STAT2170
Applied Statistics
Session 1, Special circumstances 2021

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

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Notice
As part of Phase 3 of our return to campus plan, most units will now run tutorials, seminars and other small group activities on campus, and most will keep an online version available to those students unable to return or those who choose to continue their studies online.

To check the availability of face-to-face activities for your unit, please go to timetable viewer. To check detailed information on unit assessments visit your unit’s iLearn space or consult your unit convenor.
General Information

Unit convenor and teaching staff
Convenor/Lecturer
Karol Binkowski
karol.binkowski@mq.edu.au
Contact via E-mail
See iLearn for consultation hours

Lecturer
Thomas Fung
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Contact via E-mail
See iLearn for consultation hours

Christine Hale
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Credit points
10

Prerequisites
FOSE1015 or STAT170(P) or STAT1170 or STAT171 or STAT1371 or STAT150 or STAT1250

Corequisites

Co-badged status
STAT6180

Unit description
This unit aims to extend and broaden statistical experience from 1000-level statistics units, with a focus on application to real-world analysis. It covers relationships between categorical or continuous explanatory variables and a continuous response variable using the techniques of one-way and two-way analysis of variance and simple and multiple linear regression. Data management, report writing, graphical presentation of results, and power analysis are discussed.

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:

**ULO2**: Apply appropriate statistical methods, such as one-way ANOVA, two-way ANOVA and multiple regression, to answer research questions.

**ULO1**: Summarise data graphically and numerically and interpret them.

**ULO4**: Use statistical software to create model output and interpret them.

**ULO3**: Justify and evaluate the assumptions underlying the models, and modify the analysis if needed.

**ULO5**: Demonstrate foundational learning skills including active engagement in their learning process.

General Assessment Information

**HURDLES**: Attendance at, and reasonable engagement in, Small Group Teaching Activities (SGTA) classes in this unit is **compulsory**. Attendance and reasonable engagement in the class activities in at least 10 out of 12 of the SGTA classes are requirements to pass the unit. This is a hurdle requirement.

See the unit iLearn page for more detail.

**ATTENDANCE and PARTICIPATION**: Please contact the unit convenor as soon as possible if you have difficulty attending and participating in any classes. There may be alternatives available to make up the work. If there are circumstances that mean you will miss a class, you can apply for Special Consideration via ask.mq.edu.au.

**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 scanned 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 submitting online, please email us to let us know.
Assessment Tasks

<table>
<thead>
<tr>
<th>Name</th>
<th>Weighting</th>
<th>Hurdle</th>
<th>Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>SGTA Participation</td>
<td>0%</td>
<td>Yes</td>
<td>Weekly</td>
</tr>
<tr>
<td>iLearn Quiz</td>
<td>10%</td>
<td>No</td>
<td>Week 4</td>
</tr>
<tr>
<td>Mid-Semester Test</td>
<td>20%</td>
<td>No</td>
<td>Week 7</td>
</tr>
<tr>
<td>Assignment</td>
<td>20%</td>
<td>No</td>
<td>Week 11</td>
</tr>
<tr>
<td>Final Exam</td>
<td>50%</td>
<td>No</td>
<td>Formal Examination period</td>
</tr>
</tbody>
</table>

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 a 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](http://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](http://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.
SGTA Participation
Assessment Type 1: Participatory task
Indicative Time on Task 2: 6 hours
Due: Weekly
Weighting: 0%
This is a hurdle assessment task (see assessment policy for more information on hurdle assessment tasks)

Attendance and reasonable engagement in at least 80% SGTA classes is a requirement to pass the unit.

On successful completion you will be able to:
• Demonstrate foundational learning skills including active engagement in their learning process.

iLearn Quiz
Assessment Type 1: Quiz/Test
Indicative Time on Task 2: 1 hours
Due: Week 4
Weighting: 10%

The quiz will become available on iLearn.

On successful completion you will be able to:
• Apply appropriate statistical methods, such as one-way ANOVA, two-way ANOVA and multiple regression, to answer research questions.
• Summarise data graphically and numerically and interpret them.
• Use statistical software to create model output and interpret them.
• Justify and evaluate the assumptions underlying the models, and modify the analysis if needed.

Mid-Semester Test
Assessment Type 1: Quiz/Test
Indicative Time on Task 2: 1 hours
Due: Week 7
Weighting: 20%

Mid-Semester Test

On successful completion you will be able to:

- Apply appropriate statistical methods, such as one-way ANOVA, two-way ANOVA and multiple regression, to answer research questions.
- Summarise data graphically and numerically and interpret them.
- Use statistical software to create model output and interpret them.
- Justify and evaluate the assumptions underlying the models, and modify the analysis if needed.

Assignment

Assessment Type 1: Quantitative analysis task
Indicative Time on Task 2: 10 hours
Due: Week 11
Weighting: 20%

The assignment will cover all learning outcomes.

On successful completion you will be able to:

- Apply appropriate statistical methods, such as one-way ANOVA, two-way ANOVA and multiple regression, to answer research questions.
- Summarise data graphically and numerically and interpret them.
- Use statistical software to create model output and interpret them.
- Justify and evaluate the assumptions underlying the models, and modify the analysis if needed.
- Demonstrate foundational learning skills including active engagement in their learning process.

Final Exam

Assessment Type 1: Examination
Indicative Time on Task 2: 2 hours
Due: Formal Examination period
Weighting: 50%
Formal invigilated examination testing the learning outcomes of the unit.

On successful completion you will be able to:

- Apply appropriate statistical methods, such as one-way ANOVA, two-way ANOVA and multiple regression, to answer research questions.
- Summarise data graphically and numerically and interpret them.
- Use statistical software to create model output and interpret them.
- Justify and evaluate the assumptions underlying the models, and modify the analysis if needed.

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 Learning Skills Unit 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**

**We have 2 hours of lectures and 1 hour of SGTA per week.**

**Textbook**

There is no prescribed textbook.

**Software**

You are required to use R/RStudio to perform data analyses. You will use R/RStudio as part of the SGTA classes. You can find more information on RStudio at their website: https://www.rstudio.com/. The software is freely available to download at no cost for all standard operating systems (Windows, Mac OS and Linux) at https://www.rstudio.com/products/rstudio/download/.

**Additional References**

These recommended books are available in Reserve at the library.

# Unit Schedule

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<thead>
<tr>
<th>Week</th>
<th>Lectures</th>
<th>Work due</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Course introduction; One-sided tests; Type I and Type II error; Introduction to R/RStudio</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Modified two-sample t-test; Assessing normality and equal variance assumptions</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>One way ANOVA</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>One way ANOVA, Multiple comparisons</td>
<td>iLearn quiz</td>
</tr>
<tr>
<td>5</td>
<td>Transformations; Non-parametrics; Power and Sample Size</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Data management; R Markdown; Simple linear regression</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Simple linear regression and model validation; Multiple regression</td>
<td>Mid Semester Exam</td>
</tr>
<tr>
<td></td>
<td>Mid-Semester Break</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Multiple regression and model validation</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Extensions and examples of multiple regression</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Two-way ANOVA</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Two-way ANOVA continued and multiple comparisons</td>
<td>Assignment</td>
</tr>
<tr>
<td>12</td>
<td>Two-Way ANOVA and multiple regression connection</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Revision</td>
<td></td>
</tr>
</tbody>
</table>

# 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 Enquiry Service

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
Equity 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.

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.

Changes since First Published

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>12/02/2021</td>
<td>Updated General Assessment section</td>
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