



MGNT804

Data Based Decision Making

Term 2 North Ryde 2019

Department of Actuarial Studies and Business Analytics

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Disclaimer

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General Information

Unit convenor and teaching staff Lecturer Brad Smith brad.smith@mq.edu.au
Credit points 4
Prerequisites Admission to MMgmt
Corequisites
Co-badged status
Unit description This unit addresses the formal methods of decision making. These methods include measuring risk by subjective probabilities; growing decision trees; performing sensitivity analysis; using theoretical probability distributions; simulation of uncertain events; modelling risk attitudes; estimating the value of information; and combining quantitative and qualitative considerations. The main goal of the unit is to show how to build models of real business situations that allow the decision maker to better understand the structure of decisions and to automate the decision process by using computer decision tools.

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:

- Frame a research question based on an issue for a firm for which data is needed to make a decision
- Identify and select appropriate research methods to answer the research question
- Design and carry out a research project for a given business unit and make a recommendation based on data they collect and analyse
- Critically evaluate research proposals and results so that they are useful for business practice

Assessment Tasks

Name	Weighting	Hurdle	Due
<u>Contribution to class</u>	10%	No	All sessions
<u>Group Assignment 1</u>	15%	No	Start of session 6
<u>Group Assignment 2</u>	15%	No	Start of session 10
<u>Final examination</u>	60%	No	Exam week: 10 - 15 June 2019

Contribution to class

Due: **All sessions**

Weighting: **10%**

Contribution to class requires students to be actively engaged in class discussions of the cases and examples and lecturer's presented material. To this end, students should be prepared in advanced so that they will be part of the active learning in the classroom. Class discussions by the students should be **relevant to the topic** and **add value** to the overall lecture quality. Sharing experiences from students' working environment and extra-curricular activities relevant to class topics will have extra bonus points.

The marking criteria for this assessment will be made available in iLearn.

On successful completion you will be able to:

- Frame a research question based on an issue for a firm for which data is needed to make a decision

Group Assignment 1

Due: **Start of session 6**

Weighting: **15%**

The assignment will involve using the methods and models discussed in lectures to solve decision-making problems that arise in the business context. Regarding the assessment criteria, students should demonstrate sufficient understanding of the theoretical principles in this unit, including data collection, model selection and design, application, and the ability to draw meaningful inferences based on the data and model output.

This group assessment will have 50% of the marks allocated to individual performance. The assignments may involve data analysis using computer tools, as well as draw on theoretical material from lectures. Students need to self enroll in groups of no more than five in the first week. There might be minor changes to group assignments by the end of session 3.

Students are to submit their assignment through iLearn on or before the due date. Further

instructions on how to do this will be provided to students via iLearn.

Your submission should include:

- Responses to the questions should be included in one word document (including all relevant tables and figures and their explanations) and one excel (if necessary) file containing the decision tree and additional requested calculations discussed in class using Palisade software package.
- The word document above should also include in its second page a clear, written indication of the contribution of each group member to the project, i.e., by student name, exact contribution of each member. Your report will be graded only if this page is provided.
- No appendices are accepted.

The marking criteria for this assessment will be made available in iLearn.

Extensions and penalties:

No extensions will be granted. There will be a deduction of 10% 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 – 20% penalty). This penalty does not apply for cases in which an application for disruption of studies is made and approved. No submission will be accepted after solutions have been posted.

On successful completion you will be able to:

- Frame a research question based on an issue for a firm for which data is needed to make a decision
- Design and carry out a research project for a given business unit and make a recommendation based on data they collect and analyse
- Critically evaluate research proposals and results so that they are useful for business practice

Group Assignment 2

Due: **Start of session 10**

Weighting: **15%**

Students will be given a series of questions / case studies to analyse using the Palisade software.

This group assessment will have 50% of the marks allocated to individual performance. Students will be evaluated based on their ability to justify the models applied, solve the problem under consideration, explain the findings and present their findings in a brief answer format. Group members for both assignments are the same.

Students are to submit their assignment through iLearn on or before the due date. Further instructions on how to do this will be provided to students via iLearn.

Your submission should include:

- Task responses containing discussion of the case, gap analysis, and recommendations in one word document (no more than 10 pages - including all relevant tables and figures and their explanations) and one excel file (if necessary) containing the decision tree and additional requested calculations discussed in class using Palisade software package.
- The word document above should also include in its second page a clear, written indication of the contribution of each group member to the project, i.e., by student name, exact contribution of each member. Your report will be graded only if this page is provided.
- No appendices are accepted.

The marking criteria for this assessment will be made available in iLearn.

Extensions and penalties:

No extensions will be granted. There will be a deduction of 10% 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 – 20% penalty). This penalty does not apply for cases in which an application for disruption of studies is made and approved. No submission will be accepted after solutions have been posted.

