ACST8095

Actuarial Data Analytics

Session 2, Special circumstance 2020

Department of Actuarial Studies and Business Analytics

Contents

Notice

As part of Phase 3 of our return to campus plan, most units will now run tutorials, seminars and ot her small group learning activities on campus for the second half-year, while keeping an online ver sion available for those students unable to return or those who choose to continue their studies onli ne.

To check the availability of face-to-face and onlin e activities for your unit, please go to timetable vi ewer. To check detailed information on unit asses sments visit your unit's iLearn space or consult yo ur unit convenor.

General Information

Unit convenor and teaching staff
Unit Convenor
Maggie Lee
Contact via in class, iLearn Dialogue or Discussion forums
Refer to iLearn
Wednesday 2-4pm during teaching weeks

Lecturer
Pavel Shevchenko
Contact via in class, iLearn Dialogue or Discussion forums
Refer to iLearn
Refer to iLearn

Teaching Assistant
Hong Xie
Contact via iLearn Dialogue (admin enquiries)

Angela Chow
angela.chow@mq.edu.au

Credit points
10

Prerequisites
Permission by special approval

Corequisites

Co-badged status

Unit description
This unit covers advanced tools and techniques in data analytics. Students will be taught how to apply and develop these skills in a range of business environments and will be able to contribute to all stages of developing solutions to analytical problems across multiple industries or domains. This unit has a focus on practical application using a variety of real-life case studies. Students gaining a grade of credit or higher in this unit are eligible for exemption from the Data Analytics Principles subject of the Actuary program of the Actuaries Institute.

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: Explain the key iterative steps involved in building a model (business understanding, data understanding and preparation, modelling, evaluation, communication and deployment).

ULO2: Describe the various stages in data understanding and preparation and apply these skills within the context of practical problems.

ULO3: Compare predictive modelling techniques to select an appropriate method for a stated situation and perform predictive modelling for a given set of data.

ULO4: Use a range of perspectives (statistical techniques and measures, business context and objectives etc.) to evaluate the appropriateness of a model.

ULO5: Communicate modelling results to a range of business decision making audiences, taking into account the audience's needs and relating findings back to the original business objectives.

ULO6: Communicate modelling results to a range of business decision making audiences, taking into account the audience's needs and relating findings back to the original business objectives.

General Assessment Information

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 criteria for all assessment tasks will be provided on the unit iLearn site.

Late submission

For individual assessment tasks worth 10% or less - No extensions will be granted. Students who have not submitted the task prior to the deadline will be awarded a mark of 0 for the task, except for cases in which an application for special consideration is made and approved.

For individual assessment tasks worth more than 10% - 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.

Details of the assessments

Details of the assessments, including the task question, will be uploaded on iLearn. If there are any discrepancies between the unit guide and the detailed assessment documents on iLearn, the details in the assessment documents on iLearn should be the point of reference. It is the students responsibility to be aware of this and to contact the unit convenor if any clarifications are needed.

Assessment Tasks

Name	Weighting	Hurdle	Due
Project	20%	No	12pm Thursday 10/9/2020
Postgrauate student task	0%	Yes	12pm Thursday 1/10/2020
Case studies	20%	No	12pm Thursday 22/10/2020
Final Exam	60%	No	University Exam Timetable

Project

Assessment Type [1]: Quantitative analysis task
Indicative Time on Task [2]: 20 hours
Due: **12pm Thursday 10/9/2020**
Weighting: **20%**

Students will be required to write up a report (word limit of up to 5000 words) based on a project.

On successful completion you will be able to:

- Explain the key iterative steps involved in building a model (business understanding, data understanding and preparation, modelling, evaluation, communication and deployment).
- Describe the various stages in data understanding and preparation and apply these skills within the context of practical problems.
- Compare predictive modelling techniques to select an appropriate method for a stated situation and perform predictive modelling for a given set of data.
- Use a range of perspectives (statistical techniques and measures, business context and objectives etc.) to evaluate the appropriateness of a model.
- Communicate modelling results to a range of business decision making audiences, taking into account the audience's needs and relating findings back to the original business objectives.
- Communicate modelling results to a range of business decision making audiences, taking into account the audience's needs and relating findings back to the original

business objectives.

Postgrauate student task

Assessment Type [1]: Qualitative analysis task
Indicative Time on Task [2]: 2 hours
Due: **12pm Thursday 1/10/2020**
Weighting: **0%**
This is a hurdle assessment task (see assessment policy for more information on hurdle assessment tasks)

Postgraduate (ACST8095 and ACST8095 External) students are required to complete a postgraduate student task, to be submitted via iLearn.

On successful completion you will be able to:

- Explain the key iterative steps involved in building a model (business understanding, data understanding and preparation, modelling, evaluation, communication and deployment).
- Describe the various stages in data understanding and preparation and apply these skills within the context of practical problems.
- Compare predictive modelling techniques to select an appropriate method for a stated situation and perform predictive modelling for a given set of data.
- Use a range of perspectives (statistical techniques and measures, business context and objectives etc.) to evaluate the appropriateness of a model.
- Communicate modelling results to a range of business decision making audiences, taking into account the audience's needs and relating findings back to the original business objectives.
- Communicate modelling results to a range of business decision making audiences, taking into account the audience's needs and relating findings back to the original business objectives.

