alice.Fong@vuw.ac.nz)

#### Trimester Dates

Teaching Period: Monday 5 March – Friday 8 June

Study Period: Monday 11 June – Thursday 14 June

Examination Period: Friday 15 June – Wednesday 4 July (inclusive)

#### Course Delivery

This course will be delivered by two lectures per week, and a tutorial in 8 of the 12 weeks (likely in weeks 2-4, 6, 8-11).

#### Class Times and Room Numbers

Lectures:

Tuesday, Friday: 3.40 – 4.30pm in GBLT4 (Government Building Lecture Theatre 4)

Tutorials:

Tutorials will be held in the Railway West Wing (RWW) building computer labs, as follows:

Fridays 10.30–11.20am, 11.30am–12.20pm, 12.40–1.30pm, and 1.40–2.30pm in RWW202

Arrangements for allocations to tutorial groups will be posted on Blackboard. In the event of any difficulties with tutorial allocations, please contact Alice Fong ([alice.fong@vuw.ac.nz](mailto:alice.fong@vuw.ac.nz)), RH 318. To access the student computer labs, you will need to set up your username and password with the Student Computer Services (SCS).

## Course Content

This course provides an introduction to the theory and practice of econometrics, and will prepare you for more advanced econometrics and economics courses. Econometrics is concerned with the development, estimation, testing, and use of economic and financial models. Econometrics requires careful attention be paid to each of statistical theory, the (economic) theory on which the statistical model is based, and the collection and properties of the data used.

Throughout the course, emphasis will be placed on an intuitive understanding of the issues rather than on rigorous arguments, and concepts will be illustrated with economics applications. As the ultimate goal of econometrics is estimation and evaluation of models, hands-on experience with data and econometric computer software is essential. For this purpose, the econometric software package *R* will be used: *R* is freeware, and can be downloaded from the following website: <http://www.r-project.org/>.

An indicative schedule of course topics appears at the end of the course outline.

## Course Learning Objectives

By the end of this course, students should be able to:

- C1 estimate a relation between two variables using Ordinary Least Squares (OLS), explain how OLS estimators behave in terms of their probability distributions, test hypotheses on the relation between variables using *t*-values and *p*-values, and measure goodness of fit in a regression
- C2 estimate a relation between three or more variables using the OLS method, and test two or more hypotheses jointly using *F*-tests or *chi-square* tests
- C3 use dummy variables to measure categorical explanatory variables, then test for any associated structural change in the relation between variables
- C4 explain the effects of non-constant error variance in estimation and hypothesis tests, and how to adjust the tests and/or estimation to account for these problems
- C5 use an econometric computer program to implement the methods listed above

## Readings

Textbook:

There is *no required text* for this course. However, I find the following text a good econometrics reference text, and I will reference relevant sections from this text:

Wooldridge, J M, *Introductory Econometrics: A Modern Approach*, 4<sup>th</sup> edition, Thomson/South-Western, 2009.

## Expected Workload

QUAN 201 is a 15-point course. Based on VUW having designated one point = 10 hours work, the expected workload would total 150 hours: spread over 15 weeks, the expected workload would average around 10 hours per week. This would involve attending lectures & tutorials, plus reading, studying and completing assignments. The 10 hours weekly average may vary for individual students, depending on their previous knowledge and understanding, and their interest and aspirations associated with the course material.

## **Materials and Equipment**

If you have your own computer, I strongly recommend that you download a copy of the econometric software package *R* from the following website: <http://www.r-project.org/>. You will then be able to configure it as you prefer, and be able to use it whenever and where-ever you please.

The use of computers and calculators will not be required for either the midterm or final examination.

## **Assessment Requirements**

(Including the associated learning objectives)

Assignments: **25%** (probably 4 at 3 weekly intervals): C1–C5

Mid-trimester Test: **25%** (50 minutes, held in the lecture on **Friday 4 May**, covering material from weeks 1–6): C1–C2

Final examination: **50%** (2 hours, during the examination period): C1–C4

The course assignments will include both problem solving and computer tasks.

## Quality Assurance Note

Your assessed work may also be used for quality assurance purposes, such as to assess the level of achievement of learning objectives as required for accreditation and audit purposes. The findings may be used to inform changes aimed at improving the quality of FCA programmes. All material used for such processes will be treated as confidential, and the outcome will not affect your grade for the course.