On successful completion you will be able to:

- Identify and select appropriate research methods to answer the research question
- Design and carry out a research project for a given business unit and make a recommendation based on data they collect and analyse
- Critically evaluate research proposals and results so that they are useful for business practice

Final examination

Due: **Exam week: 10 - 15 June 2019**

Weighting: **60%**

Duration: 3 hours plus 10 minutes reading time

Format: Open book final examination

You are expected to present yourself for examination at the time and place designated in the MGSM examination timetable. The timetable will be available on 17 April 2019

at <https://students.mgsm.edu.au/sydney-students/units/exams/>.

The final examination will concern all the material (*class lectures, simulations and classroom*

discussions) from the entire unit. More details on the exam will be provided in class.

On successful completion you will be able to:

- Critically evaluate research proposals and results so that they are useful for business practice

Delivery and Resources

Required text

Clemen, R.T. & Reilly, T. (2014). Making Hard Decisions with Decision Tools, 3rd edition. Cengage Learning US. ISBN: 9780538797573

Laptop and Palisade software package

Palisade's DecisionTools Suite, 6.0 should be installed as an add-on in your Microsoft excel. Please bear in mind the software **is only** functioning in Microsoft Windows - Excel. If your laptop is mac, make sure Microsoft Excel is installed on it. Most examples discussed in class use @PrecisionTree or @Risk modules of Palisade.

You should bring your laptop to every lecture.

Where to purchase textbook?

The Coop Bookshop

The Coop Bookshop is our main retailer for textbooks and other related academic material. For information on textbook prices and online ordering, please refer to The Co-Op Bookshop webpage at <http://www.coop.com.au>

Cengage Learning Australia – Online store

This textbook is also available for order via the publisher's online store. For information on textbook prices and online ordering, please refer to the Cengage Learning Australia online store at <https://cengage.com.au/product/title/making-hard-decisions-with-decisiontools/isbn/9780538797573>.

eBook disclaimer

Please note that although this unit has an open book final examination, only hard-copy versions of this textbook will be allowed into the examination room. eBooks will not be allowed in the examination room, but you can however print your eBook out and bring the printed copy into the examination room. Students who wish purchase the eBook and have it printed must do so at their own expense. MGSM will not be providing printing services of eBooks.

Disclaimer: MGSM does not take responsibility for the stock levels of required textbooks from preferred retail outlets and other book retailers. While we advise our preferred book retail outlet, The Co-op Bookshop, of our maximum expected number of students purchasing specific required text each term, The Co-op Bookshop and other book retailers will make their own judgement in regards to their physical holding stock levels. To prevent disappointment if a

textbook is out-of-stock, we highly advise students to order their textbooks as early as possible, or if the required textbook is currently out-of-stock, place an order with the book retailer as soon as possible so that these book retailers can monitor demand and supply, and adjust their stock orders accordingly.

MGSM iLearn

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

Unit Schedule

Students are required to attend all classes. Please only attend the class you are enrolled in as reflected in your e-Student account. This unit will be presented over 10 sessions as follows (*The proposed program might be subject to some minor changes as the term progresses (TBA)*).

Class sessions are scheduled from: 9am to 1pm of every Tuesday starting from 2 April 2019 (session 1) until 4 June 2019 (session 10).

Final exam week: 10 - 15 June 2019 (The exam timetable will be available on 17 April 2019 at <https://students.mgsm.edu.au/sydney-students/units/exams/>)

Session	Topics and textbook chapters covered
1	Course Overview; Introduction to Decision Analysis Required textbook reading before class: Chapters 1-3
2	Probability Basics; Expected Value; Bayes Theorem Required textbook reading before class: Chapter 7
3	Probability Distributions Required textbook reading before class: Chapters 8-9
4	Decision Trees: Expected Monetary Value, Risk Profiles and Dominance Required textbook reading before class: Chapters 4-5
5	Decision Trees: Expected Monetary Value, Risk Profiles and Dominance; Sensitivity Analysis Required textbook reading before class: Chapters 4-5
6	Value of Information Required textbook reading before class: Chapter 12

Session	Topics and textbook chapters covered
7	<p>Using Data for Regression</p> <p>Required textbook reading before class: Chapter 10</p>
8	<p>Using Data for Regression</p> <p>Required textbook reading before class: Chapter 10</p>
9	<p>Using Data for Simulation</p> <p>Required textbook reading before class: Chapter 11</p>
10	<p>Using Data for Simulation, course summary and final exam revision</p> <p>Required textbook reading before class: Chapter 11</p>

Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central](https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central) (<https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central>). 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](#)
- [Grade Appeal Policy](#)
- [Complaint Management Procedure for Students and Members of the Public](#)
- [Special Consideration Policy](#) (**Note:** *The Special Consideration Policy is effective from 4 December 2017 and replaces the Disruption to Studies Policy.*)

Undergraduate students seeking more policy resources can visit the [Student Policy Gateway](https://students.mq.edu.au/support/study/student-policy-gateway) (<https://students.mq.edu.au/support/study/student-policy-gateway>). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

If you would like to see all the policies relevant to Learning and Teaching visit [Policy Central](https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central) (<https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/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/study/getting-started/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

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) 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>

If you are a Global MBA student contact globalmba.support@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/.

