UNSW Business School

School of Economics

ECON3203

Econometric Theory and Methods

Course Outline

Semester 2, 2017

Course-Specific Information

The Business School expects that you are familiar with the contents of this course outline. You must also be familiar with the Course Outlines Policies webpage which contains key information on:
- Program Learning Goals and Outcomes
- Academic Integrity and Plagiarism
- Student Responsibilities and Conduct
- Special Consideration
- Student Support and Resources

This webpage can be found on the Business School website:
https://www.business.unsw.edu.au/degrees-courses/course-outlines/policies

Table of Contents

1   STAFF CONTACT DETAILS

Lecturer-in-charge: Robert Kohn
Location: Room 446 UNSW Business School
Phone: 9385 2150
Email: r.kohn@unsw.edu.au
Consultation Times: Wednesdays 11am-12.30pm or by appointment

1.1   Communications with staff
You should feel free to contact me about any academic matter. However, I strongly encourage you to make enquiries about the subject material during the lectures or tutorials or during consultation time. Discussion of course subject material will not be entered into via lengthy emails.

Email correspondence on administrative matters (e.g. advising inability to attend tutorial) will be responded to within 48 hours, but not over weekends. Please note that the lecturer has no advance notice of the date and time of the exam (the subject of many emails).

Please email me through my regular email address rather than Moodle.

2   COURSE DETAILS

2.1   Teaching Times and Locations

Lectures start in Week 1 (to Week 13). There are three scheduled teaching hours per week in a single block from **4pm to 7pm**. There is a lecture for the first two hours. The third hour will be either a lecture or a one-hour lab session or tutorial. There is a 10 minute break after each hour.
Location of Lecture: CLB4
Location of Lab: Quad Lab 1, K-E15-1043 (6 pm – 7 pm)
I have also booked quad Lab 1 on Wednesday 5 pm – 6 pm in case extra sessions are needed.

2.2   Units of Credit
The course is worth 6 units of credit.
There is no parallel teaching in this course.

2.3   Summary of Course
The course provides unifying methods for estimation, inference and computation for a variety of single and multiple equation econometric models and gives some theoretical justification for the methods. The course emphasises the links between the theory for econometric models, the computations required for inference, and the application of the models to real examples. Being equipped with this knowledge will enable students to conduct a very broad range of relatively sophisticated econometric modelling tasks.

2.4   Aims and Relationship to Other Courses

2.4.1   Aims
The course will give students an understanding of econometric theory and methods at an intermediate level. The methods and theory will be useful in applied economics and

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financial econometrics. By this I mean that you will learn about the methodology, you will understand the theory and ideas behind the methodology, and you will learn how to apply the methods to data using the Stata computer package. By the end of the course you should be able to start reading the empirical economics and finance literatures.

The assignment work to be handed in will train you to express econometric ideas clearly and concisely. For some of the assignment work, the students will be expected to write reports that summarize the essence of the findings and their importance, with analytical details presented in an appendix.

The assignments will be carried out singly or in groups of two or three. The reason for allowing you to work in groups is that you can learn from each other and work cooperatively. I will indicate the maximum number of students allowed for each assignment. I WILL NOT ALLOCATE STUDENTS INTO GROUPS FOR THE PURPOSE OF WORKING JOINTLY ON AN ASSIGNMENT AND IT IS EACH STUDENT'S RESPONSIBILITY TO TRY AND FIND OTHERS TO WORK WITH.

Students will learn to analyse data and report results based on the evidence at hand and report the appropriate uncertainty in the results. The emphasis will be on students carrying out analyses at an intermediate level.

2.4.2 Relationship to other courses

The course will develop ideas from first principles, but students are expected to have knowledge of elementary econometrics and have analytical skills and training equivalent to those of the prerequisite course ECON3209. Students should have some familiarity with matrix algebra and an understanding of probability distributions and estimation. The course will give students sound preparation for courses that do applied econometrics as well as a sound basis for doing honours.

