



# ECON241

## Introductory Econometrics

S1 Day 2017

*Dept of Economics*

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## General Information

Unit convenor and teaching staff

Unit Convenor

Roselyne Joyeux

[roselyne.joyeux@mq.edu.au](mailto:roselyne.joyeux@mq.edu.au)

Contact via [roselyne.joyeux@mq.edu.au](mailto:roselyne.joyeux@mq.edu.au)

E4A 440

Tuesday 1-2pm

Lecturer

Fazeel Mohamed Jaleel

[fazeel.jaleel@mq.edu.au](mailto:fazeel.jaleel@mq.edu.au)

Contact via [fazeel.jaleel@mq.edu.au](mailto:fazeel.jaleel@mq.edu.au)

E4A444

TBA

Tutor and Teaching Assistant

Patrick Vu

[patrick.vu@mq.edu.au](mailto:patrick.vu@mq.edu.au)

Contact via [patrick.vu@mq.edu.au](mailto:patrick.vu@mq.edu.au)

447C

TBA

Tutor

Ha Vu

[ha.vu@mq.edu.au](mailto:ha.vu@mq.edu.au)

Contact via [ha.vu@mq.edu.au](mailto:ha.vu@mq.edu.au)

E4A429

TBA

Tutor

Ariadne Katsouras

[ariadne.katsouras@mq.edu.au](mailto:ariadne.katsouras@mq.edu.au)

Contact via [ariadne.katsouras@mq.edu.au](mailto:ariadne.katsouras@mq.edu.au)

TBA

Tutor

Mohamed Haniffa

[mohamed.haniffa@mq.edu.au](mailto:mohamed.haniffa@mq.edu.au)

Contact via [mohamed.haniffa@mq.edu.au](mailto:mohamed.haniffa@mq.edu.au)

TBA

Credit points

3

Prerequisites

15cp at 100 level or above including ((STAT150 or STAT170 or STAT171 or PSY122) and (ECON110 or ECON111))

Corequisites

Co-badged status

Unit description

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. 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; and 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.

## Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at <https://www.mq.edu.au/study/calendar-of-dates>

## Learning Outcomes

On successful completion of this unit, you will be able to:

Understand and apply the key statistical concepts, including probability distributions, parameters and estimators, the sampling distribution of an estimator, point and interval estimation, and hypothesis testing.

Specify, estimate and interpret a regression model. Summarise and interpret the estimation results, and draw valid inferences utilising hypothesis tests.

Critically evaluate the assumptions of a classical (or standard) regression model and the consequences of violation of the assumptions.

Demonstrate familiarity with an econometric software program.

## Assessment Tasks

Name	Weighting	Hurdle	Due
<u>Tutorial Exercises</u>	20%	No	Week 4,6,11 and 13.
<u>Homeworks</u>	20%	No	Week 5, 9,11 and 13
<u>Major Assignment</u>	20%	No	Week 10, Friday 4pm.
<u>Class Test</u>	40%	No	Week 12

### Tutorial Exercises

Due: **Week 4,6,11 and 13.**

Weighting: **20%**

Tutorials begin in week 2. In each tutorial class, students will be given a set of exercises based on the work recently covered in lectures. The answers to the questions must be submitted prior to the end of the class. Students may attempt the exercises up to **two times** during the class. Students are permitted to consult reference material, and to discuss the questions with the tutor and with other students but not to copy other students work. The tutorial questions and solutions will be published during the week following each class. Since we need to provide each enrolled student with a working computer, students are only permitted to attend the class in which they are registered. The tutorial exercises require a total of approximately 10 hours of work.

Four out of 12 tutorials will be assessed and the **best 3** counted toward your final grade. The assessable tutorials will be held in weeks 4, 6, 11, and 13 and they are worth 15% (5% each) of your final grade. Students are required to attend assessable tutorial classes. Students who do not submit an assessable tutorial exercise in class will be awarded a mark of zero for that particular exercise and will not be permitted to attempt it for credit at a later date. In cases where a student submits a satisfactory Disruption to Studies application for missing more than 1 assessable tutorial, which explains the serious disruption for a specific quiz, and if the student's prior attendance and performance is satisfactory, a student's tutorial marks will be re-weighted.

The remaining 5% of the tutorial work assessment grade will be awarded for tutorial participation.

Students must bring their Macquarie University campus card to each tutorial and display it in the holder provided. Failure to display a campus card may result in a student being refused access to the tutorial.

On successful completion you will be able to:

- Understand and apply the key statistical concepts, including probability distributions, parameters and estimators, the sampling distribution of an estimator, point and interval estimation, and hypothesis testing.