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

PG - Capable of Professional and Personal Judgment and Initiative

Our postgraduates will demonstrate a high standard of discernment and common sense in their professional and personal judgment. They will have the ability to make informed choices and decisions that reflect both the nature of their professional work and their personal perspectives.

This graduate capability is supported by:

Learning outcomes

- Design and carry out a research project for a given business unit and make a recommendation based on data they collect and analyse
- Critically evaluate research proposals and results so that they are useful for business practice

Assessment tasks

- Group Assignment 1
- Group Assignment 2
- Final examination

PG - Discipline Knowledge and Skills

Our postgraduates will be able to demonstrate a significantly enhanced depth and breadth of knowledge, scholarly understanding, and specific subject content knowledge in their chosen fields.

This graduate capability is supported by:

Learning outcomes

- Identify and select appropriate research methods to answer the research question
- Design and carry out a research project for a given business unit and make a recommendation based on data they collect and analyse
- Critically evaluate research proposals and results so that they are useful for business practice

Assessment tasks

- Group Assignment 1
- Group Assignment 2
- Final examination

PG - Critical, Analytical and Integrative Thinking

Our postgraduates will be capable of utilising and reflecting on prior knowledge and experience, of applying higher level critical thinking skills, and of integrating and synthesising learning and knowledge from a range of sources and environments. A characteristic of this form of thinking is the generation of new, professionally oriented knowledge through personal or group-based critique of practice and theory.

This graduate capability is supported by:

Learning outcomes

- Frame a research question based on an issue for a firm for which data is needed to make a decision
- Identify and select appropriate research methods to answer the research question
- Design and carry out a research project for a given business unit and make a recommendation based on data they collect and analyse
- Critically evaluate research proposals and results so that they are useful for business practice

Assessment tasks

- Contribution to class
- Group Assignment 1
- Group Assignment 2
- Final examination

PG - Research and Problem Solving Capability

Our postgraduates will be capable of systematic enquiry; able to use research skills to create new knowledge that can be applied to real world issues, or contribute to a field of study or practice to enhance society. They will be capable of creative questioning, problem finding and problem solving.

This graduate capability is supported by:

Learning outcomes

- Frame a research question based on an issue for a firm for which data is needed to make a decision
- Identify and select appropriate research methods to answer the research question
- Design and carry out a research project for a given business unit and make a recommendation based on data they collect and analyse
- Critically evaluate research proposals and results so that they are useful for business practice

Assessment tasks

- Contribution to class
- Group Assignment 1
- Group Assignment 2
- Final examination

PG - Effective Communication

Our postgraduates will be able to communicate effectively and convey their views to different social, cultural, and professional audiences. They will be able to use a variety of technologically supported media to communicate with empathy using a range of written, spoken or visual formats.

This graduate capability is supported by:

Learning outcomes

- Frame a research question based on an issue for a firm for which data is needed to make a decision
- Critically evaluate research proposals and results so that they are useful for business practice

Assessment tasks

- Contribution to class
- Group Assignment 1
- Group Assignment 2
- Final examination

PG - Engaged and Responsible, Active and Ethical Citizens

Our postgraduates will be ethically aware and capable of confident transformative action in relation to their professional responsibilities and the wider community. They will have a sense of connectedness with others and country and have a sense of mutual obligation. They will be able to appreciate the impact of their professional roles for social justice and inclusion related to national and global issues

This graduate capability is supported by:

Learning outcome

- Design and carry out a research project for a given business unit and make a recommendation based on data they collect and analyse

Assessment tasks

- Group Assignment 1

- Group Assignment 2

Changes from Previous Offering

Assessment tasks: None

Delivery and resources: None

Unit schedule: None

Alignment with MGSM's mission-driven attributes

Leadership: The unit develops quantitative skills required of leaders with respect to the wide range of techniques available to deal with array of information in order to make well-informed and robust strategic decisions.

Global mindset: The unit facilitates assessing the implications of strategic decisions from a whole of entity perspective, across of a national and international spectrum of stakeholders.

Citizenship: The unit applies an accurate and fair approach to deriving business strategies and disclosure of any difficulties or ethical issues that may arise from them.

Creating sustainable value: The unit promotes the adoption of a forward-looking perspective on the impact of qualitative decisions and how they may be readily adapted if parameters change in the future.

Attendance Policy (MGSM)

The interactive environment of the classroom is central to the MGSM experience. Students are required to attend the full duration of all classes for the units in which they are enrolled. We recognise that exceptional circumstances may occur, such as unavoidable travel on behalf of your organization or the serious illness or injury of you or a close family member.

Special consideration may be given for a maximum of 20% non-attendance for such circumstances as long as lecturers are contacted in advance, and supporting documentation provided, to request exemption from attendance. Failure to abide by these conditions may result in automatic withdrawal, with academic and/or financial penalty. The full Student Attendance Policy is published in the MGSM Student Handbook at <https://students.mgsm.edu.au/handbook>

Content Disclaimer

These unit materials and the content of this unit are provided for educational purposes only and no decision should be made based on the material without obtaining independent professional advice relating to the particular circumstances involved.