



# STAT150

## Quantitative Business Decisions

S2 Day 2016

*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

Convener

Anne Karpin

[anne.karpin@mq.edu.au](mailto:anne.karpin@mq.edu.au)

Contact via 9850 9617

Australian Hearing Hub level 2

Friday 10am

Petra Graham

[petra.graham@mq.edu.au](mailto:petra.graham@mq.edu.au)

Contact via 9850 6138

Australian Hearing Hub level 2

Wednesday 10am, 11am

Petra Graham

[petra.graham@mq.edu.au](mailto:petra.graham@mq.edu.au)

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

## General Assessment Information

All assessments should be attempted and compulsory classes attended.

The only excuse for missing a class, assessment or the final exam is because of documented illness or unavoidable disruption. In these special circumstances you may apply for Disruption to Studies via [ask.mq.edu.au](http://ask.mq.edu.au). For approved disruption to class tests or final exams a supplementary examination will be given. Supplementary final examinations will be scheduled approximately two weeks after the conclusion of the official examination period in regular business hours only.

Note that there is a University policy regarding Disruption to studies 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/).

## Assessment Tasks

Name	Weighting	Due
<a href="#">Tutorial attendance</a>	0%	Weekly
<a href="#">Class Test 1</a>	20%	Week 7 Practical Class
<a href="#">Assignment</a>	15%	Week 10 Monday 5pm
<a href="#">Class Test 2</a>	20%	Week 12 Practical Class
<a href="#">Final Examination</a>	45%	University Examination Period

### Tutorial attendance

Due: **Weekly**

Weighting: **0%**

A minimum of 8 out of the 12 tutorials must be attended. Attendance will be taken weekly. Tutorials and practicals begin in week 2.

On successful completion you will be able to:

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

## Class Test 1

Due: **Week 7 Practical Class**

Weighting: **20%**

Class Test 1 will be held in practical classes in week 7. This test must be taken in the practical class in which you are registered. **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

Due: **Week 10 Monday 5pm**

Weighting: **15%**

This assignment provides students with an opportunity to develop and to apply sound statistical practice. 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 will be available on iLearn two weeks before the due date. Submission will be online via iLearn only. More submission details will be given in the assignment and in class. Late submissions will incur penalties consisting of 20% deductions in marks per day. 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:

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

## Class Test 2

Due: **Week 12 Practical Class**

Weighting: **20%**

Class Test 2 will be held in practical classes in week 12. This test must be taken in the practical class in which you are registered. **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

## Final Examination

Due: **University Examination Period**

Weighting: **45%**

The Final Examination will be a two hour written examination (plus ten minutes reading time) and will be held during the examination period which runs from November 14 to December 4, 2016. A page of formulae will be provided with the final exam. Students will be permitted to take **one A4 sheet (any colour), handwritten on both sides** (using pens and/or pencils and highlighters) into the final examination. This sheet may contain any information deemed useful to the student and must be submitted with the 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 area 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.

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
- 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 (or a later version) for Microsoft Windows or Excel 2016 for Mac will be used throughout the unit. Students without one of these versions of Excel can download Excel 2016 (or the whole Office suite) from the University. See the University [Wiki page](#) for details. Please see Petra or Anne during Office Hours for help with installation problems, or visit IT help in the C5C building.

Required Text:

- *Business Statistics STAT150: A Custom Edition for Macquarie University* from *Business Statistics 3rd Edition Global Edition* by Sharpe, De Veaux and Velleman (ISBN 9781488616099). This book, with the MyStatLab key, will be used throughout this unit and is a required text. It can be purchased in hard copy from the Coop Bookshop or directly from Pearson.

## 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 Tasks and Online Quizzes
1	Introduction to statistics	
2	Summarising and displaying data	Online Quiz 1
3	Summarising and displaying data (continued)	
4	Introduction to distributions: the normal distribution	Online Quiz 2

5	Sampling distributions and confidence intervals for proportions	
6	Sampling distributions and confidence intervals for means	
7	One sample hypothesis tests for a population mean	Online Quiz 3 Class Test 1 in practical class
	Semester break	
8	Hypothesis tests for comparing population means	
9	Simple linear regression (Part 1)	
10	Simple linear regression (Part 2)	Assignment due by 5pm Monday
11	Hypothesis tests for a population proportion: z-test and chi-squared goodness-of fit	
12	Chi-squared test of independence	Class Test 2 in practical class
13	Review of STAT150	Online Quiz 4

## 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 are strongly advised to print out the lecture slides and bring these printout to lectures so that they can work through the material thoroughly. The lectures are also recorded via 'echo360', and can be accessed on iLearn (under Echo Recordings). Any student who misses a lecture must work through the Echo recording before he/she will be able to progress to the next lecture.

### 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.

## Online Quizzes: Weeks 2, 4, 7 and 13

Four online quizzes will be available. The quizzes are designed to give students an opportunity to practice theoretical, mechanical and interpretational aspects of statistics. The first quiz, should be attempted in Week 2. It is designed to assess students' ability to cope with the mathematical content of STAT150. The other quizzes, which should be attempted in Weeks 4, 7 and 13 are designed to help students revise and reinforce the concepts covered in lectures, tutorials and practicals, and to help students prepare for class tests and the final exam. Students are allowed an unlimited number of attempts at each test. Each test will open approximately two weeks before its scheduled time. Each time a student attempts a test, a new version of it will be generated. Students who have problems with quiz questions are encouraged to seek help during staff consultation hours, or from the Numeracy Centre.

## 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 are available both on iLearn and on the Statistics Department website. You do not need to make appointments at these times. Just come to the office of whichever staff member is available at that time. The Statistics department is located on level 2 of the Australian Hearing Hub building.

## 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 the assignment. The assignment 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)

**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).

## 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

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

### Assessment tasks

- Tutorial attendance
- Class Test 1
- Assignment

- Class Test 2
- 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
- apply statistical techniques to problems arising from diverse fields of research

### Assessment tasks

- Tutorial attendance
- Class Test 1
- Assignment
- Class Test 2
- 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
- apply statistical techniques to problems arising from diverse fields of research

### Assessment tasks

- Tutorial attendance

- Class Test 1
- Assignment
- Class Test 2
- 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
- apply statistical techniques to problems arising from diverse fields of research

### Assessment tasks

- Tutorial attendance
- Assignment
- Final Examination

## Changes from Previous Offering

### Assessment Tasks and Weightings:

Assessment tasks and weightings have changed significantly for Session 2 2016.

Prior to Session 2 2016, STAT150 assessment tasks consisted of four online Hurdle quizzes (10%), one class test (15%), one assignment (15%) and a 3 hour final examination (60%).

As of Session 2, 2016, there will be no Hurdle quizzes in STAT150. Online quizzes in weeks 2, 4, 7 and 13 are for revision purposes only. Assessment tasks will consist of two class tests worth 20% each (40%), one assignment (15%) and a two hour final examination (45%).

### Required Text:

Prior to Session 2 2016, the required text was *Business Statistics (Global Edition, 3e)* by Sharpe, De Veaux and Velleman (ISBN 9781488607158).

As of Session 2 2016, the required text is *Business Statistics STAT150 A Custom Edition for Macquarie University* from *Business Statistics 3rd Edition Global Edition* by Sharpe, De Veaux and Velleman (ISBN 99781292058696)

## Changes since First Published

Date	Description
03/08/2016	Correct of the text ISBN and update on software availability
31/07/2016	Correction of typographical error in the unit schedule.