## **Examinations**

Students who enrol in courses with examinations are obliged to attend an examination at the University at any time during the formal examination period.

The final examination for this course will be scheduled at some time during the period from Friday 15 June – Wednesday 4 July (inclusive).

## **Penalties**

Late submission of assignments will not be accepted without prior approval.

## **Mandatory Course Requirements**

There are no mandatory requirements for this course.

## **Class Representative**

A class representative will be elected in the first class, and that person's name and contact details made available to VUWSA, the Course Coordinator and the class. The class representative provides a communication channel to liaise with the Course Coordinator on behalf of students.

## **Communication of Additional Information**

Additional information or information on changes will be conveyed to students through the VUW Blackboard website.

## **Withdrawal from Course**

1. Your fees will be refunded if you withdraw from this course on or before Friday 16 March 2012.
2. The standard last date for withdrawal from this course is Friday 18 May. After this date, students forced to withdraw by circumstances beyond their control must apply for permission on an '*Application for Associate Dean's Permission to Withdraw Late*' including supporting documentation

The application form is available from either of the Faculty's Student Customer Service Desks.

**For the following important information follow the links provided:**

### **Academic Integrity and Plagiarism**

<http://www.victoria.ac.nz/home/study/plagiarism.aspx>

### **General University Policies and Statutes**

Find key dates, explanations of grades and other useful information at

[www.victoria.ac.nz/home/study](http://www.victoria.ac.nz/home/study)

Find out about academic progress and restricted enrolment at

<http://www.victoria.ac.nz/home/study/academic-progress.aspx>

The University's statutes and policies are available at [www.victoria.ac.nz/home/about/policy](http://www.victoria.ac.nz/home/about/policy), except qualification statutes, which are available via the Calendar webpage at

<http://www.victoria.ac.nz/home/study/calendar.aspx> (See Section C).

Further information about the University's academic processes can be found on the website of the Assistant Vice-Chancellor (Academic) at

[www.victoria.ac.nz/home/about\\_victoria/avcademic/default.aspx](http://www.victoria.ac.nz/home/about_victoria/avcademic/default.aspx)

### **AVC (Academic) Website: information including: Conduct, Academic Grievances, Students with Impairments, Student Support**

[http://www.victoria.ac.nz/home/about\\_victoria/avcademic/Publications.aspx](http://www.victoria.ac.nz/home/about_victoria/avcademic/Publications.aspx)

### **Faculty of Commerce and Administration Offices**

<http://www.victoria.ac.nz/fca/studenthelp/>

### **Te Putahi Atawhai**

#### **Maori and Pacific Mentoring Programme**

<http://www.victoria.ac.nz/tpa/>

### List of course topics

Topic	Text reference (Wooldridge, 2009)
<b>1 Introduction and Overview</b> (i) Graphical presentation of bivariate relationships (ii) Simple regression for data fitting	Chapter 1
<b>2 The Classical Linear Regression Model</b> (i) Estimation: <ul style="list-style-type: none"> <li>• model assumptions</li> <li>• interpreting coefficients</li> <li>• properties of OLS estimators</li> </ul> (ii) Inference: <ul style="list-style-type: none"> <li>• sampling distribution of OLS estimators</li> <li>• testing simple hypotheses</li> </ul> (iii) Prediction & Fit: <ul style="list-style-type: none"> <li>• <math>R^2</math> goodness of fit</li> <li>• functional form</li> </ul>	Chapter 2
<b>3 The Multiple Regression Model</b> (i) Estimation: <ul style="list-style-type: none"> <li>• model assumptions</li> <li>• interpreting coefficients</li> </ul> (ii) Inference: <ul style="list-style-type: none"> <li>• sampling distribution of OLS estimators</li> <li>• testing joint hypotheses</li> </ul> (iii) General model issues: <ul style="list-style-type: none"> <li>• Omitted variables problem</li> <li>• inclusion of irrelevant variables</li> <li>• Multicollinearity – indicators, consequences</li> <li>• Dummy variables</li> </ul>	Chapters 3, 4, 6 (Chapter 3)  (Chapter 4)  (Chapter 6)
<b>4 Extensions to the Linear Regression Model</b> (i) Errors in variables (ii) Heteroskedasticity (iii) Autocorrelation	Chapter 9.4 Chapter 8.1–8.3 Chapter 12.1–12.2