BUSA8001

Applied Predictive Analytics

Session 2, In person-scheduled-weekday, North Ryde 2024

Department of Actuarial Studies and Business Analytics

Contents

General Information

Unit convenor and teaching staff George Milunovich george.milunovich@mq.edu.au
Credit points 10
Prerequisites (BUSA6004 and BUSA8030) or (Admission to MActPrac)
Corequisites
Co-badged status BUSA7001
Unit description This unit introduces modern machine learning methodology which is used in solving many business problems in the modern world. Topics will be chosen from a wide set of possible areas including data analytics principles such as training and test data and the bias-variance tradeoff, modern approaches to regression including shrinkage techniques, tree based models and neural networks, methods for classification and the predictive analytics workflow. Emphasis throughout the unit will be on business applications drawn from a variety of fields.

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: Assess data requirements needed to generate good predictions.

ULO2: Apply a number of predictive analytics techniques to a range of business problems.

ULO3: Devise computer code required to implement predictive analytics.

ULO4: Analyse business problems using data science methods.

ULO5: Successfully work in teams to achieve group and organizational objectives

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
Group Assignment	30%	No	Week 13
Final Exam	40%	No	University Exam Period
Programming tasks	30%	No	Weeks 7 and 11

Group Assignment

Assessment Type [1]: Modelling task
Indicative Time on Task [2]: 30 hours
Due: **Week 13**
Weighting: **30%**

The group assignment is a hands-on project. Students will be required to develop a predictive model for a real-world dataset and implement it in computer script. Preliminary data analysis will be completed within a group (worth 20%). The follow-up analysis and write up will be completed individually (worth 20%).

On successful completion you will be able to:

- Assess data requirements needed to generate good predictions.
- Apply a number of predictive analytics techniques to a range of business problems.
- Devise computer code required to implement predictive analytics.
- Analyse business problems using data science methods.
- Successfully work in teams to achieve group and organizational objectives

Final Exam

Assessment Type [1]: Examination
Indicative Time on Task [2]: 20 hours
Due: **University Exam Period**
Weighting: **40%**

A final exam is to be held during the exam period.

On successful completion you will be able to:

- Assess data requirements needed to generate good predictions.
- Apply a number of predictive analytics techniques to a range of business problems.
- Devise computer code required to implement predictive analytics.

Programming tasks

Assessment Type [1]: Practice-based task
Indicative Time on Task [2]: 20 hours
Due: **Weeks 7 and 11**
Weighting: **30%**

A sequence of tutorial assessments implementing computer code and performing related analytics tasks.

On successful completion you will be able to:

- Assess data requirements needed to generate good predictions.
- Apply a number of predictive analytics techniques to a range of business problems.
- Devise computer code required to implement predictive analytics.
- Analyse business problems using data science methods.

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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

- Number and length of classes: 3 hours face-to-face teaching per week, consisting of 1 x 2 hour lecture and 1 x 1 hour computer lab/tutorial.

Recommended Textbook

- *Python Machine Learning* (Third Edition) by Raschka and Mirjalili

Technology Used and Required

- **You will need a decent quality laptop (a tablet will not be enough)**
- Students will use Python and Jupyter Lab

Unit Schedule

Will be provided on iLearn.

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 connect.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 Advocacy provides independent advice on MQ policies, procedures, and processes

Student Enquiries

Got a question? Ask us via the Service Connect Portal, 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.

Unit information based on version 2024.04 of the Handbook