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 coursework 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. You demonstrate this by achieving specific Program Learning Outcomes - what you are able to DO by the end of your degree.

For more information on Program Learning Goals and Outcomes, see the School's Course Outlines Policies webpage available at
https://www.business.unsw.edu.au/degrees-courses/course-outlines/policies.

The following table shows how your Course Learning Outcomes relate to the overall Program Learning Goals and Outcomes, and indicates where these are assessed:

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Program Learning Goals and Outcomes		Course Learning Outcomes	Course Assessment Item
This course helps you to achieve the following learning goals		*On successful completion of the course, you should be able to:*	*This learning outcome will be assessed in the following items:*
1	Knowledge	Use general econometric and computational methods for tackling econometric problems. Perform model diagnostics to determine whether the model and the estimation approach are appropriate for the data. Have some facility with the mathematics of econometric models in order to develop an intuition for the models. Be proficient at writing Stata code in do file and ado files.	• Assignment. • Problem sets • Mid-session exam • Final exam
2	Critical thinking and problem solving	Assess how well a given model fits the real data and how to improve a model that does fit well. Have some ability to improvise on econometric methods such as the bootstrap to new situations.	• Assignment • Class discussion. • Problem sets • Mid-session exam • Final exam
3a	Written communication	Communicate the results of an econometric analysis in a report that lays out the problem to be solved, a description of the data, the methodology used and the proposed results.	• Students will submit written reports on the assigned work.
3b	Oral communication	Not specifically addressed in this course.	Not specifically assessed.
4	Teamwork	Work collaboratively to complete a task.	Not specifically assessed.
5a.	Ethical, environmental and sustainability considerations	Not specifically addressed in this course.	Not specifically assessed.

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5b.	Social and cultural awareness	Not specifically addressed in this course.	Not specifically assessed.

3 LEARNING AND TEACHING ACTIVITIES

3.1 Approach to Learning and Teaching in the Course

Learning will be through:

- Weekly lectures and tutorial/lab classes.
- The lecture notes that will be available on Moodle. These form the basis of the lectures. My aim (not a guarantee) is to make them available before the class of each particular lecture.
- Assigned reading supplementing the lectures. These consist of additional notes posted on Moodle, readings from chapters in the book as well as material from other sources.
- Problem sets whose solutions will be posted as well as discussed in tutorials.
- Assignments to be handed in and graded. Here you can work in groups of one, two or three.
- Studying for the within-session and final exams.
- Working in groups on assigned work.

3.2 Learning Activities and Teaching Strategies

3.2.1 Lectures

There will be two hours of lectures per week and a tutorial or three hours of lectures. These lectures will provide a broad coverage of the main topics considered in the course. Lectures will introduce and emphasise the course content. They will include explanation of relevant topics and theory together with the use of worked examples to demonstrate the theory in practice. However, the student should not regard their content as exhaustive or full.

It is important for the student to devote a considerable amount of time to private study to achieve an appropriate level of understanding and to practice the different econometric tools introduced. Lectures provide one of the principal means of learning instruction, but it is essential that their contribution be bolstered and supported by other learning resources.

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.

3.2.2 Tutorials

The more you read the more you know, but **the more you practice the more you learn and understand**. So the key to the understanding of this course is problem solving.

There may be a weekly one hour tutorial (after the lecture). Discussion will be based around a sequence of exercise sheets that will be distributed from time to time in the course. You are expected to make a serious attempt at all questions on an exercise sheet before attending the tutorial at which it is discussed. It will not be possible to discuss all the problems set in the allotted time and you should not expect all questions to be solved in depth at the tutorials.

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Business School

The purpose of tutorials is to enable you to raise questions about difficult topics or problems encountered in their studies. *Students must not expect another lecture, but must come prepared with questions of their own.*

Every tutorial, several students may be randomly chosen to discuss his/her attempt to answer the tutorial problems. The aim is to encourage discussion within the classroom and solve the issues you and your classmates have encountered with the problems.

