

THE UNIVERSITY OF
NEW SOUTH WALES



SCHOOL OF ECONOMICS

**ECON2207/ECON3291(ARTS)
ECONOMETRIC METHODS**

SESSION 2, 2008

COURSE INFORMATION AND LECTURE SCHEDULE

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Econometric Methods Web Site:
<http://vista.elearning.unsw.edu.au>

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1. TEACHING STAFF

Lecturer-in-charge: Professor Denzil Fiebig
Room: ASB 444
Ph. 9385 3958
Email: D.Fiebig@unsw.edu.au).

Consultation times: Wed 12-2, Thurs 3-4

Tutors: Jimmy Chen (email: jimmy327@gmail.com)
Simone Cheung (email: simone.cheung@gmail.com)
Meliyanni Johar (email: m.johar@unsw.edu.au)

Consultation times: Please consult course website

The Lecturer-in-charge is responsible for the overall direction and content of the course. You should feel free to approach Denzil about any academic matter.

Any questions regarding the tutorial program including administrative matters regarding tutorial allocation should be directed to your tutor.

All teaching staff may be contacted by email.

2. INFORMATION ABOUT THE COURSE

2.1 CLASS HOURS

There is one 2 hour lecture and one 1 hour tutorial class per week. The lecture is scheduled for Thursday 4-6pm in Mathews A.

Tutorials start in Week 1. Each student should enrol in a tutorial group which meets for one hour each week. Students enrol via their MyUNSW site. Once enrolled, moving from one tutorial group to another will not be permitted unless you have compelling reasons. You should consult your tutor about these matters.

If, due to illness or other exceptional circumstances, you are unable to attend your usual tutorial, you may try to attend another tutorial in the same week. However, students are expected to attend their usual tutorial class for at least eight tutorials during the session.

2.2 UNITS OF CREDIT

This subject is worth 6 units of credit and the prerequisite is ECON2206 Introductory Econometrics. (Students are presumed to be familiar with the material covered in the ECON1202, ECON1203, ECON2206 sequence taught at UNSW.)

2.3 COMPUTING WORK

Computing is an integral component of Econometric Methods. Apart from tutorial problems that require computing, the major project, which is worth 25% of your final grade, can not be successfully completed without using econometric software.

The default econometric software is SHAZAM. Assigned computer work may be done in the computing labs or SHAZAM can be used over the web. The following link will take you to the SHAZAM site where you can run the software over the web by clicking on **Run SHAZAM**. <http://shazam.econ.ubc.ca/> Alternatively, the School has a site

license for SHAZAM, and you can obtain a copy of the software from the School office and install it on your own PC. A nominal fee of \$10 is charged to cover the CD cost.

It is possible to complete the course using other software such as SAS, STATA or E-Views. **However, EXCEL will not be sufficient.**

2.4 RELATIONSHIP OF THIS COURSE TO OTHER COURSES

This course is a core requirement for the BEc and represents the second in a sequence of econometrics courses (the first being ECON 2206) designed to equip students with knowledge of the key econometric tools and methods expected of an applied economist.

The course also provides necessary skills and techniques that will be used in further study of econometrics. A major in Econometrics or Business Statistics is designed to equip students with more advanced statistical and quantitative skills that are widely used and increasingly demanded by employers in commercial fields and the public sector.

2.5 APPROACH TO LEARNING AND TEACHING

The philosophy underpinning this course and its Teaching and Learning Strategies (see 3.3 below) are based on “Guidelines on Learning that Inform Teaching at UNSW. These guidelines may be viewed at: www.guidelinesonlearning.unsw.edu.au.

Quantitative information and statistics are pervasive not only in the study of economics and business but in understanding a wide range of phenomena. Every attempt will be made to demonstrate the relevance of the course to understanding such phenomena. This will require applying econometric and statistical methods and techniques to practical problems.

