

THE UNIVERSITY OF
NEW SOUTH WALES



Australian School of Business
School of Economics

ECON4202/6201
ADVANCED ECONOMETRIC THEORY

Course Outline

Semester 2, 2011

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1 STAFF CONTACT DETAILS

Dr. Minxian Yang: Part 1 (Weeks 1-6)

Room: ASB 452; Phone: 9385 3353; Email: M.Yang@unsw.edu.au

Consultation Times: 11:00-13:00, Fridays or by appointment

Dr. Shiko Maruyama: Part 2 (Weeks 7 - 13)

Room: Quad 3116; Phone: 9385 3386; Email: s.maruyama@unsw.edu.au

Consultation Times: Mon, 12:30 - 3:30 pm

1.1 Communications with staff

You should feel free to contact your lecturer about any academic matter. However, for efficiency, all enquiries about the subject material should be made at lectures or tutorials or during consultation time. Discussion of course subject material will not be entered into via lengthy emails.

2 COURSE DETAILS

2.1 Teaching Times and Locations

Lecture/tutorial : Tue 18:00 - 21:00 ASB105

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

Part 1 of this course will introduce some advanced elements in econometrics, including maximum likelihood, GMM, empirical likelihood and simulation techniques. Part 2 will cover structural model based inference. Some of the topics will be based on selected research papers.

2.4 Aims and Relationship to Other Courses

The pre-requisite of this course is ECON3203 (Econometric Theory) or equivalent. This course, building on ECON3203, will introduce advanced elements in econometrics and provide a good background for students to access modern econometric techniques. For MEc students, the pre-requisite is ECON6003 (Econometric Analysis).

2.5 Student Learning Outcomes

On completion of the course, students should be able to:

1. Describe the main features of the econometric methods and their statistical properties covered in the course.

2. Select and implement learned methods to specific problems.
3. Present and interpret the outcome of econometric modelling.
4. Critically appraise empirical studies from the viewpoint of modern econometrics.

Graduate Attributes

Course Learning Outcomes	ASB Graduate Attributes
2, 3, 4	1. Critical thinking and problem solving
1, 2, 3, 4	2. Communication
1, 2, 3, 4	3. Teamwork and leadership
3, 4	4. Social, ethical and global perspectives
1, 2, 3, 4	5. In-depth engagement with relevant disciplinary knowledge
1, 2, 3, 4	6. Professional skills

3 ASSESSMENT

3.1 Formal Requirements

In order to pass this course, you must:

- achieve a composite mark of at least 50 out of 100; and
- make a satisfactory attempt (achieve mark of at least 45 out of 100) at ALL assessment tasks (see below).

3.2 Assessment Details

Assessment Task	Weight	Learning Outcomes assessed	ASB Graduate Attributes assessed	Length	Due Date
Tutorial participation	5% for Part 1	1,2,3,4	1,2,3,5,6		Weekly
Assignments	15% for Part 1 20% for Part 2	1,2,3,4	1,2,5,6	TBA	TBA
Final Exam	60%	1,2,3,4	1,2,5,6	2 hours	University Exam Period
Total	100%				

3.3 Tutorial Participation

Students have opportunities to present their approaches to some of tutorial exercises, to raise/answer questions and to stimulate discussion.

3.4 Assignments

The assignments give students opportunities to demonstrate their understanding of the learned principles/techniques and their ability to independently apply them to practical problems. The due dates of assignments will be announced soon.

3.5 Final Examination

This will be held in the University examination period. The final exam will cover the entire course. The purpose of the final exam is to assess students' overall comprehension of concepts, principles, techniques, their appropriate usage, and their interpretations in data analysis.

4 LEARNING AND TEACHING ACTIVITIES

4.1 Approach to Learning and Teaching in the Course

The philosophy underpinning this course and its Teaching and Learning Strategies are based on Guidelines on Learning that Inform Teaching at UNSW. These guidelines may be viewed at: www.guidelinesonlearning.unsw.edu.au. Specifically, the lectures, tutorials and assessment have been designed to appropriately challenge students and support the achievement of the desired learning outcomes. A climate of inquiry and dialogue is encouraged between students and teachers and among students (in and out of class). The lecturers and tutors aim to provide meaningful and timely feedback to students to improve learning outcome.

4.2 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 emphasise the important concepts and methods of each topic; and to provide relevant examples to which the concepts and methods are applied.

