STAX1170

Introductory Statistics

Session 1, Online-scheduled-weekday 2025

School of Mathematical and Physical Sciences

Contents

General Information

Unit convenor and teaching staff
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Credit points
10

Prerequisites

Corequisites

Co-badged status

Unit description
This unit provides a broad introduction to statistical concepts and data analysis techniques, providing basic statistical knowledge. The unit dedicates itself to developing an understanding of statistical practice and illustrates this by studying the techniques most commonly employed in the sciences, social sciences, and humanities. Topics covered in this unit include data collection methods, data quality, data summarisation, basic probability, random variables, and statistical models like the normal distribution, followed by sampling distributions and statistical inferences about means and proportions. Also studied are analysis methods relating to comparisons, counted data and relationships, including regression and correlation. Excel is used for handling and analysing data and word processing to report the results.

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: Organise and summarise data graphically and numerically in Excel.

ULO2: Apply basic concepts of probability, random variables and sampling distributions to solve practical problems.

ULO3: Apply appropriate statistical methodologies to answer scientific research questions.

ULO4: Draw conclusions from results of a statistical analysis and communicate to others.

General Assessment Information

Requirements to Pass this Unit: To pass this unit, you must:

1. Attempt all assessment tasks
2. Achieve a total mark equal to or greater than 50%

Participation in learning activities:

We strongly encourage all students to engage regularly with the pre-recorded materials and post-recorded lectures. Consistent interaction with these resources is essential for your success, as they provide opportunities to deepen your understanding, reinforce key concepts, and prepare effectively for assessments. Staying actively involved will enhance your learning experience and help you make the most of the support available throughout the unit.

Late Assessment Submission Penalty:

Unless a Special Consideration request has been submitted and approved, a 5% penalty (of the total possible mark) will be applied each day a written assessment is not submitted, up until the 7th day (including weekends). After the 7th day, a grade of 0 will be awarded even if the assessment is submitted. Submission time for all written assessments is set at 11:55 pm. A 1-hour grace period is provided to students who experience a technical concern. For any late submission of time-sensitive tasks, such as scheduled tests/exams, performance assessments/ presentations, and/or scheduled practical assessments/labs, students need to submit an application for Special Consideration.

Assessments where Late Submissions will be accepted.

1. Generative AI Research Poster – YES, Standard Late Penalty applies
2. Excel-based practical test – NO, unless Special Consideration is granted
3. Module Test – NO, unless Special Consideration is granted

Special Considerations:

The Special Consideration Policy aims to support students impacted by short-term circumstances or events that are serious, unavoidable, and significantly disruptive and may affect their performance in assessment. If you experience circumstances or events that affect your ability to complete the assessments in this unit on time, please inform the convenor and submit a Special Consideration request through https://connect.mq.edu.au/s/.

Assessment Tasks

Name	Weighting	Hurdle	Due
Generative AI Research Poster	30%	No	Week 4
Excel based practical test invigilated	40%	No	Week 9
Module Test	30%	No	Week 13

Generative AI Research Poster

Assessment Type [1]: Case study/analysis
Indicative Time on Task [2]: 7 hours
Due: **Week 4**
Weighting: **30%**

Students analyze a dataset and create a research poster summarizing their findings, using AI tools to assist with components like data visualization, summaries, or layout suggestions. The submission includes the poster and a reflection on how AI was used ethically, what aspects they improved manually, and the importance of human oversight in academic work. Assessment Focus: Data communication, creativity, and ethical AI use.

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Excel based practical test invigilated

Assessment Type [1]: Qualitative analysis task
Indicative Time on Task [2]: 1 hours
Due: **Week 9**
Weighting: **40%**

During the Excel-based invigilated test, students will demonstrate their practical knowledge by applying statistical techniques to a given dataset.

On successful completion you will be able to:

- Organise and summarise data graphically and numerically in Excel.

- Apply basic concepts of probability, random variables and sampling distributions to solve practical problems.
- Apply appropriate statistical methodologies to answer scientific research questions.

Module Test

Assessment Type [1]: Quiz/Test
Indicative Time on Task [2]: 2 hours
Due: **Week 13**
Weighting: **30%**

This unit is structured into multiple modules, with a test designed to assess the content of modules. This particular assessment is non-invigilated.

On successful completion you will be able to:

- Organise and summarise data graphically and numerically in Excel.
- Apply basic concepts of probability, random variables and sampling distributions to solve practical problems.
- Apply appropriate statistical methodologies to answer scientific research questions.

