

ECON3208 / ECON4208 / ECON5408 Applied Econometric Methods

Course Outline Semester 1, 2017

Part A: Course-Specific Information

Students are also expected to have read and be familiar with **Part B Supplement to All Course Outlines**. This contains Policies on Student Responsibilities and Support, Including Special Consideration, Academic Misconduct and Plagiarism, and Key Dates. It also contains the BUSINESS SCHOOL PROGRAM LEARNING GOALS.

Table of Contents

<u>1</u>	<u>STAFF CONTACT DETAILS</u>	<u>1</u>
<u>2</u>	<u>COURSE DETAILS</u>	<u>1</u>
2.1	Teaching Times and Locations	1
2.2	Units of Credit	1
2.3	Summary of Course	1
2.4	Course Aims and Relationship to Other Courses	1
2.5	Student Learning Outcomes	2
<u>3</u>	<u>LEARNING AND TEACHING ACTIVITIES</u>	<u>3</u>
3.1	Approach to Learning and Teaching in the Course	3
3.2	Learning Activities and Teaching Strategies	3
<u>4</u>	<u>ASSESSMENT</u>	<u>5</u>
4.1	Formal Requirements	5
4.2	Assessment Details	5
4.3	Tutorial Participation	5
4.4	Assignments	6
	Submission Procedure for Tutorial Assignment	6
4.5	Project	6
4.5.1	Project group work	7
4.5.2	Project Submission	7
4.6	Final Exam Format	8
4.7	Quality Assurance	8
<u>5</u>	<u>COURSE RESOURCES</u>	<u>8</u>
5.1	Course website	8
5.2	Textbook and readings	8
5.3	Computing work	9
<u>6</u>	<u>COURSE EVALUATION AND DEVELOPMENT</u>	<u>10</u>
<u>7</u>	<u>COURSE SCHEDULE</u>	<u>10</u>

1 STAFF CONTACT DETAILS

Lecturer-in-charge: Chris Carter
Office: Room 404, School of Economics
Telephone Number: 02 9385 9696
Email: chris.carter@unsw.edu.au
Consultation Times: Thursday 2-5 pm

2 COURSE DETAILS

2.1 Teaching Times and Locations

Lectures start in Week 1 (to Week 12): There is one 2-hour lecture and one 1-hour tutorial class per week.

Time: Fridays 11:00am - 1:00pm

Location: Colombo Theatre A

Each student must 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 first your tutor about these matters.

Tutorials start in Week 2 (to Week 13). A full list of tutorials, times and tutors will be on the Course Website.

2.2 Units of Credit

The course is worth 6 units of credit.

2.3 Summary of Course

This course extends econometric modelling using linear regression to cover nonlinear models such as logit and probit, regression methods for forecasting, and an introduction to the treatment of endogeneity (e.g. instrumental variable estimation). Special emphasis will be placed on the process and potential pitfalls of conducting and evaluating applied econometric research. The course will equip students with the necessary knowledge to be able to conduct their own econometric research using typical economic data.

2.4 Course Aims and Relationship to Other Courses

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

The primary objective of the course is to provide a solid theoretical and practical foundation for interpretation of empirical evidence in economics. The course therefore has two components: econometric theory and “Hands-on” experience.

This course is offered as part of the economics stream in the B.Com and B.Econ degrees. It represents the second in a sequence of econometrics courses designed to equip students with knowledge of the key econometric tools and methods expected of an applied economist. A prerequisite for this course is ECON2206. It aims to build on basic theories and knowledge learnt in ECON2206.

2.5 Student Learning Outcomes

The Course Learning Outcomes are what you should be able to DO by the end of this course if you participate fully in learning activities and successfully complete the assessment items.

The Learning Outcomes in this course also help you to achieve some of the overall Program Learning Goals and Outcomes for all undergraduate students in the Business School. Program Learning Goals are what we want you to BE or HAVE by the time you successfully complete your degree (e.g. 'be an effective team player'). You demonstrate this by achieving specific Program Learning Outcomes - what you are able to DO by the end of your degree (e.g. 'participate collaboratively and responsibly in teams').