Reading

Each lecture must be supplemented by assigned reading material (relevant sections of the textbook). The aim of reading is to deepen and broaden the major points made in the lectures. Students are advised to complete the reading tasks before attempting tutorial exercises.

Tutorial

Tutorial exercises are provided for students to practise the techniques/knowledge learned from lectures and reading. The weekly tutorial meetings will be used to discuss the problems you encounter in the exercises or/and alternative approaches

to the exercises. To effectively take advantage of the tutorial meetings, students must attempt the relevant tutorial questions prior to attending a tutorial meeting. Student will have opportunities to present her/his work and ideas on exercise questions.

Assignments

Assignments enable students to independently practice on the learned materials and demonstrate their understanding and creativity.

Study 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. A “model” strategy might include:

- i. Accessing the lecture notes/slides from Blackboard before the lecture. This will give you a general idea of the topic area.
- ii. Attendance at lectures. Here the context of the topic in the course and the important elements of the topic are identified. The relevance of the topic will be explained.
- iii. Reading the relevant chapter(s) of the textbook and attending tutorials after attempting the tutorial questions.

5 ACADEMIC HONESTY AND PLAGIARISM

The University regards plagiarism as a form of academic misconduct, and has very strict rules regarding plagiarism. For UNSW policies, penalties, and information to help you avoid plagiarism see: <http://www.lc.unsw.edu.au/plagiarism/index.html> as well as the guidelines in the online ELISE and ELISE Plus tutorials for all new UNSW students:

<http://info.library.unsw.edu.au/skills/tutorials/InfoSkills/index.htm>

To see if you understand plagiarism, do this short quiz:

<http://www.lc.unsw.edu.au/plagiarism/plagquiz.html>

For information on how to acknowledge your sources and reference correctly, see:

<http://www.lc.unsw.edu.au/onlib/ref.html>

For the *ASB Harvard Referencing Guide*, see the ASB Referencing and Plagiarism web page:

<http://www.asb.unsw.edu.au/learningandteaching/studentervices/resources/Pages/referencingandplagiarism.aspx>

In the School of Economics all cases of substantial plagiarism are reported to the Associate Head of School. The following penalties will apply:

- Reduction in marks for the assessment item, including zero;
- Failure in the course [00FL] in extreme cases;
- Other additional penalties in accordance with the UNSW Procedures for Dealing with Student Plagiarism, may be considered in extreme cases;
- All cases will be recorded on the UNSW Plagiarism Central Register

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 Course and Teaching Evaluation and Improvement (CATED) Process is one of the ways in which student evaluative feedback is gathered. You are strongly encouraged to take part in the feedback process.

7 STUDENT RESPONSIBILITIES AND CONDUCT

Students are expected to be familiar with and adhere to university policies in relation to class attendance and general conduct and behaviour, including maintaining a safe, respectful environment; and to understand their obligations in relation to workload, assessment and keeping informed.

Information and policies on these topics can be found in the 'A-Z Student Guide': <https://my.unsw.edu.au/student/atoz/A.html>. See, especially, information on 'Attendance and Absence', 'Academic Misconduct', 'Assessment Information', 'Examinations', 'Special Consideration', 'Student Responsibilities', 'Workload' and policies such as 'Occupational Health and Safety'.

7.1 Workload

It is expected that you will spend at least **ten hours** per week studying this course. This time should be made up of reading, research, working on exercises and problems, and attending classes. In periods where you need to complete assignments or prepare for examinations, the workload may be greater.

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.

7.2 Attendance

Your regular and punctual attendance at lectures and seminars 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.

7.3 Keeping Informed

You should take note of all announcements made in lectures, tutorials or on the course web site. From time to time, the University will send important announcements to your university e-mail address without providing you with a paper copy. You will be deemed to have received this information. It is also your responsibility to keep the University informed of all changes to your contact details.

7.4 Special Consideration and Supplementary Examinations

You must submit all assignments and attend all examinations scheduled for your course. You should seek assistance early if you suffer illness or misadventure which affects your course progress.

General Information on Special Consideration:

1. For assessments worth 20% or more, all applications for special consideration must go through UNSW Student Central (<https://my.unsw.edu.au/student/academiclife/StudentCentralKensington.html>) and be lodged within 3 working days of the assessment to which it refers;
2. Applications will not be accepted by teaching staff, but you should notify the lecturer-in-charge when you make an application for special consideration through UNSW Student Central;
3. Applying for special consideration does not automatically mean that you will be granted a supplementary exam;
4. Special consideration requests do not allow lecturers-in-charge to award students additional marks.