3. COURSE AIMS AND OUTCOMES

3.1 COURSE AIMS

Econometric theory provides the techniques needed to quantify the strength and form of relationships between variables. Modern computer software makes it easy to implement these techniques, such as running a regression, but how do you know which model to specify or whether the data are appropriate? Applied econometrics is concerned with the strategies that need to be employed to use econometric techniques effectively. Together these techniques and strategies constitute what we define as “econometric methods”.

Students who are undertaking this course will have some background in basic statistics and grounding in the principles of regression analysis. Using this knowledge as a base, an extensive discussion of the use of regression theory and some of its extensions will be provided. We demonstrate how regression models can be applied to data to estimate relationships, to forecast and to test hypotheses that arise in economics and business.

General principles or guidelines for undertaking applied work are discussed. In particular, we stress careful data analysis, the need to evaluate estimated models and the importance of the links between econometric models and the underlying substantive knowledge or theory associated with the particular application. These issues will be related to applications drawn from fields such as economics, marketing, finance and accounting.

The primary extension to basic regression theory to be considered will be the situation where the dependent variable of interest is discrete. What influences an individual to work part-time rather than full-time, or use public transport rather than drive to work, or to choose one brand of detergent over another? Why do certain firms choose one particular accounting procedure over another? In these examples of modelling choice data, standard linear regression models are inappropriate because of the discrete nature of the dependent variable. This unit considers the specification, estimation and use of statistical models that are necessary to better cope with such modelling situations. Models to be discussed include logit and probit.

It is essential that the discussion of how to use econometric tools effectively be complemented with practice in analysing data. An important aid in this particular task will be the computing component where the popular econometrics package SHAZAM will be used.

3.2 STUDENT LEARNING OUTCOMES

The course aims to provide benefits to students in terms of:

- Being more familiar with guidelines for using econometric techniques effectively.
- Having a better appreciation of the model building cycle.
- Having the confidence and skills to critically evaluate econometric research.
- Having a thorough understanding of why it is necessary to consider extensions to the classical linear regression model when dealing with discrete dependent variables.
- Being familiar with a range of econometric models and tools that are useful when dealing with discrete dependent variables.
- Developing proficiency in the use of SHAZAM for econometric modelling.

“...the facts aren’t everything. At least half the case is in knowing what to do with the facts.” Fyodor Dostoyevsky, *Crime and Punishment*

“A good forecaster is not smarter than everyone else, he merely has his ignorance better organised.” Anonymous

3.3 TEACHING AND LEARNING STRATEGIES

The examinable content of the course comprises topics covered in lectures and tutorials.

3.3.1 LECTURES AND TUTORIALS

The purpose of lectures is to provide a logical structure for the topics that make up the course, to emphasise the important concepts and methods of each topic, and to provide relevant examples and case studies to which the concepts and methods are applied.

The object of the tutorials is to discuss various approaches to, and issues associated with the assigned exercises and topics covered in the course. There is a separate document containing the exercises which are to be covered in tutorials. A number of these exercises are intended to be challenging so as to stimulate questions and discussion. Therefore students should not feel inadequate if they have difficulty solving all the

exercises before attending their tutorial. However, it is important that students attempt the assigned exercises before the corresponding tutorial sessions.

3.3.2 CONSULTATION WITH STAFF

Students are encouraged to ask questions related to this course during lectures and tutorials. Those requiring extra assistance may take advantage of the times especially reserved by staff for consultation. A list of these will be posted on the course website.

3.3.3 LEARNING STRATEGIES

An 'ideal' learning strategy (on which provision of the course materials is based) might include:

- (i) Prior to attending a lecture, download and read the lecture notes for your lecture and bring them with you to the lecture. The lecture notes are available for downloading on the Econometric Methods website.
- (ii) Attend the lecture. The lecture notes form the basis for the lecture. Key concepts will be emphasised and demonstrated through worked examples.
- (iii) Prior to attending tutorials, attempt the assigned questions for that week. Do not be discouraged if you cannot answer all of the questions as some questions are more difficult than others. Attempting the assigned tutorial questions will provide a self-test of your understanding of particular topics and identify those topics which may require further attention. Many of the tutorial questions have been taken from past exam papers. Tutors will work through the assigned tutorial questions each week.

