



# ECON361

## Economic and Business Forecasting

S1 Day 2016

*Dept of Economics*

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Macquarie University has taken all reasonable measures to ensure the information in this publication is accurate and up-to-date. However, the information may change or become out-dated as a result of change in University policies, procedures or rules. The University reserves the right to make changes to any information in this publication without notice. Users of this publication are advised to check the website version of this publication [or the relevant faculty or department] before acting on any information in this publication.

## General Information

Unit convenor and teaching staff

Unit Convenor

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E4A-414

Consultation time: TBA via iLearn

Tutor

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Consultation time: TBA via iLearn

Credit points

3

Prerequisites

27cp including (6cp at 200 level including (ECON241 or STAT272))

Corequisites

Co-badged status

Unit description

This unit provides an introduction to quantitative economic forecasting. The broad topics covered include exponential smoothing, ARIMA and vector autoregression. The emphasis of the unit is on the practical aspects of forecasting. Theory is developed only to the point necessary to understand the forecasting procedures introduced in the unit. Students are given regular forecasting exercises throughout the unit. Practical work is carried out using an econometric software package. The objective of the unit is to produce graduates who understand the nature of forecasting problems and can produce sound forecasts for use in business and economic analysis.

## 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:

Estimate measures of forecast accuracy and rank forecasting models.

Seasonally adjust and detrend data.

Implement smoothing models and ARIMA models to produce forecasts.

Basic literacy in the R programming language.

## Assessment Tasks

Name	Weighting	Due
<u>Tutorials</u>	10%	Weeks 2-4,6, 8-13 in tutorials
<u>Assignment</u>	30%	7am on Monday in Week 12
<u>Final Examination</u>	60%	University Examination Period

### Tutorials

Due: **Weeks 2-4,6, 8-13 in tutorials**

Weighting: **10%**

#### Submission

The tutorial exercises must be attempted and submitted during the tutorial class in which the student is officially enrolled each week. The exercises will not be made available for assessment at any other time. Each tutorial assesses work that has been covered in previous lectures, with an emphasis on the most recent work. Each week, students will be told which topics will be covered in the next tutorial, and are expected to prepare prior to the class by reviewing the lecture material, reading the relevant texts, etc. Students are permitted to re-attempt tutorial questions that they have incorrectly answered any number of times during the class, but a penalty of 20% will apply to each question, each time that each question is re-attempted (i.e. the maximum available marks from each question decays linearly as the number of attempts increases). The best 8 out of 10 tutorial results will contribute a total of 10% to the final grade.

#### Extensions

No extensions will be granted. Students who have not submitted the task prior to the deadline will be awarded a mark of zero for the task, except for cases in which the University determines that the failure to submit on time was due to a serious and unavoidable disruption. In such cases, the student will be awarded a mark equivalent to the arithmetic mean of the marks awarded for the tutorials that were submitted on time.

What is required to complete the unit satisfactorily

Students must demonstrate satisfaction of the learning objectives assessed in each particular

tutorial exercise. Students are welcome to consult reference material during the tutorial, and may discuss the work with other students and the tutor. However, the responses that students submit must reflect their own ideas and work. In particular, students who submit the answers of other students, without making any contribution to the derivation of the answers, will be deemed to have violated the Academic Honesty Policy. 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:

- Estimate measures of forecast accuracy and rank forecasting models.
- Seasonally adjust and detrend data.
- Implement smoothing models and ARIMA models to produce forecasts.
- Basic literacy in the R programming language.

## Assignment

Due: **7am on Monday in Week 12**

Weighting: **30%**

The assignment assesses work covered in lectures up to the submission deadline.