- Specify, estimate and interpret a regression model. Summarise and interpret the estimation results, and draw valid inferences utilising hypothesis tests.
- Critically evaluate the assumptions of a classical (or standard) regression model and the consequences of violation of the assumptions.
- Demonstrate familiarity with an econometric software program.

## Homeworks

Due: **Week 5, 9,11 and 13**

Weighting: **20%**

Students will be given four homework exercises each worth 5% of the final grade (20% in total). It is intended that students will work on the homework exercises independently. The homework exercises are due in weeks 5, 9, 11 and 13 and must be submitted via the iLearn system. The exercises must be submitted online prior to the due date and time. Each exercise may be submitted up to **two times** prior to the deadline and each attempt has a time limit of **two hours**.

Only the **final submission** will be marked. Each homework exercise will require approximately 2 hours of work. At the time of the submission deadline, the mark recorded for the final submission by each student for that homework task will be recorded. A few days after the submission of a homework exercise, students will be provided with their mark via the iLearn system.

Students who have not submitted the task prior to the deadline will be awarded a mark of 0 for the task. The only exception to this rule will be students who apply for, and are granted, Disruption to Studies. The homework task will be made accessible to those students at a later date set by the unit convenor.

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.

Students who have clearly colluded will be awarded a mark of zero, will not be permitted to resubmit, and may be reported to the University Disciplinary Committee for further action.

On successful completion you will be able to:

- Understand and apply the key statistical concepts, including probability distributions, parameters and estimators, the sampling distribution of an estimator, point and interval estimation, and hypothesis testing.
- Specify, estimate and interpret a regression model. Summarise and interpret the estimation results, and draw valid inferences utilising hypothesis tests.
- Critically evaluate the assumptions of a classical (or standard) regression model and the consequences of violation of the assumptions.
- Demonstrate familiarity with an econometric software program.

## Major Assignment

Due: **Week 10, Friday 4pm.**

Weighting: **20%**

The assignment is due in week 10, 4 pm Friday May 19th. The assignment assesses the understanding of the topics covered in lectures up to the submission deadline and is worth 20% of the final grade. Students must submit both a hard copy and an electronic copy of their assignment. The hard copy must be submitted to the Business and Economics Student Services (BESS, E4B106) and the electronic copy must be through iLearn. Instructions and information about the requirements of the assignment will be provided in class and on iLearn.

Students who have clearly colluded will be awarded a mark of zero, will not be permitted to resubmit, and will be reported to the University Disciplinary Committee for further action. Late assignments will be accepted, but will incur a penalty of 10% of the total available marks made from the total awarded mark for each 24 hour period late or part thereof. Students who do not submit an assignment will be awarded a mark of zero for that assessment. This penalty does not apply to cases in which an application for disruption of studies is made and approved.

On successful completion you will be able to:

- Understand and apply the key statistical concepts, including probability distributions, parameters and estimators, the sampling distribution of an estimator, point and interval estimation, and hypothesis testing.
- Specify, estimate and interpret a regression model. Summarise and interpret the estimation results, and draw valid inferences utilising hypothesis tests.
- Critically evaluate the assumptions of a classical (or standard) regression model and the consequences of violation of the assumptions.
- Demonstrate familiarity with an econometric software program.

## Class Test

Due: **Week 12**

Weighting: **40%**

There is one class test in ECON241. It will be conducted in lectures in Week 12. The test is worth 40% of the final grade. The test will be of 80 minutes duration and will be conducted during the lectures. Since the purpose of the test is purely summative, students will not be provided with written feedback. Students must be available during the time of the lecture class to sit the class test. The only exception to this is if a student could not do the test because of documented illness or unavoidable disruption. In these circumstances this student may wish to consult the University's Disruption to Studies policy- [http://www.mq.edu.au/policy/docs/disruption\\_studies/policy.html](http://www.mq.edu.au/policy/docs/disruption_studies/policy.html)

If a student satisfies the Disruption to Studies policy they will be required to complete a supplementary assessment task two weeks after the date of the original assessment and this could take the form of an oral task.

On successful completion you will be able to:

- Understand and apply the key statistical concepts, including probability distributions, parameters and estimators, the sampling distribution of an estimator, point and interval estimation, and hypothesis testing.
- Specify, estimate and interpret a regression model. Summarise and interpret the estimation results, and draw valid inferences utilising hypothesis tests.
- Critically evaluate the assumptions of a classical (or standard) regression model and the consequences of violation of the assumptions.
- Demonstrate familiarity with an econometric software program.

