STAT700

Research Frontiers in Statistics

S1 Day 2019

Dept of Mathematics and Statistics

Contents

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General Information

Unit convenor and teaching staff
Unit convenor
David Bulger
david.bulger@mq.edu.au
Contact via Email
12 Wally's Walk Office 5.30
Monday 12–2pm

Credit points
4

Prerequisites
Admission to MRes

Corequisites

Co-badged status

Unit description
This unit covers selected topics on modern statistical methods including statistical modelling, computational statistics, bio- and medical statistics, statistical models in finance, modelling dependence and point processes. These topics are hot research areas of statistics. The topics will be delivered by reading research papers, discussions and presentations. Students are also required to attend department research seminars. Each topic will be taught in two weeks and then assessed by the lecturer delivering the topic.

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:

- Be able to obtain a broad view of some research activities in various fields of statistics

- Be able to read and discuss research papers in statistics

- Be able to utilise google or other search engines to look for research papers

- Be able to recognise the general structure of research papers

- Be able to summarise and present results from research papers

Assessment Tasks

Name	Weighting	Hurdle	Due
Topic 1	15%	No	9 March
Topic 2	15%	No	22 March
Topic 3	15%	No	5 April
Topic 4	15%	No	3 May
Topic 5	15%	No	17 May
Topic 6	15%	No	31 May
Statistics department seminar	10%	No	7 June

Topic 1

Due: **9 March**
Weighting: **15%**

Six different topics will be covered in STAT700. They are selected from areas of statistical research strength within the Department of Mathematics and Statistics, such as biostatistics, applied statistics, stochastic finance, time series analysis, bioinformatics, and image processing.

Each topic will be assessed by the lecturer of that topic. Each topic counts 15% towards the final assessment. Topic assessment is based on presentation (13%) and contribution to the discussion (2%). Three core criteria will be used to assess students' work:

(1) Knowledge Development: Understanding of key ideas and concepts. (2) Application: Ability to apply statistical concepts to actual problems. (3) Presentation: The extent to which work has been written and/or presented in a manner consistent with accepted academic standards.

Performance in relation to each of these criteria will be assessed against established standards.

The only excuse for not participating in the presentation 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.

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Topic 2

Due: **22 March**
Weighting: **15%**

For assessment see Topic 1.

On successful completion you will be able to:
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- Be able to recognise the general structure of research papers

- Be able to summarise and present results from research papers

Topic 3

Due: **5 April**
Weighting: **15%**

For assessment see Topic 1.

On successful completion you will be able to:
- Be able to obtain a broad view of some research activities in various fields of statistics

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- Be able to recognise the general structure of research papers

- Be able to summarise and present results from research papers

Topic 4

Due: **3 May**
Weighting: **15%**

For assessment see Topic 1.

On successful completion you will be able to:
- Be able to obtain a broad view of some research activities in various fields of statistics

- Be able to read and discuss research papers in statistics

- Be able to utilise google or other search engines to look for research papers

- Be able to recognise the general structure of research papers
- Be able to summarise and present results from research papers

Topic 5

Due: **17 May**
Weighting: **15%**

For assessment see Topic 1.

On successful completion you will be able to:
- Be able to obtain a broad view of some research activities in various fields of statistics
- Be able to read and discuss research papers in statistics
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- Be able to recognise the general structure of research papers
- Be able to summarise and present results from research papers

Topic 6

Due: **31 May**
Weighting: **15%**

For assessment see Topic 1.

On successful completion you will be able to:
- Be able to obtain a broad view of some research activities in various fields of statistics
- Be able to read and discuss research papers in statistics
- Be able to utilise google or other search engines to look for research papers
- Be able to recognise the general structure of research papers
- Be able to summarise and present results from research papers

Statistics department seminar

Due: **7 June**
Weighting: **10%**

Students are required to attend and compile a short report for at least 6 research seminars. These are not limited to those hosted by the Department of Mathematics and Statistics at Macquarie and can be those hosted by other departments at Macquarie or by other universities/ professional organisations. The NSW branch of the Statistical Society Australia (SSA) hold a seminar most months and they are organised as a meetup group which you can subscribe to at https://www.meetup.com/en-AU/NSW-Branch-of-the-Statistics-Society-of-Australia.

Students should submit approximately 150–200 words of summary and/or comments to iLearn on the seminars they attended. The idea is to accumulate 6 reports by the end of Week

13 (midnight of 7 June). Each report you submit on time will be marked out of 2. This makes for a maximum possible total of 12; your total will be multiplied by 10/12 to give your seminar participation mark out of 10.

