



# STAT150

## Quantitative Business Decisions

S1 Evening 2015

*Dept of Statistics*

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#### **Disclaimer**

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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Credit points

3

Prerequisites

Corequisites

Co-badged status

Unit description

Data is the foundation of sound business decisions. In this unit you will learn the fundamentals of analysing, solving and communicating business problems using quantitative information.

The unit will cover the statistical and mathematical concepts that provide a foundation for the study of and professional practice in business and economics. The focus will be on tools and approaches that are used every day in business. Problems and examples will be drawn from current real-world experience.

## 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:

- organise and summarise data graphically and numerically
- use appropriate techniques to analyse data
- use Excel to manipulate and analyse data
- draw conclusions from the results of data analysis
- write and present a report based on the results of a statistical analysis

apply statistical techniques to problems arising from diverse fields of research

## Assessment Tasks

Name	Weighting	Due
<u>4 Hurdle Tests</u>	10%	Week 2, 4, 7 and 13
<u>Class Test</u>	15%	Practical class Week 8
<u>Assignment and presentation</u>	15%	Monday Week 11 by 5pm
<u>Final Examination</u>	60%	University Examination Period

### 4 Hurdle Tests

Due: **Week 2, 4, 7 and 13**

Weighting: **10%**

The Hurdle Tests are online quizzes that will be made available on iLearn at least two weeks prior to the due dates (Fridays at midnight in the relevant weeks). Students are allowed an unlimited number of attempts at each test until the deadline. The pass mark is indicated on each hurdle test. Inability to pass a test without help indicates that students should visit the lecturer in their consultation hours. The highest score obtained will count towards the final grade. Each time a student attempts a test a new version of it will be generated. The quizzes are designed to give students an opportunity to practice theoretical, mechanical and interpretational aspects of statistics. Each test is worth 2.5%. Extensions will only be granted for cases in which an application for disruption to studies has been approved.

On successful completion you will be able to:

- use appropriate techniques to analyse data
- use Excel to manipulate and analyse data
- draw conclusions from the results of data analysis
- apply statistical techniques to problems arising from diverse fields of research

### Class Test

Due: **Practical class Week 8**

Weighting: **15%**

The Class Test will be held in a students' practical class in week 8. The class test must be taken in the practical class that a student is registered in. Students must bring their student ID. Failure to supply ID will mean exclusion from the test. A standard calculator may be taken into the class test (mobile phones and other devices with calculator apps are not permitted). No other material (apart from writing equipment) will be permitted in the class test. A supplementary class test will be given for students with an approved disruption to studies application.

On successful completion you will be able to:

- use appropriate techniques to analyse data
- draw conclusions from the results of data analysis
- apply statistical techniques to problems arising from diverse fields of research

## Assignment and presentation

Due: **Monday Week 11 by 5pm**

Weighting: **15%**

The Assignment provides students with an opportunity to develop and to apply sound statistical practice as part of a group. It reinforces the concepts covered in lectures and the skills learned from the practical material. This assignment requires students to use Excel to analyse data using appropriate techniques. The assignment must be submitted in the form of a statistical report. Each group member will take charge of a particular aspect of the report and that member is expected to give a short presentation on that part of the report. The assignment will be made available on iLearn at least two weeks prior to the due date. Submission must be via the iLearn turnitin link only and more details will be given in the assignment. Penalties apply for late submissions and failure of a student to contribute to the group report and/or presentation will result in no marks being awarded to that student. Extensions will only be granted for cases in which an application for disruption to studies has been approved. Presentation of reports will be held in tutorials during week 12 and 13.