## **Delivery and Resources**

- There is a single two-hour lecture each week of semester There is also a tutorial class held in each week, beginning in week 2.
- Two lecture streams are offered. Students should attend one of these lecture streams.
- The timetable for classes can be found on the University web site at:  
<http://www.timetables.mq.edu.au/>
- Students must register in a tutorial class during the first two weeks of semester. After this time class changes will not be permitted. It is vital that students are available to attend the tutorial class at their registered time. Because of resource constraints, and the fact that four out of 12 tutorial work are assessable, students will **not** be generally permitted to attend a tutorial class other than the one in which they are registered.
- It will be assumed that students regularly attend lectures. Students are also required to attend all tutorial classes.

### **Required and Recommended texts and/or materials**

- Hill, C. H., Griffiths, W. E. and Lim, G. C. (2011) Principles of Econometrics (4th 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.

#### *Additional useful textbooks.*

- Gujarati, D.N., and Porter, D.C. (2010) Essentials of Econometrics (4th ed.) McGraw-Hill.

- Stock, J.H., and Watson, M.W. (2007) Introduction to Econometrics (2nd ed.) Addison-Wesley
- Adkins, L. C. (2010) Using Gretl for Principles of Econometrics (3rd 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>).
- The unit material has been designed for the (free) Firefox web browser (<http://www.mozilla.com/en-US/firefox/upgrade.html>). Other browsers may display the unit material properly, but this cannot be guaranteed.
- Course material is available on the learning management system (iLearn).
- Students are strongly advised to check the unit web page regularly for new material and announcements.

## **Unit Schedule**

The unit is taught by lectures, tutorials, homework exercises and quizzes.

Students are expected to attend all lectures and to read the specified references after the relevant lecture. They are expected to attend all tutorials and required to submit four assessable tutorials out of 12 tutorials. Students should download the datasets that are used in the textbook and work through all the relevant examples in chapters. Students should submit the tutorials, homework exercises and quizzes and reflect on the feedback provided.

### Weekly Teaching Schedule



Week	Topics
1	Introduction, Review of necessary mathematics.
2	Probability
3	Probability
4	Inference
5	Simple regression (Part I)
6	Simple regression (Part II)
7	Prediction, goodness of fit and modelling issues
8	Multiple regression
9	Multiple regression
10	Heteroscedasticity
11	Dynamics and Autocorrelation (Part I)
12	Class Test
13	Dynamics and Autocorrelation (Part II)

*Assessment Tasks and Due Dates*

Weeks	Assessable Tutorial	Homework Exercises	Assignment	Class Test
1				
2				
3				
4	Tutorial 3			
5		Exercise 1		
6	Tutorial 5			
7				

8				
9		Exercise 2		
10			Assignment	
11	Tutorial 10	Exercise 3		
12				Class Test
13	Tutorial 12	Exercise 4		

## Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central](#). Students should be aware of the following policies in particular with regard to Learning and Teaching:

Academic Honesty Policy [http://mq.edu.au/policy/docs/academic\\_honesty/policy.html](http://mq.edu.au/policy/docs/academic_honesty/policy.html)

Assessment Policy [http://mq.edu.au/policy/docs/assessment/policy\\_2016.html](http://mq.edu.au/policy/docs/assessment/policy_2016.html)

Grade Appeal Policy <http://mq.edu.au/policy/docs/gradeappeal/policy.html>

Complaint Management Procedure for Students and Members of the Public [http://www.mq.edu.au/policy/docs/complaint\\_management/procedure.html](http://www.mq.edu.au/policy/docs/complaint_management/procedure.html)

Disruption to Studies Policy (in effect until Dec 4th, 2017): [http://www.mq.edu.au/policy/docs/disruption\\_studies/policy.html](http://www.mq.edu.au/policy/docs/disruption_studies/policy.html)

Special Consideration Policy (in effect from Dec 4th, 2017): <https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policies/special-consideration>

In addition, a number of other policies can be found in the [Learning and Teaching Category](#) of Policy Central.

## Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: [https://students.mq.edu.au/support/student\\_conduct/](https://students.mq.edu.au/support/student_conduct/)

## Results

Results shown in *iLearn*, or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in [eStudent](#). For more information visit [ask.mq.edu.au](http://ask.mq.edu.au).

## Student Support

Macquarie University provides a range of support services for students. For details, visit <http://students.mq.edu.au/support/>

### Learning Skills

Learning Skills ([mq.edu.au/learningskills](http://mq.edu.au/learningskills)) provides academic writing resources and study strategies to improve your marks and take control of your study.

