

MACQUARIE  
UNIVERSITY



FACULTY OF  
BUSINESS AND ECONOMICS

**ECON241**  
**Introductory Econometrics**

**Semester 2, 2010**

*Department of Economics*

**MACQUARIE UNIVERSITY  
FACULTY OF BUSINESS AND ECONOMICS  
UNIT OUTLINE**

|                           |  |
|---------------------------|--|
| <b>Year and Semester:</b> | <b>2010, Semester 2</b>  |
| <b>Unit convenor:</b>     | <b>Chris Heaton</b>  |
| <b>Prerequisites:</b>     | <b>(STAT170 or STAT171) and (ECON110 or ECON111 or BBA103)</b> |
| <b>Credit points:</b>     | <b>3</b>   |

Students in this unit should read this unit outline carefully at the start of semester. It contains important information about the unit. If anything in it is unclear, please consult one of the teaching staff in the unit.

**ABOUT THIS UNIT**

- This unit introduces some basic econometric techniques employed by economists in the analysis of economic relationships. These techniques are also used extensively in marketing and finance. In addition to its role as a basis for programs of study in economics, marketing and finance, the unit is the foundation econometric unit for students who wish to undertake a program of study in applied econometrics. Topics covered will usually include: estimation and hypothesis testing; simple and multiple regression; prediction; the interpretation and evaluation of regression models, including an elementary discussion of nonlinear modelling, heteroscedasticity, auto-correlation, multicollinearity and specification error; the use of categorical or qualitative data in regression models. Emphasis throughout the unit is on the application of econometric techniques and the interpretation of estimated results rather than formal theoretical proofs and derivations.

**TEACHING STAFF**

- Unit Convenor: Chris Heaton, [chris.heaton@mq.edu.au](mailto:chris.heaton@mq.edu.au), Ph: 9850 9921, Rm: E4A-414.
- Deputy Convenor: Roselyne Joyeux, [roselyne.joyeux@mq.edu.au](mailto:roselyne.joyeux@mq.edu.au), Ph: 9850 8586, Rm: E4A-440.
- Teaching Assistant: Julian Inchauspe, [jinchaus@efs.mq.edu.au](mailto:jinchaus@efs.mq.edu.au).

**CONSULTATION TIMES**

The best way to get help with unit material is to post a query on the unit bulletin board. The advantage of the bulletin board is that it is regularly read by all teaching staff in the unit, thereby maximising the chances of getting useful help quickly. Furthermore, it opens the discussion to other students, and provides an accumulated record of problems encountered, and their resolutions, that is beneficial to students and staff alike.

The tutorial program in ECON241 provides exercises for students to work on in class, and also allows time for students to seek help with problems that they are having with the unit material. Since all tutorials are held in the computer laboratories they are an ideal venue for seeking help with problems that are related to computational aspects of the unit.

In the week prior to each of the tests, staff will provide a schedule of consultation hours in their offices during which students are welcome to seek help without making an appointment. The times and venues will be published on the unit website as the unit progresses.

For matters that cannot be resolved by the above means, and for any personal matters, at any time students are welcome to make an appointment to consult with teaching staff in their offices. The best way to make an appointment is to email the relevant staff member, briefly describing the problem for which help is being sought, and indicating your availability over the next few days.

Students should be aware that staff do not have time to provide individual students with extensive one-to-one assistance outside class times. The importance of regular class attendance, participation in online discussions, and private study, cannot be overstated. In particular, students who do not regularly attend class and participate in the unit will find that there is little that staff can do to provide them with meaningful help immediately prior to major assessment tasks.

## **CLASSES**

- There is a single two-hour lecture each week of semester (apart from week 8 which is a long weekend). There is also a tutorial class held in each week apart from week 1. In the weeks for which a test is scheduled, the test will be held during the tutorial class time.
- The timetable for classes can be found on the University web site at: <http://www.timetables.mq.edu.au/>
- Two lecture streams are run simultaneously – a day stream, and an evening stream. Students should attend one of these lecture streams only.
- Students must enrol in a tutorial class during the first two weeks of semester. After this time, class changes will not be permitted. Since all the tests and the submission of the assignment will occur during the tutorial times, it is vital that students are available to attend class at their enrolled time. Cases in which students are unable to attend their enrolled class for an assessment task will be dealt with in accordance with the University's Special Consideration policy.
- While attendance at tutorial classes during non-assessment weeks is not compulsory, attendance will be recorded. Special Consideration applications from students who have not been attending tutorial classes will be unsuccessful.