Case studies

Assessment Type [1]: Case study/analysis
Indicative Time on Task [2]: 20 hours
Due: **12pm Thursday 22/10/2020**
Weighting: **20%**

Students will work on two individual case studies.

On successful completion you will be able to:

- Explain the key iterative steps involved in building a model (business understanding,

data understanding and preparation, modelling, evaluation, communication and deployment).
- Describe the various stages in data understanding and preparation and apply these skills within the context of practical problems.
- Compare predictive modelling techniques to select an appropriate method for a stated situation and perform predictive modelling for a given set of data.
- Use a range of perspectives (statistical techniques and measures, business context and objectives etc.) to evaluate the appropriateness of a model.
- Communicate modelling results to a range of business decision making audiences, taking into account the audience's needs and relating findings back to the original business objectives.

Final Exam

Assessment Type [1]: Examination
Indicative Time on Task [2]: 28 hours
Due: **University Exam Timetable**
Weighting: **60%**

The final examination will be closed book, a three-hour written paper with ten minutes reading time, to be held during the University Examination period.

On successful completion you will be able to:

- Explain the key iterative steps involved in building a model (business understanding, data understanding and preparation, modelling, evaluation, communication and deployment).
- Describe the various stages in data understanding and preparation and apply these skills within the context of practical problems.
- Compare predictive modelling techniques to select an appropriate method for a stated situation and perform predictive modelling for a given set of data.
- Use a range of perspectives (statistical techniques and measures, business context and objectives etc.) to evaluate the appropriateness of a model.
- Communicate modelling results to a range of business decision making audiences, taking into account the audience's needs and relating findings back to the original business objectives.

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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

Classes

ACST8095 is offered via classes in the North Ryde campus, Sydney CBD campus (of Macquarie University) and via distance education throughout the world. Students share lecture classes and a common teaching website with the units ACST4005 and ACST7095.

Downloadable lecture recordings

In all weeks, standard recordings of campus lectures using the University's lecture recording facility (ECHO360 or zoom) will be available. The recordings capture audio and screenshot. The recordings will either be provided via the ECHO360 link which is located on the right hand side of the webpage or via a zoom link.

Timetable

The timetable for classes can be found on the Macquarie University website at: http://www.timetables.mq.edu.au

Alterations to the class times or locations will be advised in class and on the teaching website.

Teaching staff

Maggie Lee is the unit convenor and will be taking five weeks of classes. Maggie can be contacted via Dialogue on the website, or during her consultation hours.

Professor Pavel Shevchenko will be taking the other weeks of classes. Pavel can be contacted via Dialogue on the website, or during his consultation hours.

Hong Xie is the teaching administrator, and can deal with any administrative queries related to the unit. Hong can be contacted via Dialogue on the website.

Assumed knowledge

We assume from the start of the Actuarial Data Analytics that you have acquired the knowledge and skills in subjects from the Foundation Program (Part 1s) of the Actuaries Institute education program.

Required and recommended texts and materials

Lecture slides/Learning Guide

There will be Lecture Slides and/or Learning Guides and associated readings for each section of work. You should read these materials in advance of the lectures, and bring a copy with you to classes.

Technology Used and Required

In this unit, you will need to have access to and to be able to use software to code (R and R studio) and word-processing software to produce reports.

Teaching Website

Course material is available on the online learning management system (iLearn). The teaching website is integral to this unit. Passive involvement in this unit greatly reduces the likelihood of achieving the exemption standard of understanding. Interaction with other students and with teachers is very important, and the website is the forum for that interaction. You will need to be accessing the website regularly to see announcements, read postings and stay informed - at least every couple of days. This is your responsibility and we cannot make any allowances for students who miss important information due to not checking the website regularly. The website entry page is at: http://ilearn.mq.edu.au

Teaching and Learning Activities

The unit is taught as set out in the Classes section. The Unit Schedule sets out the assessment and the topics covered in each week of the semester.

Exemptions

The Macquarie University unit ACST4005/ACST7095/ACST8095 will satisfy the requirements for exemption from the Data Analytics Principles subject of the Actuary program of the Actuaries Institute. You will be recommended for exemption if you attain grades of Credit or better in this unit. It is the responsibility of the student to apply to Macquarie University to recommend them to the Actuaries Institute for professional exemptions. For information about this process please contact Hong Xie via iLearn.

Unit Schedule

Week	Week beginning	Topic	Lecturer	Assessment task	Notes
1	27-Jul	Business Environment	ML		
2	03-Aug	Communication	ML		
3	10-Aug	Data exploration	ML		
4	17-Aug	Data quality	ML		
5	24-Aug	Data manipulation and cleansing	ML		
6	31-Aug	Modelling/Evaluation	PS		
7	07-Sep	Modelling/Evaluation	PS	Project	
Break	14-Sep				
Break	21-Sep				

8	28-Sep	Modelling/Evaluation	PS	Post grad task	
9	05-Oct	Modelling/Evaluation	PS		
10	12-Oct	Modelling/Evaluation	PS		
11	19-Oct	Modelling/Evaluation	PS	Case Studies	
12	26-Oct	Modelling/Evaluation	PS		
13	02-Nov	Modelling/Evaluation/Revision	PS		

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.)*

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 help you improve your marks and take control of your study.

- Getting help with your assignment
- Workshops
- StudyWise
- 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

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.