- [Workshops](#)
- [StudyWise](#)
- [Academic Integrity Module for Students](#)
- [Ask a Learning Adviser](#)

## Student Services and Support

Students with a disability are encouraged to contact the [Disability Service](#) who can provide appropriate help with any issues that arise during their studies.

## Student Enquiries

For all student enquiries, visit Student Connect at [ask.mq.edu.au](http://ask.mq.edu.au)

## IT Help

For help with University computer systems and technology, visit [http://www.mq.edu.au/about\\_us/offices\\_and\\_units/information\\_technology/help/](http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/).

When using the University's IT, you must adhere to the [Acceptable Use of IT Resources Policy](#). The policy applies to all who connect to the MQ network including students.

## Graduate Capabilities

### Creative and Innovative

Our graduates will also be capable of creative thinking and of creating knowledge. They will be imaginative and open to experience and capable of innovation at work and in the community. We want them to be engaged in applying their critical, creative thinking.

This graduate capability is supported by:

### Learning outcomes

- Specify, estimate and interpret a regression model. Summarise and interpret the estimation results, and draw valid inferences utilising hypothesis tests.
- Demonstrate familiarity with an econometric software program.

### Assessment tasks

- Tutorial Exercises

- Homeworks
- Major Assignment

## Discipline Specific Knowledge and Skills

Our graduates will take with them the intellectual development, depth and breadth of knowledge, scholarly understanding, and specific subject content in their chosen fields to make them competent and confident in their subject or profession. They will be able to demonstrate, where relevant, professional technical competence and meet professional standards. They will be able to articulate the structure of knowledge of their discipline, be able to adapt discipline-specific knowledge to novel situations, and be able to contribute from their discipline to inter-disciplinary solutions to problems.

This graduate capability is supported by:

### Learning outcomes

- Understand and apply the key statistical concepts, including probability distributions, parameters and estimators, the sampling distribution of an estimator, point and interval estimation, and hypothesis testing.
- Specify, estimate and interpret a regression model. Summarise and interpret the estimation results, and draw valid inferences utilising hypothesis tests.
- Critically evaluate the assumptions of a classical (or standard) regression model and the consequences of violation of the assumptions.
- Demonstrate familiarity with an econometric software program.

### Assessment tasks

- Tutorial Exercises
- Homeworks
- Major Assignment
- Class Test

## Critical, Analytical and Integrative Thinking

We want our graduates to be capable of reasoning, questioning and analysing, and to integrate and synthesise learning and knowledge from a range of sources and environments; to be able to critique constraints, assumptions and limitations; to be able to think independently and systemically in relation to scholarly activity, in the workplace, and in the world. We want them to have a level of scientific and information technology literacy.

This graduate capability is supported by:

### Learning outcomes

- Understand and apply the key statistical concepts, including probability distributions, parameters and estimators, the sampling distribution of an estimator, point and interval

estimation, and hypothesis testing.

- Specify, estimate and interpret a regression model. Summarise and interpret the estimation results, and draw valid inferences utilising hypothesis tests.
- Critically evaluate the assumptions of a classical (or standard) regression model and the consequences of violation of the assumptions.
- Demonstrate familiarity with an econometric software program.

## **Assessment tasks**

- Tutorial Exercises
- Homeworks
- Major Assignment
- Class Test

## **Problem Solving and Research Capability**

Our graduates should be capable of researching; of analysing, and interpreting and assessing data and information in various forms; of drawing connections across fields of knowledge; and they should be able to relate their knowledge to complex situations at work or in the world, in order to diagnose and solve problems. We want them to have the confidence to take the initiative in doing so, within an awareness of their own limitations.

This graduate capability is supported by:

## **Learning outcomes**

- Understand and apply the key statistical concepts, including probability distributions, parameters and estimators, the sampling distribution of an estimator, point and interval estimation, and hypothesis testing.
- Specify, estimate and interpret a regression model. Summarise and interpret the estimation results, and draw valid inferences utilising hypothesis tests.
- Critically evaluate the assumptions of a classical (or standard) regression model and the consequences of violation of the assumptions.
- Demonstrate familiarity with an econometric software program.

## **Assessment tasks**

- Tutorial Exercises
- Homeworks
- Major Assignment
- Class Test

## Research and Practice

- This unit uses research from both internal and external sources.
- This unit gives students practice in applying research findings in tutorials and homework exercises.

## Changes since First Published

Date	Description
22/02/2017	made changes to the start of tutorials from week 1 to week 2