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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

Classes

The statistics content is structured for self-paced learning from Week 1 to Week 13 (except Week 9, when the test takes place). Each week, you should work through the following materials: • Pre-recorded lecture (1 hour) – Available for Weeks 1–12. • Pre-recorded SGTA solutions (1 hour) – Covering topics from the current or previous lectures (Weeks 1–13). • Pre-recorded practical solutions (1 hour) – Application of topics from the current or previous lectures (Weeks 1–13).

Regularly engaging with these materials will help reinforce your understanding and prepare you effectively for assessments.

Communication

We will communicate with you via your university email or through announcements on iLearn. You can also post queries to convenors on the iLearn discussion board or send them to your lecturers [or stat1170.admin@mq.edu.au] from your university email address.

COVID Information

For the latest information on the University's response to COVID-19, please refer to the Coronavirus infection page on the Macquarie website: https://www.mq.edu.au/about/coronavirus-faqs.

Please check this page regularly for information and changes in requirements during the semester. If this unit regarding COVID-19 changes, we will communicate these via iLearn.

Assistance

For help with any matters related to this unit, students should contact the appropriate department staff by emailing stat1170.admin@mq.edu.au.

Required and Recommended Texts and/or Materials

- Software:
    - *Excel*, a spreadsheet application from Microsoft's *Office* suite, is used in this unit. Students with Mac or Windows computers can download it from the student portal, which can be accessed from the Student IT services web page: http://students.mq.edu.au/it_services/. Students using other operating systems might find *Google Sheets* or *OpenOffice Calc* a workable alternative.

Recommended textbook for this unit:

- *Modern Statistics: An introduction*, Don McNeil and Jenny Middledorp (ISBN 9781486007011). This can be purchased in hard copy from www.booktopia.com.au/coop or in e-format (ISBN 9781486022120).

Other recommended reading:

- *Introduction to the Practice of Statistics*, Moore, D.S. and McCabe, G. P (W.H. Freeman)
- *Statistics without Tears* by Rowntree (Penguin)
- *Mind on Statistics* by Utts & Heckard (Thomson, 2004)
- *Elementary Statistics* by Johnson & Kuby (Thomson, 2007)
- *Statistics: The Art & Science of Learning from Data* by Agresti & Franklin (Prentice Hall, 2007)
- *The Statistical Sleuth* by Ramsey and Schafer (Duxbury, 2002).

Technology Used and Required

iLearn (a version of Moodle) is used to deliver course material and can be accessed at http://ilearn.mq.edu.au.

Prizes

The Don McNeil Prize for Introductory Statistics is named in honour of the foundation Professor of Statistics at Macquarie University. The prize is awarded twice per year to the student with the best overall performance in a first-year statistics unit.

Unit Schedule

Week	Lecture Topic	Assessment due
1	Data; research questions; graphics	
2	Random Variables; Binomial distribution	
3	Normal distribution	
4	Sampling distributions	GenAI Research Poster
5	Hypothesis tests for population mean	
6	Comparing population means	
7	Power of a hypothesis test	
8	Simple linear regression	
9	Significance of regression	Module 1, 2 & 3 Excel Practical Test invigilated
10	Advanced regression	
11	Categorical data analysis	
12	Categorical data analysis	
13	*No lecture*	Module 4 & 5 online quiz

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
- Assessment Procedure
- Complaints Resolution 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 connect.mq.edu.au or if you are a Global MBA student contact globalmba.support@mq.edu.au

Academic Integrity

At Macquarie, we believe academic integrity – honesty, respect, trust, responsibility, fairness and courage – is at the core of learning, teaching and research. We recognise that meeting the expectations required to complete your assessments can be challenging. So, we offer you a range of resources and services to help you reach your potential, including free online writing and maths support, academic skills development and wellbeing consultations.

Student Support

Macquarie University provides a range of support services for students. For details, visit http://students.mq.edu.au/support/

Academic Success

Academic Success provides resources to develop your English language proficiency, academic writing, and communication skills.

- Workshops
- Chat with a WriteWISE peer writing leader
- Access StudyWISE
- Upload an assignment to Studiosity

- Complete the 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

Macquarie University offers a range of Student Support Services including:

- IT Support
- Accessibility and disability support with study
- Mental health support
- Safety support to respond to bullying, harassment, sexual harassment and sexual assault
- Social support including information about finances, tenancy and legal issues
- Student Advocacy provides independent advice on MQ policies, procedures, and processes

Student Enquiries

Got a question? Ask us via the Service Connect Portal, or contact Service Connect.

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 from Previous Offering

The **Employability module** has been removed from the unit. Instead, **new topics** have been introduced in **Week 2, Week 7, and Week 10** (refer to the unit schedule). Additionally, **Module Tests** have been replaced by **three assessments** (refer to the assessment tasks section of the unit guide).

Unit information based on version 2025.02 of the Handbook