4. STUDENT RESPONSIBILITIES AND CONDUCT

4.1 WORKLOAD AND ATTENDANCE

It is expected that you will spend at least **ten hours** per week studying this course. This time should be made up of reading the lecture notes and textbook, working on tutorial and computer exercises, and attending classes. Over-commitment has been a cause of failure for many students. You should take the required workload into account when planning how to balance study with employment and other activities.

Your regular and punctual attendance at lectures and tutorials is expected in this course. University regulations indicate that if students attend less than eighty per cent of scheduled classes they may be refused final assessment. **More importantly, attendance at lectures and tutorials will be beneficial for your understanding of the material.**

4.2 GENERAL CONDUCT AND BEHAVIOUR

You are expected to conduct yourself with consideration and respect for the needs of your fellow students and teaching staff. Conduct which unduly disrupts or interferes with a class, such as ringing or talking on mobile phones, is not acceptable and students may be asked to leave the class. More information on student conduct is available at: www.my.unsw.edu.au

You should take note of all announcements made in lectures, tutorials or on the course website. In particular you should check "Announcements" on the course website at least once a week. From time to time, the University will send important announcements to your university email address without providing you with a paper copy. You will be deemed to have received this information.

5. ASSESSMENT

5.1 FORMAL REQUIREMENTS AND ASSESSMENT DETAILS

In order to pass this course, you must obtain a total mark of at least 50 out of a maximum of 100. The total mark is the sum of all coursework and final exam marks. Coursework consists of a tutorial workbook and a major project.

Assessment Component	Percentage of total mark
Tutorial workbook	20
Project	25
Final examination	55
Total	100

5.1.1 TUTORIAL WORKBOOK

Problems and computer exercises will be distributed. Written answers will be required for a subset of these while other questions will be earmarked for discussion in lectures and tutorials. You should keep a workbook containing the required written answers.

In order to review your progress, these workbooks will be collected during week 6 tutorials or may be deposited in the school's collection boxes by 4pm on Thursday September 5. While you will receive feedback at this stage the workbooks will not be marked until the end of the semester. Completed workbooks should be handed in to your tutor or deposited in the school's collection boxes **by 4pm on Thursday October 23** and it will comprise 20% of your final mark. Provided you complete and write up each of the tasks, together with supporting output etc., you should expect to gain most of these marks. Incomplete or poorly presented work will be penalized. In particular, the material needs to be in a book or securely bound in some way. **Assorted scraps of paper will not be acceptable.**

The purpose of the workbook is to test knowledge of econometric concepts, methodology and interpretation of results relating to multiple regression and logit and probit models and the ability to apply econometric reasoning in solving a realistic problem. It will also provide a reference source in future courses.

5.1.2 PROJECT

In keeping with the main objectives of the course students are expected to gain some experience in “doing econometrics”. The major project serves this purpose. Students will be given a pre-assigned topic where each student will receive a personalized set of data to analyse. The results of the analysis will be presented in the form of a report.

The project will be distributed in lectures and early work on the project will be fully integrated into the lecture and tutorial program. Because of this integration it is highly unlikely that an extension would be granted.

This major project should be deposited in the school's collection boxes by 5pm on Friday September 19 and is worth 25% of your final grade.

5.1.3 FINAL EXAMINATION

The final examination will consist of six questions from which the students must choose four. It will be a two hour examination and will be held during the University's final examination period.

The purpose of the final examination is to assess knowledge of econometric concepts, methodology and interpretation of results relating to multiple regression and logit and probit models.