**Submission** The assignment must be submitted via the relevant links in iLearn prior to the deadline. No other form of submission is acceptable. The assignment may be submitted once only. Submission instructions and information about the requirements of the assignments will be provided in class and on iLearn. Following the submission deadline for the assignment, a number of students may be required to present an oral defence of their submitted work. Students who are selected to present an oral defence will be contacted via their Macquarie University student email account (at short notice) and must attend at the time and place allocated to them. In the oral defence, the student may be asked to work through the relevant assignment in the presence of teaching staff from the unit, and to explain how he or she completed the assignment. The student may also be asked supplementary questions. The student will be assigned a mark for the oral defence that will override the mark that was awarded for the submitted version of the assignment. Verbal feedback will be provided at the time. A student who does not attend an oral defence that he or she was selected to present will be awarded a mark of zero for that task. Students must read their Macquarie University email at least every 24 hours. Failure to read the relevant email cannot will not be accepted as a valid excuse for not attending an oral defence.

**Extensions** No extensions will be granted. Late assignments will be accepted up to 48 hours after the submission deadline. There will be a deduction of 35% of the total available marks made from the total awarded mark for each 24 hour period or part thereof that the submission is late (for example, 25 hours late in submission – 70% penalty). For cases in which the University determines that the failure to submit on time was due to a serious and unavoidable disruption, the penalty will not apply. In such cases, Special Consideration will be granted and will be

determined by the Unit Convener on a case-by-case basis in accordance with the *Disruption to Studies Outcomes Schedule* of the *Disruption to Studies Policy*.

What is required to complete the unit satisfactorily For the assignment, students will be awarded a mark that reflects their level of achievement indicated by the grade descriptors and the cut-off marks for the SNG described in the Grading Policy. For example, a mark of less than 50% would indicate a failure to demonstrate achievement of the learning outcomes under consideration; a mark of greater than 84% would indicate the achievement of deep and critical understanding; etc. It is intended that students will work on the assignments independently. Students who collude or otherwise violate the Academic Honesty Policy will face further action which may result in failure in the unit (with an SNG of zero) and more severe penalties.

On successful completion you will be able to:

- Implement smoothing models and ARIMA models to produce forecasts.
- Basic literacy in the R programming language.

## Final Examination

Due: **University Examination Period**

Weighting: **60%**

The final examination is of 2 hours duration and will be held in the official Macquarie University examination period. All students must attend the examination at the time and place designated in the University Examination Timetable. The examination will include short answer questions that require both calculation and written responses. Details of the structure of the final examination will be provided when available during the semester.

Students who do not attend the final examination will be awarded a grade of FA (Failed Absent). The only exceptions to this are cases in which the University determines that the failure to attend the examination was due to a serious and unavoidable disruption. In such cases, the affected student will be required to sit a supplementary examination at the place and time nominated by the University.

On successful completion you will be able to:

- Estimate measures of forecast accuracy and rank forecasting models.
- Seasonally adjust and detrend data.
- Implement smoothing models and ARIMA models to produce forecasts.

## Delivery and Resources

### Classes

- There is a single 2 hour lecture class per week. There is also a 1 hour tutorial class held in each of weeks 2 to 4, 6 and 8 to 13 (there are no classes in Week 5 due to the Easter

long weekend or in Week 7 due to the Anzac Day long weekend). Students must enrol in a tutorial class at the start of the semester.

- Students will not be permitted to change tutorial classes after COB on Friday in Week 2. Because of resource constraints, and the fact that tutorial work is assessable, students will generally not be permitted to attend a tutorial class other than the one in which they are enrolled.
- It will be assumed that students attend all lectures and tutorials. Students who do not attend class will not be provided with assistance outside class time to help them catch up.
- The timetable for classes can be found on the University web site at: <http://www.timetables.mq.edu.au/>

## Required and Recommended Texts and/or Materials

Students are not required to purchase a textbook for ECON361. A detailed reading list will be on the unit website, and all references are available via the Library eReserve. Students are expected to read this material.

## Technology Used and Required

- The main software used in ECON361 is the R programming language. The Windows and Mac versions may be freely downloaded from <http://www.r-project.org/>. Linux users may find R in their distribution's repositories, but since this version is likely to be old, it is recommended that students follow the instructions on the R website to add an R mirror to their repositories.
- Students will need to use a spreadsheet for some parts of this unit. Microsoft Excel will be provided in the computing laboratories and must be used in the tutorials. The assignments may require the submission of an spreadsheet which must be in a recent Excel format.