For more information on the Undergraduate Program Learning Goals and Outcomes, see Part B of the course outline.

The following table shows how your Course Learning Outcomes relate to the overall Program Learning Goals and Outcomes, and indicates where these are assessed (they may also be developed in tutorials and other activities):

Program Learning Goals and Outcomes		Course Learning Outcomes	Course Assessment Item
<i>This course helps you to achieve the following learning goals for all Business School undergraduate students:</i>		<i>On successful completion of the course, you should be able to:</i>	<i>This learning outcome will be assessed in the following items:</i>
1	Knowledge	<p>Apply a range of econometric models and tools that are useful when dealing with discrete dependent variables.</p> <p>Model and interpret data with the problems of omitted variables, endogenous regressors, nonstationarity and selection bias, problems that are prevalent in most economic data.</p> <p>Use regression models to forecast future values.</p> <p>Use STATA for econometric modelling.</p>	<ul style="list-style-type: none"> • Tutorial Work • Project • Final Exam
2	Critical thinking and problem solving	<p>Make informed decisions about the model building process and the relevance of theoretical models in conducting applied work.</p> <p>Critically evaluate empirical research.</p>	<ul style="list-style-type: none"> • Tutorial Work • Project • Final Exam
3a	Written communication	Construct written work which is logically and professionally presented.	<ul style="list-style-type: none"> • Tutorial Work • Final Exam

3b	Oral communication	Not specifically addressed in this course.	
4	Teamwork	Work collaboratively to complete a task.	<ul style="list-style-type: none"> • Project
5a.	Ethical, environmental and sustainability considerations	Identify and assess ethical considerations in problems in economics and business.	<ul style="list-style-type: none"> • Exam
5b.	Social and cultural awareness	Formulate economic and business interactions in analytical terms and analyse them using tools provided by the theory.	<ul style="list-style-type: none"> • Exam

3 LEARNING AND TEACHING ACTIVITIES

3.1 Approach to Learning and Teaching in the Course

The philosophy underpinning this course and its Teaching and Learning Strategies (3.2 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 in a broad set of topics.

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. We also discuss common problems that arise in most economic data.

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 various fields.

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 STATA will be used.

3.2 Learning Activities and Teaching Strategies

The examinable content of the course is defined by the references given in the Lecture Schedule, the content of Lectures, and the content of the Tutorial Program.

Lectures

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

Tutorials

The object of the tutorials is to discuss various approaches to, and issues associated with the assigned exercises and topics covered in the course. Each week a document will be posted 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. Tutorials are an integral component of the course; attendance and participation in your tutorial is crucial for your successful completion of the course.

Out-of-Class Study

While students may have preferred individual learning strategies, it is important to note that most learning will be achieved outside of class time. Lectures can only provide a structure to assist your study, and tutorial time is limited.

Discussion Forum

A Discussion Forum will operate on the Course website. Tutors will monitor the discussion and answer questions when needed.

Learning strategies

While students may have preferred individual learning strategies, it is important to note that most learning will be achieved outside of class time. Lectures can only provide a structure to assist your study, and tutorial time is limited.

- Prior to attending a lecture, read the assigned readings for the lecture. Also 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 Applied Econometric Methods website.
- Attend the lecture. The lecture notes form the basis for the lecture. Key concepts will be emphasised and demonstrated through worked examples.
- Complement your lecture notes with the assigned readings and ask questions from the lecturer or your tutor if some issues are still unclear.
- 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. Some of the tutorial questions have been taken from past exam papers. Tutors will work through the assigned tutorial questions each week.
- Attempt additional problems from the end-of-chapter questions in the textbook. Many of the tutorial and examination questions have a similar structure to the textbook questions. By attempting additional questions, you are able to test your own knowledge and, through practice and experience, improve your understanding of the material.