## REQUIRED AND RECOMMENDED TEXTS AND/OR MATERIALS

- Hill, C. H., Griffiths, W. E. and Lim, G. C. (2008) *Principles of Econometrics* (3<sup>rd</sup> ed.) Wiley. This is the main text used in the unit. It is strongly recommended that students purchase a copy. It may be purchased from the Macquarie University Co-op Bookshop. It is also available in the library.
- Adkins, L. C. (2010) *Using Gretl for Principles of Econometrics* (3<sup>rd</sup> ed.). This book is a free download from <http://www.learneconometrics.com/gretl/ebook.pdf>.
- A list of prescribed reading will be developed on the website as the unit progresses.
- Students should download the Gretl datasets from <http://www.learneconometrics.com/gretl.html>. These are the datasets used in examples and exercises in the above two books.

## TECHNOLOGY USED AND REQUIRED

- The main software package used in ECON241 is Gretl (<http://gretl.sourceforge.net/>). This software is available for use in the E4B computer labs, and may be freely downloaded for use elsewhere. The Microsoft Windows version is available at <http://gretl.sourceforge.net/win32/>. A Mac version is available at <http://gretl.sourceforge.net/osx.html>. Linux users should check their repositories or download the rpm or source from <http://gretl.sourceforge.net/>.
- The use of a spreadsheet will often be helpful for tasks in this unit. For students who don't own or wish to use Microsoft Excel, a free alternative is provided by OpenOffice (<http://www.openoffice.org>).
- Significant use is made of online material in ECON241. The unit material has been designed for the (free) Firefox 3.6 web browser (<http://www.mozilla.com/en-US/firefox/upgrade.html>). Other browsers may display the unit material properly, but this cannot be guaranteed.
- Some of the equations on the website are rendered using the jsMath script. The appearance of these equations may be improved by installing the appropriate Tex fonts (<http://www.math.union.edu/~dpvc/jsMath/download/jsMath-fonts.html>).

## UNIT WEB PAGE

- Course material is available on the learning management system (Blackboard)
- The web page for this unit can be found at:  
[http://www.businessandeconomics.mq.edu.au/for/new\\_and\\_current\\_students/undergraduate/resources/coursework\\_information/undergraduate\\_unit\\_descriptions/economics\\_units/econ241](http://www.businessandeconomics.mq.edu.au/for/new_and_current_students/undergraduate/resources/coursework_information/undergraduate_unit_descriptions/economics_units/econ241)

## LEARNING OUTCOMES

The learning outcomes of this unit are:

1. An understanding of the fundamentals of probability, and their relevance for statistical inference.

2. The ability to construct point and interval estimators for regression parameters.
3. The ability to conduct tests of hypotheses about regression parameters.
4. An understanding of alternative regression specifications.
5. The ability to interpret regression output.
6. Familiarity with an econometric software program.

## GRADUATE CAPABILITIES

In addition to the discipline-based learning objectives, all academic programs at Macquarie seek to develop the capabilities the University's graduates will need to develop to address the challenges, and to be effective, engaged participants in their world.

This unit contributes to this by developing the following graduate capabilities:

1. Critical, Analytical and Integrative Thinking
2. Problem Solving and Research Capability
3. Apply economic theories to practical situations or problems
4. Critically evaluate and test competing economic theories, comparing predictions to actual outcomes
5. Build and estimate mathematical models
6. Use estimated models for prediction and evaluation

## TEACHING AND LEARNING STRATEGY

- The unit is taught by lectures, tutorials, homework exercises and online discussion.
- Students are expected to attend all lectures and tutorials and to read the specified references promptly after the relevant lecture. Students should download the datasets that are used in the textbook and work through all the relevant examples in chapters. Students should submit the tutorial and homework exercises and reflect on the feedback provided.

