



# STAT825

## Statistics Project

S2 Day 2014

*Statistics*

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#### **Disclaimer**

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## General Information

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|---|
| Unit convenor and teaching staff<br>Unit Convenor<br>Georgy Sofronov<br><a href="mailto:georgy.sofronov@mq.edu.au">georgy.sofronov@mq.edu.au</a><br>Contact via <a href="mailto:georgy.sofronov@mq.edu.au">georgy.sofronov@mq.edu.au</a><br>E4A536<br>Friday 11am-1pm |
| Credit points<br>4  |
| Prerequisites<br>16cp in BCA or STAT units at 800 level or above  |
| Corequisites<br>STAT806 or STAT810  |
| Co-badged status  |
| Unit description<br>This unit comprises a project which either reviews or develops an area of methodology or which discusses the use of statistical methods in a particular subject area.   |

## 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:

Project writing

## Assessment Tasks

| Name                              | Weighting | Due              |
|-----------------------------------|-----------|------------------|
| <a href="#">Project proposal</a>  | 10%       | 28 November 2014 |
| <a href="#">Literature review</a> | 30%       | 28 November 2014 |
| <a href="#">Project report</a>    | 60%       | 28 November 2014 |

## Project proposal

Due: **28 November 2014**

Weighting: **10%**

Project proposal and preparation

On successful completion you will be able to:

- Project writing

## Literature review

Due: **28 November 2014**

Weighting: **30%**

Review of literature, data and statistical methods

On successful completion you will be able to:

- Project writing

## Project report

Due: **28 November 2014**

Weighting: **60%**

### Getting Started:

The first priority is to settle on a project topic that appeals to you and for which we can offer suitable supervision.

### How do you decide on a project topic?

-- Project topic related to your job.

Students who are currently in employment may choose a topic relevant to their job this has the advantage that they are able to work on their project during work hours and using the facilities in their office. If you are in this position then you need to select a supervisor who is familiar with your proposed field of investigation. In the first instance you should discuss the availability of such supervision with the Unit Convenor. If we are unable to offer suitable supervision for your chosen topic you may need to select a different topic, or seek an external supervisor after consulting the Unit Convenor.

-- Project topic suggested by a member of staff

Most students obtain their project topic this way. The procedure is for the student to approach one or maybe several members of staff and to discuss possible subject areas that are of interest to the staff member concerned. The research interests of our department staff are available at [http://www.stat.mq.edu.au/our\\_staff](http://www.stat.mq.edu.au/our_staff). If you have difficulties to locate a supervisor you may seek help from the Unit Convenor.

Out of these discussions the student will choose or be guided to a particular topic. The student must then secure the agreement of the staff member concerned to supervise the topic. Bear in mind that you are asking the staff member to commit considerable time to work with you. Many supervisors will prefer you to work on a project of their choosing, particularly if you do not have very specific plans of your own, as the work will then have continuing benefit and support from both participants. You should communicate with your supervisor regularly by email or in person (eg once per week), regarding your project.

**When you have found a member of staff who is willing to supervise your project you must email the Unit Convenor the supervisor's name and the project topic.**

-- Some topics from previous Masters projects:

- The EM and EMS methods for image reconstruction in emission tomography.
- Time series analysis of beach pollution monitoring data
- The impact of transmission lines on the vegetation of Ku-Ring-Gai Chase National Park.
- Evaluating quality in an academic teaching unit
- The effects of rotation group bias on estimates of unemployment from the monthly labour force survey.
- Censored data and the lognormal distribution.

A comparison of several methods for analysing clustered binary data - a simulation study.

- Housing prices in Sydney: a statistical analysis.
- Sudden infant death syndrome.
- The Effect of Body Mass Index on Intermediate Outcomes in the Treatment of Infertility
- Predictors of Growth Amongst Young Children in Sydney
- A Churn Analysis of a General Insurance Portfolio.

## **Requirements of the project:**

### **1. Scope of the project.**

The project should involve at least some (but not necessarily all) of the following:

- Data collection and/or sampling with appropriate analysis and reporting of results. It is often the case that there are several plausible models for representing the data. Alternative models in such cases should be considered and some justification given for the particular form of analysis chosen.
- Literature search and review. The Science Citation Index, the Current Index of Statistics and the CD-ROM directories in the Library are invaluable tools for such work. Also Mathematical Reviews and Zentralblatt für Mathematik may be useful.
- Problem formulation, model specification and analysis. This is best illustrated by an example:

Suppose a non-standard experimental design has been used in the generation of a set of data. The first task would be to explain the objectives of the experiment, then to explain carefully the nature of the experimental design and to detail any features of the implementation of the experiment that may influence the model chosen to represent the data and its subsequent analysis. This would all come under the heading of 'problem formulation'. The model specification and analysis may involve, for example, proposing an analysis of variance table as well as justification for the particular tests used. This clearly has a number of ingredients in common with the first category (Data collection etc.) however the first category will include problems where standard designs are used and interest is focused on the results of the experiment rather than in the present case where the design and its analysis are at least as important as the interpretation of the data.

