MGMT220

Fundamentals of Business Analytics

S2 Day 2019

Department of Actuarial Studies and Business Analytics

Contents

General Information

Unit convenor and teaching staff
Viken Kortian
viken.kortian@mq.edu.au
See iLearn

Credit points
3

Prerequisites
(15cp at 100 level or above) including ISYS114

Corequisites

Co-badged status

Unit description
Growing quantities of data collected by business, government, the internet and social media provide opportunities for better management and a better society through evidence-based decision-making and the provision of new services. This unit introduces students to quantitative techniques and approaches to achieve these goals. Students will gain hands-on experience with software tools to analyse and present quantitative data. Students will be introduced to the discovery and analysis of social networks, social trends, and relationships amongst industry factors using spreadsheets and data visualisation software. The unit thus is an introduction to the technical and philosophical skills required, and the many applications of business analytics.

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:

Understand different methods of data analysis and presentation for social networks, complex systems and relational links.

Create interactive models using appropriate software to aid decision-makers in understanding interrelationships and trends.

Apply intermediate skills in spreadsheets and data visualisation software to demonstrate trends and relationships among factors in industry and society.

Analyse government, industry and social media data to identify relationships and trends.

Evaluate conclusions drawn from different data and analytic tools.

General Assessment Information

All assignments are to be submitted online using the link on the unit website in iLearn.

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 special consideration is made and approved. No submission will be accepted after solutions have been posted.

It is the responsibility of students to view their marks for each within session assessment on iLearn within 20 working days of posting. If there are any discrepancies, students must contact the unit convenor immediately. Failure to do so will mean that queries received after the release of final results regarding assessment marks (not including the final exam mark) will not be addressed.

Assessment Tasks

Name	Weighting	Hurdle	Due
Spreadsheet Functions	10%	No	Week 4
Data Visualisation	30%	No	Week 8
Model Sensitivity Analysis	30%	No	Week 11
Interactive Model	30%	No	Week 13

Spreadsheet Functions

Due: **Week 4**
Weighting: **10%**

Students will be asked to demonstrate skills in data sorting and integration, lookup and transformation procedures .

On successful completion you will be able to:

- Understand different methods of data analysis and presentation for social networks, complex systems and relational links.
- Apply intermediate skills in spreadsheets and data visualisation software to demonstrate trends and relationships among factors in industry and society.

Data Visualisation

Due: **Week 8**
Weighting: **30%**

Students will use visualisation software to extract spreadsheet data to demonstrate trends and interrelationships in different ways appropriate to the task. Evaluate the better presentation mode.

On successful completion you will be able to:

- Apply intermediate skills in spreadsheets and data visualisation software to demonstrate trends and relationships among factors in industry and society.
- Evaluate conclusions drawn from different data and analytic tools.

Model Sensitivity Analysis

Due: **Week 11**
Weighting: **30%**

Students will create a model of complex interactions in Excel and test the sensitivity of outcomes to various inputs using DataTables or Optimisation methods.

On successful completion you will be able to:

- Understand different methods of data analysis and presentation for social networks, complex systems and relational links.
- Analyse government, industry and social media data to identify relationships and trends.
- Evaluate conclusions drawn from different data and analytic tools.

Interactive Model

Due: **Week 13**
Weighting: **30%**

Groups will create an interactive model using appropriate software tools to allow a user to better understand relationships within a chosen problem domain. • 50% of this assessment is based on the group report • 50% of this assessment is based on individual presentation to the class.

On successful completion you will be able to:

- Create interactive models using appropriate software to aid decision-makers in understanding interrelationships and trends.
- Apply intermediate skills in spreadsheets and data visualisation software to demonstrate trends and relationships among factors in industry and society.
- Analyse government, industry and social media data to identify relationships and trends.

Delivery and Resources

Textbook Camm, Cochran, Fry, Ohlmann, Anderson & Sweeney, (2019) Business Analytics, 3ed, Cengage ISBN 978133740642.