5.2 SPECIAL CONSIDERATION AND SUPPLEMENTARY EXAMINATIONS

5.2.1 UNSW POLICY AND PROCESS FOR SPECIAL CONSIDERATION

If you believe that your performance in a subject, either during session or in an examination has been adversely affected by sickness or other adverse circumstances, you should ask for special consideration in the determination of your results. (see <https://my.unsw.edu.au/student/atoz/SpecialConsideration.html>)

- Applications for special consideration (including supplementary examinations) must go through UNSW Central administration (within 3 working days of the assessment to which it refers) – applications will **not** be accepted by teaching staff;
- Applying for special consideration does not automatically mean that you will be granted additional assessment or that you will be awarded an amended result;
- If you are making an application for special consideration (through UNSW Central Administration) please notify your Lecturer in Charge;
- Please note that a register of applications for Special Consideration is maintained. History of previous applications for Special Consideration is taken into account when considering each case.

5.2.2 ASB POLICY AND PROCESS FOR SPECIAL CONSIDERATION AND SUPPLEMENTARY EXAMS

In the ASB, requests for special consideration are determined by a Faculty wide panel which will advise the Lecturer in Charge of appropriate action.

If the Faculty panel (see above) grants a special consideration request, this may entitle the student to sit a supplementary examination. In such cases the following procedures will apply:

- Supplementary exams will be scheduled centrally and will be held approximately two weeks after the formal examination period. Actual date will be advised by mid-semester.
- Where a student is granted a supplementary examination as a result of a request for special consideration, the student's original exam (if completed) will not be marked and only the mark achieved in the supplementary examination will count towards the final grade.

Further information concerning supplementary examinations is available on the 'Policies and Guidelines for Current Students' page of the ASB website: www.business.unsw.edu.au/currentstudents.

6. ACADEMIC HONESTY AND PLAGIARISM

The University regards plagiarism as a form of academic misconduct, and has very strict rules regarding plagiarism. For full information regarding policies, penalties and information to help you avoid plagiarism see: <http://www.lc.unsw.edu.au/plagiarism/>

Plagiarism is the presentation of the thoughts or work of another as one's own.* Examples include:

- direct duplication of the thoughts or work of another, including by copying work, or knowingly permitting it to be copied. This includes copying material, ideas or concepts from a book, article, report or other written document (whether published or unpublished), composition, artwork, design, drawing, circuitry, computer program or software, web site, Internet, other electronic resource, or another person's assignment without appropriate acknowledgement;
- paraphrasing another person's work with very minor changes keeping the meaning, form and/or progression of ideas of the original;
- piecing together sections of the work of others into a new whole;
- presenting an assessment item as independent work when it has been produced in whole or part in collusion with other people, for example, another student or a tutor; and,
- claiming credit for a proportion a work contributed to a group assessment item that is greater than that actually contributed.†

Submitting an assessment item that has already been submitted for academic credit elsewhere may also be considered plagiarism.

The inclusion of the thoughts or work of another with attribution appropriate to the academic discipline does *not* amount to plagiarism.

Students are reminded of their Rights and Responsibilities in respect of plagiarism, as set out in the University Undergraduate and Postgraduate Handbooks, and are encouraged to seek advice from academic staff whenever necessary to ensure they avoid plagiarism in all its forms.

The Learning Centre website is the central University online resource for staff and student information on plagiarism and academic honesty. It can be located at: www.lc.unsw.edu.au/plagiarism

The Learning Centre also provides substantial educational written materials, workshops, and tutorials to aid students, for example, in:

correct referencing practices;

- paraphrasing, summarising, essay writing, and time management;
- appropriate use of, and attribution for, a range of materials including text, images, formulae and concepts.

Individual assistance is available on request from The Learning Centre.

Students are also reminded that careful time management is an important part of study and one of the identified causes of plagiarism is poor time management. Students should allow sufficient time for research, drafting, and the proper referencing of sources in preparing all assessment items.

* Based on that proposed to the University of Newcastle by the St James Ethics Centre. Used with kind permission from the University of Newcastle

† Adapted with kind permission from the University of Melbourne.

7. STUDENT RESOURCES

7.1 COURSE WEBSITE

The Econometric Methods website may be found at <http://vista.elearning.unsw.edu.au>. You are required to have a Unipass and a Unipin and be enrolled in the course to access the website.

The website contains: (a) the course outline, the tutorial documents and other course handouts; (b) the lecture notes; (c) data used in the tutorial problems and project; (d) past exam papers; and (e) course announcements.