As these reports are supposed to be completed over a 13-week period, no extension will be granted. Student who have not submitted their reports 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.

On successful completion you will be able to:

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Delivery and Resources

Lectures

Lectures begin in Week 1. Students should attend one 3-hour session per week. Papers and reading materials for each topic will be made available via iLearn. Students should read these materials prior to the lectures.

Each topic will last for two weeks. In the first week, the lecturer will give a brief introduction to the materials covered in that topic and introduce students to the papers that will be discussed. Each student will be given three papers to read. However, each student will be required to present one paper in the class in the second week. Students are encouraged to participate in presentations, i.e. ask questions and involve in discussions.

Department research seminars

Students are also required to attend and participate in the research seminars of Statistics Department.

Technologies used and required

None

Unit Schedule

Please visit the unit's *iLearn* site for a weekly schedule of topics.

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

PG - Capable of Professional and Personal Judgment and Initiative

Our postgraduates will demonstrate a high standard of discernment and common sense in their professional and personal judgment. They will have the ability to make informed choices and decisions that reflect both the nature of their professional work and their personal perspectives.

This graduate capability is supported by:

Learning outcomes

- Be able to obtain a broad view of some research activities in various fields of statistics
- Be able to read and discuss research papers in statistics
- Be able to utilise google or other search engines to look for research papers

Assessment tasks

- Topic 1
- Topic 2
- Topic 3
- Topic 4
- Topic 5
- Topic 6
- Statistics department seminar

PG - Discipline Knowledge and Skills

Our postgraduates will be able to demonstrate a significantly enhanced depth and breadth of

knowledge, scholarly understanding, and specific subject content knowledge in their chosen fields.

This graduate capability is supported by:

Learning outcomes

- Be able to obtain a broad view of some research activities in various fields of statistics
- Be able to read and discuss research papers in statistics
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Assessment tasks

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- Topic 2
- Topic 3
- Topic 4
- Topic 5
- Topic 6
- Statistics department seminar

PG - Critical, Analytical and Integrative Thinking

Our postgraduates will be capable of utilising and reflecting on prior knowledge and experience, of applying higher level critical thinking skills, and of integrating and synthesising learning and knowledge from a range of sources and environments. A characteristic of this form of thinking is the generation of new, professionally oriented knowledge through personal or group-based critique of practice and theory.

This graduate capability is supported by:

Learning outcomes

- Be able to read and discuss research papers in statistics
- Be able to utilise google or other search engines to look for research papers
- Be able to recognise the general structure of research papers
- Be able to summarise and present results from research papers

Assessment tasks

- Topic 1
- Topic 2
- Topic 3
- Topic 4

- Topic 5
- Topic 6
- Statistics department seminar

PG - Research and Problem Solving Capability

Our postgraduates will be capable of systematic enquiry; able to use research skills to create new knowledge that can be applied to real world issues, or contribute to a field of study or practice to enhance society. They will be capable of creative questioning, problem finding and problem solving.

This graduate capability is supported by:

Learning outcomes

- Be able to utilise google or other search engines to look for research papers
- Be able to summarise and present results from research papers

Assessment tasks

- Topic 1
- Topic 2
- Topic 3
- Topic 4
- Topic 5
- Topic 6
- Statistics department seminar

PG - Effective Communication

Our postgraduates will be able to communicate effectively and convey their views to different social, cultural, and professional audiences. They will be able to use a variety of technologically supported media to communicate with empathy using a range of written, spoken or visual formats.

This graduate capability is supported by:

Learning outcome

- Be able to summarise and present results from research papers

Assessment tasks

- Topic 1
- Topic 2
- Topic 3
- Topic 4

- Topic 5

- Topic 6

- Statistics department seminar

PG - Engaged and Responsible, Active and Ethical Citizens

Our postgraduates will be ethically aware and capable of confident transformative action in relation to their professional responsibilities and the wider community. They will have a sense of connectedness with others and country and have a sense of mutual obligation. They will be able to appreciate the impact of their professional roles for social justice and inclusion related to national and global issues

This graduate capability is supported by:

Learning outcome

- Be able to obtain a broad view of some research activities in various fields of statistics

Assessment tasks

- Topic 1

- Topic 2

- Topic 3

- Topic 4

- Topic 5

- Topic 6

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