STAT8122

Time Series

Session 2, Attendance for exam only, Exam centre within Australia 2021

Archive (Pre-2022) - Department of Mathematics and Statistics

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Session 2 Learning and Teaching Update

The decision has been made to conduct study online for the remainder of Session 2 for all units WITHOUT mandatory on-campus learning activities. Exams for Session 2 will also be online where possible to do so.

This is due to the extension of the lockdown orders and to provide certainty around arrangements for the remainder of Session 2. We hope to return to campus beyond Session 2 as soon as it is safe and appropriate to do so.

Some classes/teaching activities cannot be moved online and must be taught on campus. You should already know if you are in one of these classes/teaching activities and your unit convenor will provide you with more information via iLearn. If you want to confirm, see the list of units with mandatory on-campus classes/teaching activities.

Visit the MQ COVID-19 information page for more detail.

General Information

Unit convenor and teaching staff
Unit Convenor/Lecturer
Tania Prvan
tania.prvan@mq.edu.au
Contact via tania.prvan@mq.edu.au
12 Wally's Walk Room 629
Please refer to iLearn

Lecturer
Nan Zou
nan.zou@mq.edu.au
Contact via nan.zou@mq.edu.au
12 Wally's Walk Room 706
Please refer to iLearn

Credit points
10

Prerequisites
((Admission to MAppStat or MSc or MScInnovation or GradCertAppStat or GradDipAppStat or MActPrac) and (STAT6110 or STAT806 or STAT810 or STAT8310)) or (Admission to BMathScMAppStat and permission by special approval)

Corequisites

Co-badged status
STAT7122

Unit description
*This unit has an online offering for S2 which is **synchronous**, meaning there will be set times to attend online lectures and tutorials.*

This unit is an introduction to Time Series Analysis and Forecasting. This unit introduces methods suitable for forecasting including the decomposition of time series, exponential smoothing methods, ARIMA modelling, and regression with autocorrelated disturbances.

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: provide an understanding of common statistical methods used in forecasting

ULO2: develop computer skills for forecasting time series data

ULO3: provide insights into the problems of implementing and operating large scale forecasting systems

General Assessment Information

There is no "group work" assessment in this unit.

Each assignment must be word processed and submitted online via iLearn by the due date. Late submission requires an approved Special Consideration.

Assessment Tasks

Name	Weighting	Hurdle	Due
Assignment 1	15%	No	Week 4
Assignment 2	15%	No	Week 8
Assignment 3	15%	No	Week 12
Final Examination	55%	No	Formal Exam period

Assignment 1

Assessment Type [1]: Quantitative analysis task
Indicative Time on Task [2]: 10 hours
Due: **Week 4**
Weighting: **15%**

Reinforce and apply the concepts covered in lectures and the skills learned in SGTA sessions, through data analysis.

On successful completion you will be able to:

- provide an understanding of common statistical methods used in forecasting
- develop computer skills for forecasting time series data

Assignment 2

Assessment Type [1]: Quantitative analysis task
Indicative Time on Task [2]: 10 hours
Due: **Week 8**
Weighting: **15%**

Reinforce and apply the concepts covered in lectures and the skills learned in SGTA sessions, through data analysis.

On successful completion you will be able to:

- provide an understanding of common statistical methods used in forecasting
- develop computer skills for forecasting time series data
- provide insights into the problems of implementing and operating large scale forecasting systems

Assignment 3

Assessment Type [1]: Quantitative analysis task
Indicative Time on Task [2]: 10 hours
Due: **Week 12**
Weighting: **15%**

Reinforce and apply the concepts covered in lectures and the skills learned in SGTA sessions, through data analysis.

On successful completion you will be able to:

- provide an understanding of common statistical methods used in forecasting
- develop computer skills for forecasting time series data
- provide insights into the problems of implementing and operating large scale forecasting systems

Final Examination

Assessment Type [1]: Examination
Indicative Time on Task [2]: 20 hours
Due: **Formal Exam period**
Weighting: **55%**

An invigilated final examination to be scheduled in the university examination period.

On successful completion you will be able to:

- provide an understanding of common statistical methods used in forecasting
- develop computer skills for forecasting time series data
- provide insights into the problems of implementing and operating large scale forecasting systems

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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

There is one two hour synchronous lecture and one one hour SGTA each week. Lectures begin in Week 1 and SGTAs in Week 2. Please consult the timetable for the scheduling of these activities.

In addition to the weekly two hour synchronous lecture there are online resources which should be viewed prior to the two hour synchronous lecture.

Technologies used and required

Lecture material will be placed on iLearn. R is used throughout the unit. R is free and is extensively used for performing statistical analysis.

Textbook

- Rob J Hyndman and George Athanasopoulos (2021) Forecasting: principles and practice, 3rd edition, OTexts: Melbourne, Australia. OTexts.com/fpp3/

Unit Schedule

Week	Topic
1	Introduction
2	Time series graphics

Week	Topic
3	Time series decomposition
4	Time series features
5	The forecaster's toolbox
6	Time series regression models
7	Exponential smoothing
8	ARIMA models
9	Dynamic Regression Models
10	Forecasting hierarchical and grouped time series
11	Advanced forecasting methods
12	Some practical forecasting issues
13	Revision

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
- Grade Appeal Policy
- Complaint Management 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

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.