4 ASSESSMENT

4.1 Formal Requirements

To be eligible for a passing grade in this course, students must:

- Achieve a composite mark of at least 50 out of 100;
- AND
- Make a satisfactorily attempt at ALL assessment tasks. This means attendance at 80% of tutorials (9 out of 12) and a mark of at least 40% in all assessment items.

4.2 Assessment Details

Assessment Task	Weighting	Length	Due Date
Assignments	25%	See 4.4 below	Week 6 and Week 10, 12.5% each
Project	25%	See 4.5 below	Week 13
Final Exam	50%	2 hours	University Exam Period
Total	100%		

4.3 Tutorial Participation

No marks are awarded for tutorial attendance. However, a record of attendance at tutorials will be kept. **Students should note that 80%** attendance is required by UNSW and Business School rules. In certain circumstances, such as where a request for special consideration is made in relation to assessment items, tutorial attendance will be taken into account in determining your final assessment or whether special consideration is granted.

Attendance at 9 of 12 tutorials will be deemed as meeting the requirement. Students must sign on by 10 minutes from the start of tutorial to qualify as 'in attendance'. Signing on for another student will be treated as misconduct. If, owing 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, you are required to attend your usual tutorial class at least 9 times during the session. This allows for occasional absence due to minor illness and other reasons, hence special consideration applications will not reduce this requirement.

If, owing 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, you are required to attend your usual tutorial class at least 9 times during the session. This allows for occasional absence due to minor illness and other reasons, hence special consideration applications will not reduce this requirement.

The tutor will check your attempts to answer tutorial questions. These are not part of the assessments but will be kept on records in case you require special consideration. It will also give the lecturer in charge an idea on your progress during the semester in case of a failing grade in the final exam. Students should also note that, in certain

circumstances, such as where a request for special consideration is made in relation to final examination, tutorial attendance will be taken into account in determining your final assessment or whether special consideration is granted.

4.4 Assignments

In order to review your progress, written answers for pre-specified questions will be collected during **week 6** and **week 10** tutorials.

The assignments will be marked and handed back as promptly as possible. Written answers must be neatly presented. Pages must be stapled and the student name and number must be indicated. More details on the assignments will be provided in class and on the website.

Students should submit their **OWN individual** assignments.

The purpose of the assignments is to test knowledge and understanding of econometric concepts, methodology and interpretation of results and the ability to apply econometric reasoning in solving a realistic problem. It will also provide a self-test of how you are doing in the course.

Submission Procedure for Tutorial Assignment

You must submit 1 hard copy of the assignment to your tutor at the start of the tutorial hour of the week the assignment is due.

If you fail to submit your paper to your tutor in the appropriate tutorial you will be given a mark of zero.

Assignments are checked for plagiarism through Turnitin. In addition to the hard copy of the tutorial assignment, **you must also submit an electronic copy** to the course website by 6pm on Friday of Week 6 and Week 10. Instructions will be available on the course website. Browse and upload a copy of your document - do not paste text. **Note: your hard copy and your electronic copy must be identical, and you will not be eligible for credit until they have both been handed in.**

No late submissions will be accepted. Special consideration does not apply to tutorial assignments.

Employment obligations or holiday plans of any kind are not acceptable reasons for missing the submission deadline of the tutorial assignments.

4.5 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 have chosen from a list of pre-assigned topics to analyse. The results of the analysis will be presented in the form of a report.

Questions and issues related to the project will be discussed in lectures and will form part of the weekly tutorial questions. Note that although the questions specific to the project can be discussed with the lecturer and the tutors, specific answers will not be provided as these will form part of the assessable document. The document must be typewritten and stapled. Student name and number must be clearly indicated on the cover page.

4.5.1 Project group work

Students shall work together on the project and teams of up to a **maximum of 4 students** shall submit a joint project.