## Unit Web Page

The web page for this unit can be found at: <http://ilearn.mq.edu.au>.

## Teaching and Learning Strategy

ECON361 is taught by lectures, set reading, tutorial exercises (Assessed Coursework), an assignment, class discussion and online discussion. Students are expected to attend lectures, read the relevant material after the lecture, attend tutorial classes, submit tutorial exercises regularly, and participate in online discussions and class discussions.

## Unit Schedule

Week	Topic	Tutorials	Work Due
Week 1	Introduction		
Week 2	Forecast evaluation	Tutorial 1	
Week 3	Time series decomposition	Tutorial 2	
Week 4	Exponential smoothing	Tutorial 3	
Week 5	No classes (long weekend)		
Week 6	Exponential smoothing	Tutorial 4	
Week 7	No classes (long weekend)		
Week 8	ARIMA	Tutorial 5	
Week 9	ARIMA	Tutorial 6	
Week 10	ARIMA	Tutorial 7	
Week 11	ARIMA	Tutorial 8	
Week 12	ARIMA	Tutorial 9	Assignment
Week 13	Combined forecasts	Tutorial 10	

Note: This schedule is approximate and is subject to change according to the rate of progress made.

## 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)

**New Assessment Policy in effect from Session 2 2016** [http://mq.edu.au/policy/docs/assessment/policy\\_2016.html](http://mq.edu.au/policy/docs/assessment/policy_2016.html). For more information visit [http://students.mq.edu.au/events/2016/07/19/new\\_assessment\\_policy\\_in\\_place\\_from\\_session\\_2/](http://students.mq.edu.au/events/2016/07/19/new_assessment_policy_in_place_from_session_2/)

Assessment Policy prior to Session 2 2016 <http://mq.edu.au/policy/docs/assessment/policy.html>

Grading Policy prior to Session 2 2016 <http://mq.edu.au/policy/docs/grading/policy.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 [http://www.mq.edu.au/policy/docs/disruption\\_studies/policy.html](http://www.mq.edu.au/policy/docs/disruption_studies/policy.html) *The Disruption to Studies Policy is effective from March 3 2014 and replaces the Special Consideration Policy.*

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).

## **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 the 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**

Macquarie University uses the following grades in coursework units of study:

- HD - High Distinction
- D - Distinction
- CR - Credit
- P - Pass
- F - Fail



Grade descriptors and other information concerning grading are contained in the Macquarie University Grading Policy which is available at:

<http://www.mq.edu.au/policy/docs/grading/policy.html>

## Grading Appeals and Final Examination Script Viewing

During the semester, if you wish to query a mark awarded to you for a particular assessment task then you should email the Unit Convenor within 1 week of the marked task being returned to you. Your email should clearly state the nature of your query and any grounds you have for suspecting that an error has been made in the calculation of your mark. If, at the conclusion of the unit, you have performed below expectations, and are considering lodging an appeal of grade, 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 grounds for appeal before appealing your grade.

[http://www.businessandeconomics.mq.edu.au/current\\_students/undergraduate/forms\\_and\\_processes/grade\\_appeals](http://www.businessandeconomics.mq.edu.au/current_students/undergraduate/forms_and_processes/grade_appeals)

## 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

### 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

- Estimate measures of forecast accuracy and rank forecasting models.
- Seasonally adjust and detrend data.
- Implement smoothing models and ARIMA models to produce forecasts.
- Basic literacy in the R programming language.

#### Assessment tasks

- Tutorials
- Assignment
- Final Examination

### 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 outcome

- Estimate measures of forecast accuracy and rank forecasting models.

#### Assessment task

- Assignment

### 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**

- Estimate measures of forecast accuracy and rank forecasting models.
- Seasonally adjust and detrend data.
- Implement smoothing models and ARIMA models to produce forecasts.
- Basic literacy in the R programming language.

## **Assessment tasks**

- Tutorials
- Assignment
- Final Examination

## **Changes since First Published**

<b>Date</b>	<b>Description</b>
24/02/2016	Vector autoregression removed from learning outcomes.