Students should consult this website at least once a week as it contains important information about the course. It will be assumed that all students have seen any notice posted on the course website.

7.2 TEXTBOOK AND READINGS

The textbook for this course is:

Wooldridge, J.M. (2009), *Introductory Econometrics: A Modern Approach*, 4th ed. South-Western.

The 2nd and 3rd editions are also suitable as they are close substitutes for the 4th edition.

This is the basic reference for the course. It will be the primary source of extra reading for material covered in lectures and assignments and some exercises will be taken from the book. As a further aid to your study, copies of lecture overheads will be available electronically on the course webpage.

There are a number of other good texts that cover essentially the same material as the textbook. A selection of these is listed below and is available in the Open Reserve Section of the library. They appear in the course outline as alternative references. You may find them useful for additional or alternative explanations of some topics.

Chatfield, C. (1995). *Problem Solving: A Statistician's Guide*, 2nd ed., Chapman and Hall.

Griffiths, W.E., Hill, R.C. and Judge, G.G. (1993). *Learning and Practicing Econometrics*, John Wiley and Sons.

Kennedy, P. (1998). *A Guide to Econometrics*, 4th ed., Blackwell Publishers.

Powers, D.A. and Xie, Y. (2000). *Statistical Methods for Categorical Data Analysis*, Academic Press.

For the computing component of the course, brief notes will be available electronically on the course webpage. The SHAZAM website is a useful resource and for a complete treatment there is a manual: *SHAZAM User's Manual Version 8.0*, (1997). McGraw-Hill.

7.3 OTHER RESOURCES, SUPPORT AND INFORMATION

The University and ASB provide a wide range of support services for students, including:

Learning and Study Support:

- **ASB Education Development Unit**

The Education Development Unit (EDU) provides learning support and assistance to all students in the ASB, to enable them to enhance the quality of their learning. The EDU services are free, and tailored to meet the academic needs of students in the Australian School of Business.

The role of the EDU is to provide

- A range of support initiatives for students from the Australian School of Business in relation to their transition to university;
- Learning skills development, resources and activities for Business students
- Academic writing and skills workshops throughout the session;
- Printed and online study skills resources, such as referencing guides, report writing and exam preparation;
- A drop-in EDU Office containing books and resources that can be borrowed;
- A limited consultation service for students with individual or small group learning needs.

The EDU website www.business.unsw.edu.au/edu contains information, online resources and useful links as well as providing information and dates for workshops. More information about the EDU services including resources, workshop details and registration, and consultation request forms are available from the EDU Office.

EDU Contact Details

Location Room G07 Ground Floor,
 West Wing, Australian School of Business Building
Telephone: 02 9385 5584
Email: Edu@unsw.edu.au
Website www.business.unsw.edu.au/edu

UNSW Learning Centre (<http://www.lc.unsw.edu.au>)

In addition to the EDU services, the UNSW Learning Centre provides academic skills support services for all UNSW students. The Learning Centre is located on Level 2 of the Library and can be contacted by phone: 9385 3890 or through their website.

Technical support:

For any technical support issues (difficulty logging in to websites, problems downloading documents, etc) you can contact the UNSW IT Service Desk at: (02) 9385 1333 ; Email: servicedesk@unsw.edu.au

Counselling support - <http://www.counselling.unsw.edu.au>

Students experiencing problems of a personal or academic nature are encouraged to contact the Counselling Service at UNSW. This consultation service is free and confidential and run by professional counsellors. The Counselling Service also conducts workshops on topics such as 'Coping With Stress' and 'Procrastination'. The

Counselling Service is located on Level 2, Quadrangle East Wing, and can be contacted on 9385 5418.

Library training and support services - <http://info.library.unsw.edu.au>

Disability Support Services – Those students who have a disability that requires some adjustment in their teaching or learning environment are encouraged to discuss their study needs with the Course Coordinator or the Equity Officer (<http://www.studentequity.unsw.edu.au/disabil.html>). Early notification is essential to enable any necessary adjustments to be made.