ASB Policy on requests for Special Consideration for Final Exams:

The policy of the School of Economics is that the lecturer-in-charge will need to be satisfied on each of the following before supporting a request for special consideration:

1. Does the medical certificate contain all relevant information? For a medical certificate to be accepted, the degree of illness, and impact on the student, must be stated by the medical practitioner (severe, moderate, mild). A certificate without this will not be valid.
2. Has the student performed satisfactorily in the other assessment items? Satisfactory performance would require at least at least 40% in each assessment item specified in the Course Outline and meeting the obligation to have attended 80% of tutorials.
3. Does the student have a history of previous applications for special consideration? A history of previous applications may preclude a student from being granted special consideration.

Special Consideration and the Final Exam:

Applications for special consideration in relation to the final exam are considered by an ASB Faculty panel to which lecturers-in-charge provide their recommendations for each request. If the Faculty panel grants a special consideration request, this will entitle the student to sit a supplementary examination. No other form of consideration will be granted. The following procedures will apply:

1. Supplementary exams will be scheduled centrally and will be held approximately two weeks after the formal examination period. The dates for ASB supplementary exams for session 2, 2011 are:
 - 30 November 2011 – exams for the School of Accounting,
 - 1 December 2011 – exams for all Schools other than Accounting and Economics,
 - 2 December 2011 – exams for the School of Economics.

If a student lodges a special consideration for the final exam, they are stating they will be available on the above dates. Supplementary exams will not be held at any other time.

2. 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 be ignored and only the mark achieved in the supplementary examination will count towards the final grade. Failure to attend the supplementary exam will not entitle the student to have the original exam paper marked and may result in a zero mark for the final exam.

If you are too ill to perform reasonably on the final exam, do not attend the final and apply for a supplementary instead. However granting of a supplementary exam in such cases is not automatic. If a student attends the regular final, s/he is unlikely to be granted a supplementary exam.

The ASB's Special Consideration and Supplementary Examination Policy and Procedures for Final Exams for Undergraduate Courses is available at:
<http://www.asb.unsw.edu.au/currentstudents/resources/forms/Documents/supplementaryexamprocedures.pdf>.

Special consideration and assessments other than the Final exam:

For the application of special consideration to assessment items other than the final exam, refer to the specific policies outlined. The School of Economics does not provide supplementary assessment items other than for the final exam.

7.5 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

7.6 Occupational Health and Safety

UNSW Policy requires each person to work safely and responsibly, in order to avoid personal injury and to protect the safety of others. For more information, see <https://my.unsw.edu.au/student/atoz/OccupationalHealth.html>.

8 STUDENT RESOURCES AND SUPPORT

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

- **ASB Education Development Unit (EDU)** (www.business.unsw.edu.au/edu)
Academic writing, study skills and maths support specifically for ASB students. Services include workshops, online and printed resources, and individual consultations. EDU Office: Room GO7, Ground Floor, ASB Building (opposite Student Centre); Ph: 9385 5584; Email: edu@unsw.edu.au
- **Capturing the Student Voice:** An ASB website enabling students to comment on any aspect of their learning experience in the ASB:

<http://www.asb.unsw.edu.au/currentstudents/resources/studentfeedback/Pages/default.aspx>

- **Blackboard eLearning Support:** For online help using Blackboard, follow the links from www.elearning.unsw.edu.au to *UNSW Blackboard Support / Support for Students*. For technical support, email: itservicecentre@unsw.edu.au; ph: 9385 1333
- **UNSW Learning Centre** (www.lc.unsw.edu.au)
Academic skills support services, including workshops and resources, for all UNSW students. See website for details.
- **Library training and search support services:**
<http://info.library.unsw.edu.au/web/services/services.html>
- **IT Service Centre:** Technical support for problems logging in to websites, downloading documents etc. <https://www.it.unsw.edu.au/students/index.html>
UNSW Library Annexe (Ground floor)
- **UNSW Counselling and Psychological Services**
(<http://www.counselling.unsw.edu.au>)
Free, confidential service for problems of a personal or academic nature; and workshops on study issues such as 'Coping With Stress' and 'Procrastination'.
Office: Level 2, Quadrangle East Wing; Ph: 9385 5418
- **Student Equity & Disabilities Unit** (<http://www.studentequity.unsw.edu.au>) Advice regarding equity and diversity issues, and support for students who have a disability or disadvantage that interferes with their learning. Office: Ground Floor, John Goodsell Building; Ph: 9385 4734

9 COURSE RESOURCES

The website for this course is on Blackboard.