Camm et al also offer the text book online and the course will be structured around MindTap.

Technology used and required

Students should have access to standard spreadsheet software. We will be using MSExcel® and make reference to similar software by other brands such as Minitab®. We will make extensive use of Data-Visualisation software, Tableau®. We have a teaching license for the semester, and students will be given a key to download the full program for use in study at home.

Important note

Our iLab system is not compatible with our Tableau® Teaching License, so we cannot install Tableau® in the labs. Students are strongly encouraged to bring laptop computers (either Windows or Apple OS) to the tutorial-workshops for these sessions.

Recommended readings

Suggested online readings, and resources are presented in each week's exercises. Without a formal textbook students will need to routinely read the sources shared in the unit website, and contribute others that they find. **Unit Web Page** Course material is available on the learning management system (iLearn). The general online website is http://ilearn.mq.edu.au

Unit Schedule

Unit Schedule The unit schedule appears on the following pages. We are still learning about the expectations of industry, and the capabilities and interests of our students, so we may make small changes to the timing and attention to different topics as the unit progresses.

Week	Content	Text Book Sections
1	Introduction: Text Book (Camm et al) and MindTap. Basic Spreadsheet Functions	1.1, 1.2, 1.3, 1.4, 1.5 2.1, 2.2, 2.3, 2.4 Appendix A
2	Spreadsheet Functions continue: Graphs & Data	2.5, 2.6, 2.7, 2.8, 2.9
3	Advanced Spreadsheet Functions. Tidy data, Pivot Tables, Pivot Charts	3.1, 3.2, 3.3
4	Statistical Inferencing Model building – Regression and Multiple Regression	6.2, 6.5, 6.6 7.1, 7.2, 7.3, 7.4, 7.5 **Spreadsheet Functions assignment (10%) due.**

5	Tableau Guest Speaker	
6	Dashboards in Tableau Time Series analysis and Forecasting	8.1, 8.2, 8.3, 8.4
7	Storyboards in Tableau Guest Speaker	
8	Spreadsheet Models	10.1, 10.2, 10.3, 10.4 **Data visualisation assignment (30%) due.**
9	Modelling Uncertainty – Events and Probabilities	5.1, 5.2, 5.3, 5.4
10	What-if Sensitivity Analysis	11.1, 11.2, 11.3, 11.4
11	Optimisation	12.1, 12.2, 12.3, 12.4, 12.5 **Sensitivity Analysis assignment (30%) due.**
12	Data Mining	4.1, 4.2, 4.3
13	Summary and looking to next semester – Logistical regression	9.3 **Interactive Model assignment (30%) due**

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). 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). 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).

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

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 outcome

- Create interactive models using appropriate software to aid decision-makers in understanding interrelationships and trends.

Assessment tasks

- Model Sensitivity Analysis
- Interactive Model

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 outcome

- Understand different methods of data analysis and presentation for social networks, complex systems and relational links.

Assessment tasks

- Spreadsheet Functions
- Data Visualisation

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

- Understand different methods of data analysis and presentation for social networks, complex systems and relational links.
- Create interactive models using appropriate software to aid decision-makers in understanding interrelationships and trends.
- Apply intermediate skills in spreadsheets and data visualisation software to demonstrate trends and relationships among factors in industry and society.
- Analyse government, industry and social media data to identify relationships and trends.
- Evaluate conclusions drawn from different data and analytic tools.

Assessment tasks

- Data Visualisation
- Model Sensitivity Analysis
- Interactive Model

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

- Understand different methods of data analysis and presentation for social networks, complex systems and relational links.
- Create interactive models using appropriate software to aid decision-makers in understanding interrelationships and trends.
- Apply intermediate skills in spreadsheets and data visualisation software to demonstrate trends and relationships among factors in industry and society.
- Analyse government, industry and social media data to identify relationships and trends.
- Evaluate conclusions drawn from different data and analytic tools.

Assessment tasks

- Spreadsheet Functions
- Data Visualisation
- Model Sensitivity Analysis

- Interactive Model