On successful completion you will be able to:

- organise and summarise data graphically and numerically
- use appropriate techniques to analyse data
- use Excel to manipulate and analyse data
- draw conclusions from the results of data analysis
- write and present a report based on the results of a statistical analysis
- apply statistical techniques to problems arising from diverse fields of research

## Final Examination

Due: **University Examination Period**

Weighting: **60%**

The Final Examination will be a three hour written exam (plus ten minutes reading time) and will be held during the examination period which runs from June 9 to 26, 2015. A page of formulae and relevant Excel output will be included in the final examination. Students will be permitted to take **one A4 sheet (any colour), handwritten on both sides** (using pens and/or pencils) into the final examination. This sheet must be submitted with your final exam paper at the conclusion of the exam. A standard calculator may also be taken into the final examination (mobile phones and other devices with calculator apps are not permitted in the exam). See the week 13 iLearn important information for more details on preparing for the final exam.

The University Examination timetable will be available in draft form approximately eight weeks before the commencement of the examinations and in final form approximately four weeks before the commencement of the examinations at: <http://www.timetables.mq.edu.au/>

Students are advised that it is Macquarie University policy **not** to set early examinations for individuals or groups of students. All students are expected to ensure that they are available until the end of the teaching semester, i.e. the final day of the official examination period.

The only excuse for not sitting an examination at the designated time is because of documented illness or unavoidable disruption. In these special circumstances you may apply for Disruption to Studies via <ask.mq.edu.au>. A supplementary examination will only be granted if the student has been found to have had a significant disruption to studies. If a supplementary examination is granted as a result of the disruption to studies process, the examination will be scheduled approximately two weeks after the conclusion of the official examination period.

Note that there is a University policy regarding requests for special consideration for examinations and the granting of supplementary examinations, which can be found at: [http://students.mq.edu.au/student\\_admin/exams/disruption\\_to\\_studies/](http://students.mq.edu.au/student_admin/exams/disruption_to_studies/).

Students can submit disruption to studies request(s) through the following link: <https://ask.mq.edu.au/>

### **Grading in this Unit**

The final Standardised Numerical Grade (SNG) in Stat150 will be based on students' work during the semester and in the Final Examination. The determination of the final SNG will be based on performance of individual assessment tasks against criteria and standards as detailed in the Grading Policy (see <http://mq.edu.au/policy/docs/grading/policy.html>). Final grades will be awarded on the basis of students' overall performance and the extent to which they demonstrate fulfillment of the learning outcomes listed for this unit. Students must pass the Final Exam to pass the unit.

On successful completion you will be able to:

- use appropriate techniques to analyse data
- draw conclusions from the results of data analysis
- apply statistical techniques to problems arising from diverse fields of research

## **Delivery and Resources**

### **Classes**

Students should enrol in and attend the following classes each week:

- 1 x 2 hour lecture beginning in Week 1 (students enrolled in the iLecture option listen to lectures through the ECHO recordings rather than attending a class)
- 1 x 1 hour compulsory tutorial beginning in Week 2
- 1 x 1 hour compulsory practical beginning in Week 2

The timetable for classes can be found on the University web site at: <http://www.timetables.mq.edu.au>

Students can change their tutorial and practical classes by using eStudent at: <https://student1.mq.edu.au/>

## Required and Recommended Texts and/or Materials

- A standard calculator should be brought to all classes.
- Excel 2013 for Microsoft Windows will be used throughout the course (other versions of Excel should work but ask your tutor or lecturer if it doesn't).

Required Text:

- Business Statistics (Global edition, 3e) by Sharpe, De Veaux and Velleman (ISBN 978-1-292-05869-6) with the MyStatLab key will be used throughout this course and is a required text. This can be purchased in hard copy from the Coop Bookshop or directly from Pearson. The text in e-format with MyStatLab is also available - see iLearn for details.

Many other useful texts are available for additional practice material. A list will be made available on iLearn.