### Approximate Schedule of Topics

| Week | Topics   |
|------|--|
| 1    | Introduction to econometrics. Review of necessary mathematics. |
| 2    | Probability  |
| 3    | Probability  |
| 4    | Probability  |
| 5    | Inference  |
| 6    | Simple regression  |
| 7    | Simple regression  |
| 8    | Long weekend – no lectures                                     |
| 9    | Multiple regression  |
| 10   | Multiple regression  |
| 11   | Heteroscedasticity   |
| 12   | Dynamics and Autocorrelation                                   |
| 13   |  |

### Schedule of Work Submission

| Week | Tutorial/Test   | Homework due |
|------|-----------------|--------------|
| 1    |                 |              |
| 2    | Tutorial 1      |              |
| 3    | Tutorial 2      |              |
| 4    | Diagnostic Test |              |
| 5    | Tutorial 3      |              |
| 6    | Tutorial 4      | Homework 1   |
| 7    | Test 1          | Homework 2   |
| 8    | Tutorial 5      | Homework 3   |
| 9    | Tutorial 6      | Homework 4   |
| 10   | Assignment      | Homework 5   |
| 11   | Tutorial 7      | Homework 6   |
| 12   | Tutorial 8      | Homework 7   |
| 13   | Test 2          | Homework 8   |

#### **RELATIONSHIP BETWEEN ASSESSMENT AND LEARNING OUTCOMES**

There are four types of assessment task in ECON241.

##### The Diagnostic Test

A 45 minute test will be held during the normal tutorial times in week 4. Students must attend the tutorial class at their enrolled time to complete the test. This test is worth 5% of the final grade. It will cover some material from the first three weeks of lectures, and material that is assumed knowledge for the unit. The purpose of the diagnostic test is to identify students who may be deemed at risk of poor performance in ECON241 due to an inadequate understanding of the assumed knowledge. Students will be informed if they are viewed as being at risk of poor performance based on their results in this test. The test will be conducted via Blackboard in the computing laboratories and may involve short answer/computational questions and multiple choice. Students will be provided with their mark via Blackboard within a few days of the completion of the test. Students will be provided with written feedback via the Blackboard system with two weeks of the completion of the test.

##### The Homework

Students will be given 8 homework tasks during the semester. These will be released after the necessary material has been covered in lectures. Each homework exercise is in the form of a short-answer online quiz, and is conducted via the Blackboard system. Questions are chosen randomly by Blackboard. Students may attempt each homework exercise as many times as they wish, up to the submission deadline. Each time an exercise is submitted, the student will receive a mark and some brief feedback. For each homework exercise, only the submission which attracted the highest mark will be used in the calculation of the final grade. The homework exercises are of equal value and contribute a total of 15% towards the final grade. The submission deadlines for the homework assignments are in the following table.

| Homework quiz | Submission deadline   |
|---------------|-----------------------|
| 1             | Noon, Friday, Week 6  |
| 2             | Noon, Friday, Week 7  |
| 3             | Noon, Friday, Week 8  |
| 4             | Noon, Friday, Week 9  |
| 5             | Noon, Friday, Week 10 |
| 6             | Noon, Friday, Week 11 |
| 7             | Noon, Friday, Week 12 |
| 8             | Noon, Friday, Week 13 |

The homework assesses the following learning outcomes.

1. The ability to construct point and interval estimators for regression parameters.
2. The ability to conduct tests of hypotheses about regression parameters.
3. The ability to interpret regression output.

### The Assignment

Students will be given an assignment worth 20% of the final grade. The assignment is due in week 10 and must be submitted during the week 10 tutorial via the Blackboard system. Students must attend the tutorial class at their enrolled time to submit the assignment. A few days after the submission of the assignment, students will be provided with their mark via the Blackboard system. Students will be provided with written feedback via the Blackboard system within two weeks of the submission of the assignment. The following learning outcomes will be assessed in the assignment.

1. The ability to construct point and interval estimators for regression parameters.
2. The ability to conduct tests of hypotheses about regression parameters.
3. An understanding of alternative regression specifications.
4. The ability to interpret regression output.
5. Familiarity with an econometric software program.

### The Other Tests

There are two tests in ECON241. They are conducted in the tutorials in weeks 7 and 13. Each test is worth 30% of the final grade. The tests are each of 45 minutes duration and will be conducted during the tutorial classes. Students must attend the tutorial class in which they enrolled in order to sit the tests. A few days after sitting each test, students will be provided with their marks. Since the purpose of the tests is purely summative, students will not be provided with written feedback. The tests assess the following learning objectives.