Prescribed textbook:

Green, William H. (2003), *Econometric Analysis*, 5th Edition, Prentice Hall

Reference books:

- [1] Gourieroux, C. and A. Monfor (1989), *Statistics and Econometric Models*,
Vol. 1 and 2, Cambridge University Press
- [2] Hamilton, J.D. (1994), *Time Series Analysis*, Princeton University Press
- [3] Newey, W. K. and D. McFadden (1994), *Large Sample Estimation and Hypothesis Testing*, Handbook of Econometrics, vol. IV, p2113-2245
- [5] Train, K.E. (2002), *Discrete Choice Methods with Simulation*, Cambridge University Press (available on line)

Journal articles:

These will be provided during the course.

10 LECTURE SCHEDULE

In Part 1 (Dr Yang), we will first review some basic facts about statistical inference to build a foundation for more advanced material. Second, we will introduce general inference techniques and the associated asymptotic theory that are frequently used in modern econometric analysis. These include estimation and testing issues in maximum likelihood (ML), quasi ML, generalised method of moments and simulated ML and empirical likelihood (EL). Third, depending on time, we may also discuss some time-series specific topics and some specific issues with ML inference.

In Part 2 (Dr Maruyama), using the foundations that have been put in place in Part 1, we will discuss "model-based estimation", or so-called "structural estimation". The goal of this series of lectures is to try to explore the connections between economics and metrics that give us the name 'econometrics.' Too often purely statistical results are emphasized in the teaching of econometrics. While it is necessary to have a good grounding in statistics and probability theory to do econometrics, these foundations are really only necessary conditions. Econometrics is meant to be a balanced mixture of economic theory, statistical theory, and last but not least, data. An economic model of a phenomenon is required for us to interpret the relationships we observe in the data. In practice, most high-quality applied econometrics exercises that appear in journals are the result of repeated adjustment of the model to the data, the estimator to the model and the data, etc. The goal of this series of lectures (and accompanying homework exercises) is to give you some sense of this process, by discussing a set of diverse papers that we consider good examples of the model-based approach to empirical microeconomics.

Week	Topics	Main Reference
Week 1	brief review on probability theory	Greene: Appendices B, D
Week 2	estimation and inference	Greene: Chapter 16, Appendix C
Week 3	maximum likelihood (ML) method	Greene: Chapter 17
Weeks 4-5	extremum estimators: qML and GMM, simulated ML	Greene: Chapter 18, Train: Chapter 10
Week 6	empirical ML, some time series models	to be supplied in the class
Week 7	constructing structural models	selected articles
Week 8	demand, market power, and welfare	selected articles
Week 9	production function, search	selected articles
Week 10	dynamic models	selected articles
Weeks 12-13	multi-agent: equilibrium, non-equilibrium, and contractual models	selected articles

Note: The above schedule is an approximation. Its order and contents may vary.

11 KEY DATES AND STUDENT RESPONSIBILITIES

It is your responsibility to ensure that:

1. You are recorded by the University as being correctly enrolled in all your courses.
2. You have successfully completed all prerequisite courses. Any work done in courses for which prerequisites have not been fulfilled will be disregarded (unless an exemption has been granted), and no credit given or grade awarded.
3. You abide by key dates:
Monday 18 July is the first day of Semester 2 lectures. **Sunday 24 July** is the last day you can enrol in Semester 2 courses.
Sunday 24 July is the due date for Semester 2 fees.
Wednesday 31 August is the last day for students to discontinue without financial penalty (and the last date to finalise arrangements for FEE-HELP).
Sunday 4 September is the last day to discontinue without academic penalty.
4. You organise your affairs to take account of examination and other assessment dates where these are known. **Be aware that your final examination may fall at any time during the semester's examination period.** The scheduling of examinations is controlled by the University administration. No early examinations are possible. The examination period for Semester 2, 2011, falls between **Friday 28 October** and **Tuesday 15 November**.
5. When the provisional examination timetable is released, ensure that you have no clashes or unreasonable difficulty in attending the scheduled examinations. The final examination timetable for Semester 2 is released in early October.
6. Note that the dates for ASB supplementary exams for Semester 2, 2011 are:
30 November 2011 – exams for the School of Accounting,
1 December 2011 – exams for all Schools other than Accounting and Economics,
2 December 2011 – exams for the School of Economics.

A full list of UNSW Key Dates is located at:

<https://my.unsw.edu.au/student/resources/KeyDates.html>