



STAT3128

Market Research and Forecasting

Session 2, Special circumstances 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 and teaching staff

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Please refer to iLearn

Tutor

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Credit points

10

Prerequisites

20cp at 2000 level including STAT270 or STAT2170 or STAT271 or STAT2371 or BIOL235(P) or BIOL2610 or PSY222 or PSY248(P) or PSYU2248

Corequisites

Co-badged status

Unit description

Advanced quantitative methods including conjoint analysis, principal component analysis and other statistical techniques that have important applications in market research form the first part of this unit. Emphasis is placed on market research applications. The unit then covers methods for modelling and forecasting trends based on time series data, including procedures for seasonal adjustment.

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: perform an appropriate principal components analysis (PCA) and interpret the results.

ULO2: perform an appropriate Factor Analysis (FA) and interpret the results.

ULO3: perform a Conjoint Analysis (CA) and generate an orthogonal plan.

ULO4: fit an appropriate AR, MA or ARIMA time series model to data and interpret the results.

ULO5: fit an appropriate ARIMA with regressors to data and interpret the results.

ULO6: smooth data and fit an appropriate ARIMA to the smoothed data.

General Assessment Information

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

ASSIGNMENT SUBMISSION: Assignment submission will be online through the iLearn page.

Submit assignments online via the appropriate assignment link on the iLearn page. A personalised cover sheet is not required with online submissions. Read the submission statement carefully before accepting it as there are substantial penalties for making a false declaration.

- Assignment submission is via iLearn. You should upload this as a single PDF file.
- Please note the quick guide on how to upload your assignments provided on the iLearn page.
- Please make sure that each page in your uploaded assignment corresponds to only one A4 page (do not upload an A3 page worth of content as an A4 page in landscape). If you are using an app like Clear Scanner, please make sure that the photos you are using are clear and shadow-free.
- It is your responsibility to make sure your assignment submission is legible.
- If there are technical obstructions to your submission online, please email us to let us know.

You may submit as often as required prior to the due date/time. Please note that each submission will completely replace any previous submissions. It is in your interests to make frequent submissions of your partially completed work as insurance against technical or other problems near the submission deadline.

LATE SUBMISSION OF WORK: All assessment tasks must be submitted by the official due date and time. In the case of late submission for a non-timed assessment (e.g. an assignment), if special consideration has NOT been granted, 20% of the earned mark will be deducted for each 24-hour period (or part thereof) that the submission is late for the first 2 days (including weekends and/or public holidays). For example, if an assignment is submitted 25 hours late, its mark will attract a penalty equal to 40% of the earned mark. After 2 days (including weekends and public holidays) a mark of 0% will be awarded. Timed assessment tasks (e.g. tests,

examinations) do not fall under these rules.

FINAL EXAM POLICY: It is Macquarie University policy not to set early examinations for individuals or groups of students. All students are expected to ensure that they are available until the end of the teaching semester, that is, the final day of the official examination period. The only excuse for not sitting an examination at the designated time is because of documented illness or unavoidable disruption. In these special circumstances, you may apply for special consideration via ask.mq.edu.au.

If you receive special consideration for the final exam, a supplementary exam will be scheduled in the interval between the regular exam period and the start of the next session. By making a special consideration application for the final exam you are declaring yourself available for a resit during this supplementary examination period and will not be eligible for a second special consideration approval based on pre-existing commitments. Please ensure you are familiar with the policy prior to submitting an application.

You can check the supplementary exam information page on FSE101 in iLearn (bit.ly/FSESupp) for dates, and approved applicants will receive an individual notification one week prior to the exam with the exact date and time of their supplementary examination.

Assessment Tasks

Name	Weighting	Hurdle	Due
Class Test 1	15%	No	Week 6
Assignment	10%	No	Week 9
Class Test 2	15%	No	Week 12
Final Examination	60%	No	Formal exam period

Class Test 1

Assessment Type ¹: Quiz/Test

Indicative Time on Task ²: 10 hours

Due: **Week 6**

Weighting: **15%**

Test

On successful completion you will be able to:

- perform an appropriate Factor Analysis (FA) and interpret the results.

- perform a Conjoint Analysis (CA) and generate an orthogonal plan.

Assignment

Assessment Type ¹: Quantitative analysis task

Indicative Time on Task ²: 10 hours

Due: **Week 9**

Weighting: **10%**

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:

- perform an appropriate principal components analysis (PCA) and interpret the results.
- perform an appropriate Factor Analysis (FA) and interpret the results.
- perform a Conjoint Analysis (CA) and generate an orthogonal plan.
- fit an appropriate AR, MA or ARIMA time series model to data and interpret the results.
- fit an appropriate ARIMA with regressors to data and interpret the results.

Class Test 2

Assessment Type ¹: Quiz/Test

Indicative Time on Task ²: 10 hours

Due: **Week 12**

Weighting: **15%**

Test

On successful completion you will be able to:

- fit an appropriate AR, MA or ARIMA time series model to data and interpret the results.
- fit an appropriate ARIMA with regressors to data and interpret the results.
- smooth data and fit an appropriate ARIMA to the smoothed data.

Final Examination

Assessment Type ¹: Examination

Indicative Time on Task ²: 20 hours

Due: **Formal exam period**

Weighting: **60%**

Formal invigilated examination testing the learning outcomes of the unit.

On successful completion you will be able to:

- perform an appropriate principal components analysis (PCA) and interpret the results.
- perform an appropriate Factor Analysis (FA) and interpret the results.
- perform a Conjoint Analysis (CA) and generate an orthogonal plan.
- fit an appropriate AR, MA or ARIMA time series model to data and interpret the results.
- fit an appropriate ARIMA with regressors to data and interpret the results.
- smooth data and fit an appropriate ARIMA to the smoothed data.

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 one hour synchronous lecture and one two 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 one hour synchronous lecture there are online resources including videos which should be viewed prior to the one hour synchronous lecture.

Technologies used and required

Lecture material will be placed on iLearn. The statistical package SPSS will be used in some of the lectures.

Recommended Texts

There is no set textbook for this unit.

Useful reference texts for the Market Research part of the unit are

- Applied Multivariate Techniques by Subhash Sharma (QA278.S485/1996)
- Applied Multivariate Methods for Data Analysis by Dallas E. Johnson (QA278.J615/1998)
- Multivariate Statistical Methods by Bryan F. J. Manly (QA278.M35/2004)

There is no suitable text for Conjoint Analysis. Most treatments in Market Research textbooks are either too simple or too technical. A useful reference for the Forecasting part is

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

Unit Schedule

Week	Topic
1	Principal Component Analysis (PCA)
2	PCA
3	Factor Analysis (FA)
4	FA
5	Conjoint Analysis (CA)
6	Class Test 1
7	Introduction to Forecasting
8	ARIMA models
9	ARIMA models
10	Dynamic Regression models and intervention analysis
11	Exponential smoothing and Periodicity
12	Class Test 2
13	Revision

Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central \(https://policies.mq.edu.au\)](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 \(https://students.mq.edu.au/support/study/policies\)](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 \(https://policies.mq.edu.au\)](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.