3.2.3 Out-of-Class Study
While you 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.

The recommended textbook for this course is Stock and Watson. You are encouraged to purchase it and use it. My advice to you is, make the book your friend and use the consultation time to come and ask for help understanding what you read.

4   ASSESSMENT

4.0 You must complete the "Working with Academic Integrity" module on your Moodle site, before you hand in any written work.

- You MUST complete the 'Working with Academic Integrity' module AND THE MODULE'S QUIZ, found on your course Moodle site, BEFORE YOU ARE ALLOWED TO SUBMIT ANY WRITTEN ASSESSMENT.
- If your submission is delayed because you did not complete the module and the quiz, you may be liable to late penalties as specified in your course outline.
- Failing to comply with the University rules of Academic integrity may result in serious consequences:
    - All cases of plagiarism (regardless of their severity) ARE recorded with the University Integrity Office University register.
    - Depending on the level of the plagiarism/misconduct, the penalties may include a FAIL grade for the assessment piece, a FAIL grade for the course, or being expelled for serious/repeat offences.

4.1   Formal Requirements
In order to pass this course, you must:
- achieve a composite mark of at least 50 out of 100;
- Make a satisfactory attempt at ALL assessment tasks. This means attendance at **2/3 or more of** both classes and tutorials (8 out of 12) and a mark of **at least** 40% in each assessment item.
- AND also achieve an average mark of at least 50% on the midsession and final exams.

Task	Weighting	Length	Due Date
Assignment	14%		**Week 6 and Week 10**
8 Problem sets	3% x 6+4%x 2 = 26%		
Mid-session exam	20%	1 hour and 30 minutes	**Week 9**

Final Exam	40%	2 hours and 30 minutes	University Exam Period
Total	100%		

4.2 Assignments

4.2.1 Submission Procedure for Assignment
Students must submit 1 hard copy AND 1 electronic copy of their assignment.
The electronic copy is to be submitted to the course website by 9 pm on due date.
Instructions will be available on the website. Browse and upload a copy of your document - do not paste text. Use your student ID in the file name.
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.
The hard copy is to be submitted to submission box by the 9 pm on due date. Do not use plastic sheets or binders. Simply staple the pages together. **Your name and ID** should be on the cover page.

SUBMISSION BOX OPTION

For this course, you should submit your assignments to the School of Economics assignment box, located on the ground floor of the UNSW Australia Business School building, in the West wing by 9 pm on due date.

4.2.2 Late Submission of Assignment
10% of the value of each assignment will be deducted for each day (24 hours) or part thereof which the electronic copy of an assignment is submitted to the course website after the deadline. Assignments submitted more than five days late will not be marked. The weekly assigned problem must be submitted on time. Late submission will result in 0marks.

Late submission will be considered only in extreme circumstances. Any student, who for reasons of **serious illness cannot submit before the submission date**, will need **full and convincing documentation of that illness**, specifically a valid medical certificate which covers the period 4 days prior to the submission deadline. In cases where students have applied for special consideration, assignments must still be submitted within five days of the submission date or they will not be marked.

For information on Special Consideration please refer to the Business School's Course Outlines Policies webpage. Applications for special consideration for late submission must be provided to the Lecturer-in-charge within 3 days of the submission date.

Special consideration will only allow a waiver of part of the late penalty: one day's penalty for each two days of illness. Students should also note that satisfactory performance in the course to that time, including attendance at tutorials, will be taken into account by the Lecturer-in-charge in deciding whether to approve an application for consideration.

Employment obligations or holiday plans of any kind are not acceptable reasons for absence from any test/examination.

Applications for special consideration must be **lodged online through myUNSW within 3 working days of the assessment** (Log into myUNSW and go to My Student

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Profile tab > My Student Services channel > Online Services > Special Consideration). Then submit the originals or certified copies of your supporting documentation and a completed Professional Authority form (pdf - download here) to Student Central.