- Survey of recent developments in a field. This will involve literature search and review with the above suggestions relevant.
- Simulation.

## **2. Format.**

A common format for many projects usually includes the following items:

Title page (including unit code, eg, STAT 825)

Abstract

Content page(s)

Main body of the project in sections (or chapters) with the following recommended headings:

o Introduction

o Methods

o Results

o Discussion and Conclusion

o References (or Bibliography) (Note: You shall check with your supervisor for reference Style/ Format.)

Appendix

As sections of your first draft are written ask your supervisor to read them and comment. Then work on the suggestions and rewrite. The sooner your supervisor gets a chapter draft the sooner you will get it back and the longer the time you will have to respond to it.

Note that the project must be typed using a word processor with mathematical capability, if necessary. Do not include vast amounts of computer printout in your appendix unless it is absolutely essential to do so. Mostly, it will not be looked at and it causes irritation to the reader as it adds excessive bulk.

## **3. Length**

Excluding index, references and appendices, the project length should be between 8,000 and

11,000 words although for certain topics (for example those with considerable theoretical content) fewer than 8,000 words may be acceptable.

#### 4. Standard of English

The project needs to be written up in English of an acceptable standard. If English is not your first language, you should seek the help of an English-speaking person to correct your grammar and spelling, or use the services of professional editors.

#### 5. Submission of Project

Projects have to be submitted by the 28th of November 2014 (one week before the last day of the examination period of the session).

Three spiral-bound copies should be submitted to the Unit Convenor in person, via your supervisor or by mail. One copy is for your supervisor to keep, and the other two copies will be examined by two markers.

#### Very Important Note:

**Students who fail to complete their project by the due date but have made satisfactory progress in their project during the session may re-enrol in the following session to complete the project.**

**Students who do not complete nor have made substantial progress in their project in a session will NOT be given permission to re-enrol and an F or FA grade will be awarded unless there are special circumstances.**

#### 6. Academic Honesty Policy

Academic honesty is an integral part of the core values and principles contained in the Macquarie University Ethics Statement. Its fundamental principle is that all staff and students act with integrity in the creation, development, application and use of ideas and information. You must read the University's policy on Academic Honesty. This can be found on the MQ web site at:

[http://www.mq.edu.au/policy/docs/academic\\_honesty/policy.html](http://www.mq.edu.au/policy/docs/academic_honesty/policy.html).

Penalties may include a deduction of marks, failure in the unit, and/or referral to the University Discipline Committee.

#### 7. Examination and grading

Two examiners will examine your project and provide numerical marks according to the Marking Guide attached at the back of this document. These marks are then averaged to give the final grade (with a numerical mark) of HD, D, Cr, P or F for your project.

**Note: Students must be aware that you only have one opportunity to submit the project and the two markers will grade your project according to the two submitted copies. You do not have a chance to correct and resubmit.**

On successful completion you will be able to:

- Project writing

## Delivery and Resources

### Technology used and required

This unit is a Master of Applied Statistics Project. There will be no lectures, practicals or tutorials.

### Changes since the last offering of this unit

No major differences from previous offering.

## Unit Schedule

Projects have to be submitted by the 28th of November 2014 (one week before the last day of the examination period of the session).

## Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central](#). Students should be aware of the following policies in particular with regard to Learning and Teaching:

Academic Honesty Policy [http://mq.edu.au/policy/docs/academic\\_honesty/policy.html](http://mq.edu.au/policy/docs/academic_honesty/policy.html)

Assessment Policy <http://mq.edu.au/policy/docs/assessment/policy.html>

Grading Policy <http://mq.edu.au/policy/docs/grading/policy.html>

Grade Appeal Policy <http://mq.edu.au/policy/docs/gradeappeal/policy.html>

Grievance Management Policy [http://mq.edu.au/policy/docs/grievance\\_management/policy.html](http://mq.edu.au/policy/docs/grievance_management/policy.html)

Disruption to Studies Policy [http://www.mq.edu.au/policy/docs/disruption\\_studies/policy.html](http://www.mq.edu.au/policy/docs/disruption_studies/policy.html) *The Disruption to Studies Policy is effective from March 3 2014 and replaces the Special Consideration Policy.*

In addition, a number of other policies can be found in the [Learning and Teaching Category](#) of 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/support/student\\_conduct/](https://students.mq.edu.au/support/student_conduct/)

## 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](http://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](http://ask.mq.edu.au)

## IT Help

For help with University computer systems and technology, visit <http://informatics.mq.edu.au/help/>.

When using the University's IT, you must adhere to the [Acceptable Use Policy](#). The policy applies to all who connect to the MQ network including students.

## Graduate Capabilities

### 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 outcome

- Project writing

#### Assessment tasks

- Project proposal
- Literature review
- Project report

### 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 outcome**

- Project writing

### **Assessment tasks**

- Project proposal
- Literature review
- Project report

## **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 outcome**

- Project writing

### **Assessment tasks**

- Project proposal
- Literature review
- Project report

## **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**

- Project writing

### **Assessment task**

- Project report

## 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

- Project writing

### Assessment task

- Project report

## 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 outcome

- Project writing

### Assessment task

- Project report