# BUSA8000

## Techniques in Business Analytics

Session 2, In person-scheduled-weekday, North Ryde 2022

*Department of Actuarial Studies and Business Analytics*

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# General Information

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| Unit convenor and teaching staff<br>Unit Convenor<br>Lin Han<br>lin.han@mq.edu.au<br><br>Deanna Tracy<br>deanna.tracy@mq.edu.au |
| Credit points<br>10 |
| Prerequisites<br>ECON6034 or ECON634 or admission to MBusAnalytics |
| Corequisites |
| Co-badged status |
| Unit description<br>This unit develops some of the core skills needed for the practice of modern business analytics. Statistical inference and associated statistical computing will be covered along with an introduction to analytical techniques needed for working with both structured and unstructured data. The reporting of the results from quantitative style research will also be studied. |

## 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:

**ULO1:** Articulate the importance and application of data in a variety of contexts.

**ULO2:** Apply methods for handling data in R.

**ULO3:** Implement statistical learning algorithms in R.

**ULO4:** Apply appropriate statistical methods/models, and perform analysis on various types of data and interpret the result.

**ULO5:** Understand and apply the principles of statistical inference.

# General Assessment Information

**Late Assessment Submission Penalty (written assessments)**

Unless a Special Consideration request has been submitted and approved, a 5% penalty (of the total possible mark) will be applied each day a written assessment is not submitted, up until the 7th day (including weekends). After the 7th day, a grade of '0' will be awarded even if the assessment is submitted. Submission time for all written assessments is set at 11.55pm. A 1-hour grace period is provided to students who experience a technical concern.

For any late submissions of time-sensitive tasks, such as scheduled tests/exams, performance assessments/presentations, and/or scheduled practical assessments/labs, students need to submit an application for Special Consideration.

# Assessment Tasks

| Name | Weighting | Hurdle | Due |
|---|---|---|---|
| Online Quiz 1 | 10% | No | Week 5 |
| Report | 20% | No | Week 7 |
| Online Quiz 2 | 10% | No | Week 10 |
| Final Examination | 60% | No | University Examination Period |

## Online Quiz 1

Assessment Type [1]: Quiz/Test
Indicative Time on Task [2]: 5 hours
Due: **Week 5**
Weighting: **10%**

Students will be given a dataset and required to perform various calculations based on the techniques taught in classes.

On successful completion you will be able to:

- Apply methods for handling data in R.
- Implement statistical learning algorithms in R.

## Report

Assessment Type [1]: Case study/analysis
Indicative Time on Task [2]: 15 hours

Due: **Week 7**
Weighting: **20%**

Students will be presented with a selection of case studies and given a report scope. Details will be provided on iLearn.

On successful completion you will be able to:

- Articulate the importance and application of data in a variety of contexts.
- Apply methods for handling data in R.
- Implement statistical learning algorithms in R.

## Online Quiz 2

Assessment Type [1]: Quiz/Test
Indicative Time on Task [2]: 5 hours
Due: **Week 10**
Weighting: **10%**

Students will complete some multiple choice and/or short answer questions.

On successful completion you will be able to:

- Apply appropriate statistical methods/models, and perform analysis on various types of data and interpret the result.
- Understand and apply the principles of statistical inference.

## Final Examination

Assessment Type [1]: Examination
Indicative Time on Task [2]: 20 hours
Due: **University Examination Period**
Weighting: **60%**

A two hour exam to be held during the University exam period.

On successful completion you will be able to:

- Apply appropriate statistical methods/models, and perform analysis on various types of

data and interpret the result.

- Understand and apply the principles of statistical inference.

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[1] If you need help with your assignment, please contact:

- the academic teaching staff in your unit for guidance in understanding or completing this type of assessment
- the Writing Centre for academic skills support.

[2] Indicative time-on-task is an estimate of the time required for completion of the assessment task and is subject to individual variation

# Delivery and Resources

## Delivery

Please refer to iLearn for details. It is the responsibility of individual students to stay up to date with the unit material.

## Recommended Texts

1. *R for Data Science*, Wickham and Grolemund

2. *An Introduction to Statistical Learning*, James et al.

3. *Collaborative Statistics*, Illowsky and Dean

These are all open-source textbooks and are available freely and legally online.

Some references or recommended reading materials will be introduced whenever appropriate. Please refer to iLearn for details.

## Technology Used and Required

**Calculator**

A calculator will be required during the Final Examination. **Note:** students are expected to clearly show all steps (working) in their solutions to 'calculation' questions.

Non-programmable calculators with no text-retrieval functionality are permitted. Calculators that have a full alphabet on the keyboard are not permitted. Graphics calculators are not permitted. Calculators need the following minimum functionality: xy or ^, 1/x and log or ln functions, and a memory. Non-programmable financial calculators are permitted but it is not a requirement to use a financial calculator.

Students are assumed to already be familiar with the basic operation of their calculator prior to the start of this unit.

**Computing**

Prior to the start of this unit, students are expected to be familiar at least with the basic operation

of their computing device.

**Software**

This unit does use R. Whilst it is not strictly necessary that students have any background using R, it will certainly be beneficial.

**Knowledge of Mathematics and Statistics**

A background of basic mathematics and statistics is assumed. Students entering the unit should be familiar with basic calculus, as well as concepts such as expected value, variance, and standard deviation.

# Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (https://policies.mq.edu.au). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- Academic Appeals Policy
- Academic Integrity Policy
- Academic Progression Policy
- Assessment Policy
- Fitness to Practice Procedure
- Assessment Procedure
- Complaints Resolution Procedure for Students and Members of the Public
- Special Consideration Policy

Students seeking more policy resources can visit Student Policies (https://students.mq.edu.au/support/study/policies). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

To find other policies relating to Teaching and Learning, visit Policy Central (https://policies.mq.edu.au) and use the search tool.

## Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: https://students.mq.edu.au/admin/other-resources/student-conduct

## Results

Results published on platform other than eStudent, (eg. iLearn, Coursera etc.) 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 or if you are a Global MBA student contact globalmba.support@mq.edu.au

# Academic Integrity

At Macquarie, we believe academic integrity – honesty, respect, trust, responsibility, fairness and courage – is at the core of learning, teaching and research. We recognise that meeting the expectations required to complete your assessments can be challenging. So, we offer you a range of resources and services to help you reach your potential, including free online writing and maths support, academic skills development and wellbeing consultations.

# Student Support

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

## The Writing Centre

The Writing Centre provides resources to develop your English language proficiency, academic writing, and communication skills.

- Workshops
- Chat with a WriteWISE peer writing leader
- Access StudyWISE
- Upload an assignment to Studiosity
- Complete the Academic Integrity Module

The Library provides online and face to face support to help you find and use relevant information resources.

- Subject and Research Guides
- Ask a Librarian

# Student Services and Support

Macquarie University offers a range of Student Support Services including:

- IT Support
- Accessibility and disability support with study
- Mental health support
- Safety support to respond to bullying, harassment, sexual harassment and sexual assault
- Social support including information about finances, tenancy and legal issues

# Student Enquiries

Got a question? Ask us via AskMQ, or contact Service Connect.

# IT Help

For help with University computer systems and technology, visit 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.