In addition, it is important that all students are familiar with University policies and procedures in relation to such issues as:

- **Examination procedures** and advice concerning illness or misadventure <https://my.unsw.edu.au/student/academiclife/assessment/examinations/examinationrules.html>
- **Occupational Health and Safety** policies and student responsibilities; <https://my.unsw.edu.au/student/atoz/OccupationalHealth.html>

8. CONTINUAL COURSE IMPROVEMENT

Each year feedback is sought from students and other stakeholders about the courses offered in the School and continual improvements are made based on this feedback. UNSW's Course and Teaching Evaluation and Improvement (CATEI) Process (http://www.ltu.unsw.edu.au/ref4-5-1_catei_process.cfm) is one of the ways in which student evaluative feedback is gathered.

9. LECTURE SCHEDULE

The course is divided into 2 main sections. The schedule given below is only approximate because lectures, where possible, will be interactive. This means there is some scope to discuss and cover specific material in more or less detail depending on the preferences and needs of the class.

Included in the schedule below are two types of problems, those to be discussed in tutorials and those designated as workbook problems that need to be written up in your workbooks but are not typically discussed in tutorials. Questions denoted by PS (=Problem Set) can be found in the separate document entitled Problem Set.

Section 1: Modelling real data

Primary reference: Wooldridge: Chs 1, 9.1, 9.5 (9.4 in 3rd ed.), 19

Alternative references: Chatfield: Chs 1-5; Griffiths et al: Intro, Ch 2.1; Kennedy: Ch 5

Week 1

What is Econometrics? What is Econometric Methods? What am I doing in this course?

Tutorial problems: PS 1.1-1.4, 2.1 (These are review problems)

Week 2

Why is applied econometrics difficult? What is the model building cycle? Why are data so crucial in econometric model building?

Tutorial problem: PS 2.3

Workbook problems: PS 1.5, 2.2, 2.3

Week 3

Where do models come from?

Tutorial problems: PS 2.4, 2.5

Workbook problem: PS 2.6

Week 4

What are the threats to model validity?

Tutorial problems: Project Q 1-2

Workbook problem: Project Q 2.1

Week 5

What is important in evaluating applied econometric research?

Tutorial problems: Project Q3-4

Workbook problem: PS 2.8

Extra reference: Levitsky, I., Assane, D. & Robinson, W. (2000), "Determinants of gaming revenue: Extent of changing attitudes in the gaming industry", *Applied Economics Letters* 7 (3), 155-158.

Section 2: Modelling probabilities

Primary reference Wooldridge: Chs 7, 17

Alternative references: Griffiths et al: Intro, Ch 23; Powers & Xie: Chs 1-3

Week 6

What's different when using qualitative or discrete variables in econometric modelling?

What's wrong with the linear probability model?

Tutorial problems: Project – general discussion

Week 7

What is the logit model? How are the parameters of a logit model estimated?

Tutorial problems: PS 3.1, 3.9(i)-(ii)

Week 8

What more do we need to know about estimation of logit models and maximum likelihood estimation in general?

Tutorial problems: PS 3.2-3.4

Workbook problem: PS 3.3(iii)

Week 9

What is the probit model? How are the parameters of a probit model estimated? How do we interpret probit (and logit) estimates?

Tutorial problems: PS 3.5-3.6, 3.10

Workbook problem: PS 3.13 (To be done progressively over remainder of the weeks)

Week 10

What are the procedures used for testing in models estimated by maximum likelihood?

Tutorial problems: PS 3.7, 3.9(iii)-(iv)

Week 11

How do we evaluate logit and probit models?

Tutorial problems: 3.8, 3.11

Week 12

How can we put this all together to read and evaluate applied econometric studies using binary choice models?

Tutorial problems: PS 3.12

Extra reference: Govindasamy, R. & Italia, J. (1998), "Predicting consumer risk perceptions towards pesticides residue: A logistic analysis", *Applied Economics Letters* 5 (5), 793-796.