4.3 Within Session Exam

There will be a mid-session exam in week 9. The exam will be 90 minutes in length. The exam will cover material introduced in the first 8 weeks. Details of time and place will be advised on the course website.

There will be **NO supplementary tests** offered for the mid-session exam. You should make every effort to take the mid-session exam. Students who fail to attend the examination will need to apply for Special Consideration. For information on Special Consideration please refer to the Business School's Course Outlines Policies webpage.

In cases of serious illness, students will need full and convincing documentation of that illness. Students who are found to be genuinely too ill to have attended the exam will have their mark in the final exam re-weighted to include the mark reserved for the missed test. In all other cases of non-attendance students will receive a grade of zero. Employment obligations or holiday plans of any kind are not acceptable reasons for absence from any test/examination.

Applications for special consideration 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 supporting documentation and a completed Professional Authority form (pdf - download here) to Student Central.

4.4 Final Exam Format

A sample exam in a similar format as the final exam will be put up on Course website in Week 13. Students should note that, given changes in the course content, past exam papers for this subject may be misleading. As outlined in 3.2 above all material covered in the lectures, assignments and tutorials is examinable. In particular, the final exam may examine material from the whole course.

4.5 Protocol for viewing final exam scripts

The UNSW Business School has set a protocol under which students may view their final exam script. Please check the protocol here.

4.6 Written Assignments

Information will be provided on Moodle regarding the requirements and assessments of the written assignments.

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.

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5   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.

6   COURSE RESOURCES

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

Course Notes
These will be available on Moodle.

Recommended text
- Introduction to Econometrics. J.H. Stock and M.W. Watson. Update, 3rd edition. 2015. Pearson.

Other useful references

Wooldridge, J. M. Introductory Econometrics: a modern approach. 4th edition. This is also a very good book with similar aims to Stock and Watson.

Sheather, S.J. 2009 A Modern Approach to Regression with R. Springer.

Greene, W.H. 2012 Econometric Analysis, 7th edition. Pearson International Books. (this book is probably a little too theoretical for most students).

Efron and Tibshirani (1994) An introduction to the bootstrap. New York: Chapman Hall

Software: The Stata package will be used. It is available in the Quad Labs. You can also purchase your own copy. I will post some details.

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7   COURSE SCHEDULE

Lectures start in Week 1 and finish in Week 13.

Week	Topic	Reference
Week 1 27 July	Review of the linear regression model	Class notes. Stock and Watson: Chapters 4 to 8.
Week 2 3 August	Review of some theory for the linear regression model.	Class notes. Stock and Watson: Chapters 4 to 8.
Week 3 10 August	Review of some theory for the linear regression model. Transformation of the dependent and independent variables in linear regression. Introduction to cross validation to choose the transformation.	Class notes.
Week 4 17 August	Stepwise and all subset regression. Maximum likelihood and BIC for linear regression.	Class notes.
Week 5 24 August	Parametric and nonparametric bootstrap. Simulation.	Class notes. Efron and Tibshirani (1994)
Week 6 31 August	Parametric and nonparametric bootstrap. Binary regression.	Class notes. Efron and Tibshirani (1994)
Week 7 7 September	Binary regression.	Class notes. Stock and Watson: Chapter 11.
Week 8 14 September	Binary regression and multinomial regression.	Class notes. Stock and Watson: Chapter 11.
Week 9 21 September	Midsession exam + lecture	Class notes.
Mid-semester break: 23 September – 2 October inclusive (2 Oct = Labour Day Public Holiday)		
Week 10 5 October	Panel data models.	Class notes. Stock and Watson: Chapter 10
Week 11 12 October	Panel data and longitudinal models.	Class notes. Stock and Watson: Chapter 10
Week 12 19 October	Tutorial to review material. No lecture	4:00 pm to 6:00 pm
Week 13 26 October	Endogeneity	Class notes. Stock and Watson Chapter 12.

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