1. An understanding of the fundamentals of probability, and their relevance for statistical inference.
2. The ability to construct point and interval estimators for regression parameters.
3. The ability to conduct tests of hypotheses about regression parameters.

4. An understanding of alternative regression specifications.
5. The ability to interpret regression output.
6. Familiarity with an econometric software program.

- Students must be available during the time of their enrolled tutorial to sit the tests (including the diagnostic test) and submit the assignment. Students who do not attend at the appropriate time and place for an assessment task will earn a mark of zero for that task. The only exception to this rule will be students who apply for, and are granted, Special Consideration.
- Late homework submissions will not be accepted. At the time of the submission deadline, the highest mark recorded by each student to date for that homework task will be recorded. The homework task will remain accessible to students for revision, but the results of any subsequent attempts will not be used in the calculation of the grade. The only exception to this rule will be students who apply for, and are granted, Special Consideration.
- There is no final examination in ECON241.

#### **ACADEMIC HONESTY**

The nature of scholarly endeavour, dependent as it is on the work of others, binds all members of the University community to abide by the principles of academic honesty. Its fundamental principle is that all staff and students act with integrity in the creation, development, application and use of ideas and information. This means that:

- all academic work claimed as original is the work of the author making the claim
- all academic collaborations are acknowledged
- academic work is not falsified in any way
- when the ideas of others are used, these ideas are acknowledged appropriately.

Further information on academic honesty can be found in the Macquarie University Academic Honesty Policy at [http://www.mq.edu.au/policy/docs/academic\\_honesty/policy.html](http://www.mq.edu.au/policy/docs/academic_honesty/policy.html)

#### **GRADES**

Please refer to relevant Bachelor Degree rule in the Handbook of Undergraduate Studies. Students should note that their final grade cannot necessarily be determined from their aggregate of assessment marks since some scaling may occur. Furthermore, students should note that their SNG is an indication of their ranking within the grade that they are awarded. It is not the sum of the marks awarded for each assessment task.

## **GRADING APPEALS AND FINAL EXAMINATION SCRIPT VIEWING**

If, at the conclusion of the unit, you have performed below expectations, and are considering lodging an appeal of grade and/or viewing your final exam script please refer to the following website which provides information about these processes and the cut off dates in the first instance. Please read the instructions provided concerning what constitutes a valid ground for appeal before appealing your grade.

[http://www.businessandconomics.mq.edu.au/for/new\\_and\\_current\\_students/undergraduate/admin\\_central/grade\\_appeals](http://www.businessandconomics.mq.edu.au/for/new_and_current_students/undergraduate/admin_central/grade_appeals).

## **SPECIAL CONSIDERATION**

The University is committed to equity and fairness in all aspects of its learning and teaching. In stating this commitment, the University recognises that there may be circumstances where a student is prevented by unavoidable disruption from performing in accordance with their ability. A special consideration policy exists to support students who experience serious and unavoidable disruption such that they do not reach their usual demonstrated performance level. The policy is available at: [http://www.mq.edu.au/policy/docs/special\\_consideration/procedure.html](http://www.mq.edu.au/policy/docs/special_consideration/procedure.html)

## **STUDENT SUPPORT SERVICES**

Macquarie University provides a range of Academic Student Support Services. Details of these services can be accessed at <http://www.student.mq.edu.au>.

[Individual Unit Convenors may wish to add Unit/ Faculty specific support eg BESS, Room, PAL, E4B Consultation Room.]

## **IT CONDITIONS OF USE**

Access to all student computing facilities within the Faculty of Business and Economics is restricted to authorised coursework for approved units. Student ID cards must be displayed in the locations provided at all times.

Students are expected to act responsibly when utilising University IT facilities. The following regulations apply to the use of computing facilities and online services:

- Accessing inappropriate web sites or downloading inappropriate material is not permitted. Material that is not related to coursework for approved unit is deemed inappropriate.
- Downloading copyright material without permission from the copyright owner is illegal, and strictly prohibited. Students detected undertaking such activities will face disciplinary action, which may result in criminal proceedings.

Non-compliance with these conditions may result in disciplinary action without further notice.

Students must use their Macquarie University email addresses to communicate with staff as it is University policy that the University issued email account is used for official University communication.