### Technology Used and Required

All course material is delivered through iLearn (which is a version of Moodle). The link may be found at <http://ilearn.mq.edu.au>

## Unit Schedule

WEEK	LECTURE TOPIC	Assessment Due
1	Introduction to statistics	
2	Summarising and displaying data	Hurdle 1 due Friday
3	Summarising and displaying data (continued)	
4	Introduction to distributions: the normal distribution	Hurdle 2 due Friday
5	Sampling distributions and confidence intervals for proportions	
6	Sampling distributions and confidence intervals for means	
	Semester Break	

7	One sample hypothesis test for a population mean	<b>Hurdle 3 due Friday</b>
8	Hypothesis tests for comparing population means	<b>Class Test (held during Practicals)</b>
9	Simple linear regression (Part 1)	
10	Simple linear regression (Part 2)	
11	Hypothesis tests for a population proportion: z-test and chi-squared goodness-of fit	<b>Assignment due by 5pm Monday 18th May</b>
12	Chi-squared test of independence	-
13	Review of STAT150	<b>Hurdle 4 due Friday</b>

## Learning and Teaching Activities

### Lectures

Lectures begin in Week 1. Students should attend one 2-hour session per week. Copies of the lecture slides will be made available via iLearn. Students should print out the lecture slides and bring the printout to lectures. The lectures are also recorded via 'echo360', and can be accessed on iLearn (under Echo Recordings). Students enrolled in the iLecture option are expected to listen to the lecture following one of the face-to-face lectures.

### Tutorials

Tutorials are compulsory and begin in Week 2. Each tutorial is based on work from the previous week's lecture. The aim of tutorials is to practise techniques and understand concepts learned in lectures. Tutorials are designed for students to work together in groups. The emphasis on group work is to explore ideas, devise and ask questions and plan ways to answer them. Tutorial material will be made available via iLearn. Students should print out their tutorial material and bring the printout to their tutorial class each week.

### Practicals

Practical classes are compulsory and begin in Week 2. Every week throughout the semester students will be required to work through practical material that teaches them how to apply the statistical techniques learned during lectures and tutorials by using Excel 13. The weekly practical material is based on work from the previous week's lecture. Practical material, and the required Excel datasets, will be made available via iLearn. Students should print out their practical material (available on iLearn) and bring it to their practical session each week. Students preferring to use their own computers to do the practical work are encouraged to do so.

## Help with STAT150 related administrative matters

For help with STAT150 related administrative matters (such as class enrolment) students should contact Victoria Park, the STAT150 admin officer, via [stat150.admin@mq.edu.au](mailto:stat150.admin@mq.edu.au)

## Staff consultation (office) hours

Members of the Statistics Department have consultation hours each week when they are available to help students enrolled in Introductory Statistics. These consultation hours will be listed on the doors of the Statistics staff located on the 5th floor of E4A. The list will also be available both on iLearn and on the Statistics Department website. You may just walk on in at those times, no appointment necessary.

## Numeracy Centre

The Numeracy Centre exists to help students who are experiencing difficulties with numeracy-based subjects such as STAT150. Any student who lacks the knowledge of mathematics needed for STAT150 is encouraged to seek the help of the Centre, which is located in C5A 225. The Centre offers a number of services including individual help, supplementary workshops that run each week and an opportunity to meet with other students to discuss problems. STAT150 assumes knowledge of high school mathematics. Anyone without this knowledge should take a mathematics unit prior to enrolling in STAT150.

## Computing Laboratories

Excel 13 will be used in practical sessions and for completing assignments. Assignments and quizzes can be completed in the computing labs in E4B. Computing labs now use iLab, so work undertaken must be saved to the iLab desktop and then emailed. Opening hours of computing laboratories during semester: 8am - 10pm Mon-Fri 9am - 5pm Sat-Sun For opening hours during semester breaks, see the notice boards outside the computing laboratories. Look for additional information on the whiteboards in the labs. Please note that computing labs may be booked for classes. Check the timetable on the door of the lab to make sure that the room is free.

## 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.html>

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

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

Grievance Management Policy [http://mq.edu.au/policy/docs/grievance\\_management/policy.html](http://mq.edu.au/policy/docs/grievance_management/policy.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).

## 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://informatics.mq.edu.au/help/>.

When using the University's IT, you must adhere to the [Acceptable Use 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**

- write and present a report based on the results of a statistical analysis
- apply statistical techniques to problems arising from diverse fields of research

### **Assessment tasks**

- Assignment and presentation
- Final Examination

## **Capable of Professional and Personal Judgement and Initiative**

We want our graduates to have emotional intelligence and sound interpersonal skills and to demonstrate discernment and common sense in their professional and personal judgement. They will exercise initiative as needed. They will be capable of risk assessment, and be able to handle ambiguity and complexity, enabling them to be adaptable in diverse and changing environments.