More details about the project group work will be given in your second tutorial in Week 3. Group allocations will be finalised during your tutorials of Week 6.

There is a requirement for students to present joint project assignments and students **MAY NOT** choose to submit individual project assignments.

A cover sheet for the project will be posted on the course website. The group members are required to complete a peer assessment sheet for the project. It is your responsibility to resolve any workload among the group members. The peer assessment sheet will be used to assess each member's contribution to the project. In the event of a big discrepancy between group members' contribution, the mark allocated to each member will be an average weighted by their peers' assessment.

4.5.2 Project Submission

A hard copy of your project must be handed in to the ECON3208 course assignment box (Ground Floor, outside of the Western Lobby of the UNSW Business School) by 6pm on **Friday 2nd June 2017** (end of week 13). Only ONE submission per group is required. Do not use plastic sheets or binders. Do not submit loose-leaf sheets of paper. Simply attach the completed cover sheet that will be provided, and staple the pages together. **Check that the names and student IDs of each group member have been completed on the cover page.**

In addition to the hard copy of the project, **you must also submit an electronic copy** to the course website by 6pm on **Friday 2nd June 2017**. Only ONE online submission per group is required. Instructions will be available on the course website. Browse and upload a copy of your document - do not paste text. **Note: your hard copy and your electronic copy must be identical, and you will not be eligible for credit until they have both been handed in.**

All electronic copies of essays will be checked for plagiarism on the Turnitin software into which they are uploaded. See notes on Plagiarism below and also note that the Turnitin software will automatically check against all other assignments submitted. Plagiarism will lead to heavy penalty.

Additional instructions on submission of the project will be available on the website. You should keep a copy of all work submitted for assessment as well as the returned marked assignments.

Late submissions: a penalty of 20% of the value of the project will be deducted for each day (24 hours) or part thereof past the deadline unless an extension is granted. This penalty will apply if **either** the hard or the electronic copy of the project is late

4.6 Final Exam Format

A **two** hour final examination will be held during the University's final examination period. It will cover material from the entire course. Examples of previous exam questions will be provided and the format of the exam will be discussed in the lectures.

The purpose of the final examination is to assess knowledge of econometric concepts, methodology and interpretation of results relating to the models reviewed in class. It is designed to test your learning and understanding of both the theoretical and empirical aspects of different econometric techniques discussed, as outlined in 3.2.

Applications for special consideration for the final exam must be lodged online through myUNSW within 3 working days of the assessment (Log into myUNSW and go to My Student Profile tab > My Student Services channel > Online Services > Special Consideration). Then submit the originals or certified copies of your completed Professional Authority form ([pdf - download here](#)) and any supporting documentation to Student Central.

4.7 Quality Assurance

The Business School is actively monitoring student learning and quality of the student experience in all its programs. A random selection of completed assessment tasks may be used for quality assurance, such as to determine the extent to which program learning goals are being achieved. The information is required for accreditation purposes, and aggregated findings will be used to inform changes aimed at improving the quality of Business School programs. All material used for such processes will be treated as confidential and will not be related to course grades.

5 COURSE RESOURCES

5.1 Course website

The website for this course is on UNSW Moodle at: <http://moodle.telt.unsw.edu.au>

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.

5.2 Textbook and readings

The textbook for this course is:

Wooldridge, J.M. (2016), *Introductory Econometrics: A Modern Approach*, 6th ed. South-Western.

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.

Another text recommended for the course is:

Stock, J.H. and M.W. Watson (2015), Introduction to Econometrics, Updated 3rd ed. Addison-Wesley.

Although Stock and Watson (2015) is not a required text, the reading list below includes chapters from the text. The material is similar to that provided in Wooldridge, but sometimes different styles or approaches in explaining the same material will be more helpful to individual students. Both texts will be available in the Open Reserve Section of the library. Also they will be available for purchase from the bookstore.