This graduate capability is supported by:

### **Learning outcomes**

- draw conclusions from the results of data analysis
- write and present a report based on the results of a statistical analysis
- apply statistical techniques to problems arising from diverse fields of research

### **Assessment tasks**

- 4 Hurdle Tests
- Assignment and presentation
- Final Examination

## **Commitment to Continuous Learning**

Our graduates will have enquiring minds and a literate curiosity which will lead them to pursue knowledge for its own sake. They will continue to pursue learning in their careers and as they participate in the world. They will be capable of reflecting on their experiences and relationships with others and the environment, learning from them, and growing - personally, professionally and socially.

This graduate capability is supported by:

### **Learning outcome**

- apply statistical techniques to problems arising from diverse fields of research

## Assessment tasks

- 4 Hurdle Tests
- Class Test
- Assignment and presentation
- Final Examination

## 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

- organise and summarise data graphically and numerically
- use appropriate techniques to analyse data
- use Excel to manipulate and analyse data
- draw conclusions from the results of data analysis
- write and present a report based on the results of a statistical analysis
- apply statistical techniques to problems arising from diverse fields of research

## Assessment tasks

- 4 Hurdle Tests
- Class Test
- Assignment and presentation
- 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 outcomes

- use appropriate techniques to analyse data
- use Excel to manipulate and analyse data
- draw conclusions from the results of data analysis
- write and present a report based on the results of a statistical analysis
- apply statistical techniques to problems arising from diverse fields of research

## Assessment tasks

- 4 Hurdle Tests
- Class Test
- Assignment and presentation
- Final Examination

## 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

- use appropriate techniques to analyse data
- use Excel to manipulate and analyse data
- draw conclusions from the results of data analysis
- write and present a report based on the results of a statistical analysis
- apply statistical techniques to problems arising from diverse fields of research

## Assessment tasks

- 4 Hurdle Tests
- Class Test
- Assignment and presentation
- Final Examination

## Effective Communication

We want to develop in our students the ability to communicate and convey their views in forms effective with different audiences. We want our graduates to take with them the capability to read, listen, question, gather and evaluate information resources in a variety of formats, assess, write clearly, speak effectively, and to use visual communication and communication

technologies as appropriate.

This graduate capability is supported by:

### **Learning outcomes**

- organise and summarise data graphically and numerically
- write and present a report based on the results of a statistical analysis
- apply statistical techniques to problems arising from diverse fields of research

### **Assessment tasks**

- Assignment and presentation
- Final Examination

## **Engaged and Ethical Local and Global citizens**

As local citizens our graduates will be aware of indigenous perspectives and of the nation's historical context. They will be engaged with the challenges of contemporary society and with knowledge and ideas. We want our graduates to have respect for diversity, to be open-minded, sensitive to others and inclusive, and to be open to other cultures and perspectives: they should have a level of cultural literacy. Our graduates should be aware of disadvantage and social justice, and be willing to participate to help create a wiser and better society.

This graduate capability is supported by:

### **Learning outcome**

- apply statistical techniques to problems arising from diverse fields of research

### **Assessment tasks**

- 4 Hurdle Tests
- Assignment and presentation
- Final Examination

## **Socially and Environmentally Active and Responsible**

We want our graduates to be aware of and have respect for self and others; to be able to work with others as a leader and a team player; to have a sense of connectedness with others and country; and to have a sense of mutual obligation. Our graduates should be informed and active participants in moving society towards sustainability.

This graduate capability is supported by:

### **Learning outcome**

- apply statistical techniques to problems arising from diverse fields of research

### **Assessment tasks**

- 4 Hurdle Tests

- Assignment and presentation
- Final Examination

## Changes since First Published

Date	Description
09/02/2015	Correction of the unit schedule.