5.3 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 the final grade, cannot be successfully completed without using econometric software. Furthermore, some exam questions will ask you to interpret various generic outputs and you will need experience analysing and interpreting outputs to answer the questions appropriately.

The default econometric software is Stata. Assigned computer work may be done in the computing labs; alternatively, you can obtain a personal copy of the Stata and install it on your own PC. To purchase your own copy, you will need to fill out a form and pay the price of the version of Stata you choose to buy. For more information on Stata prices in Australia, see: <http://www.survey-design.com.au/buygradplan.html>
Notes: In all cases, the installation CD includes PDF of manuals. Small Stata can handle only up to 99 variables x 1200 observations. These prices are for the most recent version of Stata which is version 14.

There are lots of resources and support for Stata on the web. Particularly useful are the following websites:

- For general help, browse through: <http://www.ats.ucla.edu/stat/stata/> You can work through a tutorial at: <http://data.princeton.edu/stata/>
- For help on getting started: <http://www.stata.com/capabilities/session.html>
- For examples based on the Wooldridge textbook: <http://fmwww.bc.edu/gstat/examples/wooldridge/wooldridge.html>

The manual: A.C. Acock, "A Gentle Introduction to Stata", 4th edition, Stata Press, 2014 is an additional reference for further help.

Note that students **do not need to buy** their own copy of Stata and can choose to conduct their computing work on campus in the computer labs. Also, it is possible to complete the course using other software such as SHAZAM, SAS or E-Views; however, EXCEL will not be sufficient. Tutorial answers and general support for student queries will be given for Stata only.

6 COURSE EVALUATION AND DEVELOPMENT

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 myExperience Survey Tool is one of the ways in which student evaluative feedback is gathered. You are strongly encouraged to take part in the feedback process.

7 COURSE SCHEDULE

The schedule given overleaf 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 needs of the class. Further reading material may be introduced in due course. In the following, W refers to Wooldridge (2016) while S&W refers to Stock and Watson (2015). The references to parts of earlier chapters in Wooldridge (2016), especially those chapters already covered in ECON 2206 are not indicated. Students are encouraged to review the relevant material from ECON 2206 as we progress through the course.

Note: Additional readings will be assigned during class and posted on the website.

Week	Date	Topics	Readings
1	27 February	Review of Topics in Regression Analysis Categorical regressors No tutorials	W: Ch. 1-19 S&W: Ch.1-3 W: Ch 2:5
2	6 March	Discrete Dependent variables: The Probit and Logit Tutorials begin	W: Ch 17 and Appendix B S&W: Ch. 11
3	13 March	Limited Dependent Variables: Censored and Truncated Estimation	W: Ch 17 and Appendix B S&W: Ch. 11
4	20 March	(Limited Dependent Variables: Inference and testing	W: Ch 17 and Appendix B S&W: Ch. 11
5	27 March	Instrumental Variable Estimation: Omitted Variables/Two Stage Least Squares	W: Ch 15 S&W: Ch. 9 and 12
6	03 April	Instrumental Variable Estimation: Testing for Endogeneity /Overidentification	W: Ch 15 S&W: Ch. 9 and 12
Assignment 1			
7	10 April	No Lectures (Easter Friday is 14 April) Tutorials only	
Mid-semester break: Friday 14 – Saturday 22 April inclusive			
8	24 April	Instrumental Variable Estimation: Errors in Variables Problem Simultaneous Equations	W: Ch 15 and 16 S&W: Ch. 9 and 12
9	1 May	Time Series: Distributed lag models/Spurious regression I	W: Ch 10,11,12,18 S&W: Ch. 12
10	8 May	Time Series: Distributed lag models/Spurious regression II	W: Ch 10,11,12,18 S&W: Ch. 12
Assignment 2			
11	15 May	Time Series: Cointegration and Error Correction Models	W: Ch 18
12	22 May	Panel Data Analysis	W: Ch. 13 S&W: Ch 10
13	29 May	No Lectures Tutorials only	
Project			