



# PSYU2248

## Design and Statistics II

Session 1, In person-scheduled-weekday, North Ryde 2024

*School of Psychological Sciences*

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#### **Disclaimer**

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## General Information

### Unit convenor and teaching staff

Convenor & Lecturer

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Please see iLearn for consultation hours

Lecturer

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Please see iLearn for consultation hours

### Credit points

10

### Prerequisites

((PSYC104 or PSYU1104 or PSYX104 or PSYX1104) and (PSYC105 or PSYU1105 or PSYX105 or PSYX1105)) or ((PSYU1101 or PSYX1101 or PSYU1102 or PSYX1102) and (STAT1103 or STAX1103))

### Corequisites

### Co-badged status

### Unit description

In this intermediate statistics unit, you will build upon first-year to continue your journey in both the design and statistical components of experimental and non-experimental research common to psychological science. The importance of interpretation based on both the design and statistical analysis components is emphasised in this unit, as well as the utility of research to achieve positive impact for real-world problems and make informed decisions grounded in scientific evidence. You will learn a range of statistical analyses such as analysis of variance, linear regression, and non-parametric analyses. You will apply design and statistics principles to both academic and non-academic research contexts, including the communication of findings in multiple formats to a variety of audiences. You will continue to develop your practical data analysis skills using Stata statistical software.

## 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:** Analyse, interpret, critique, and discuss empirically derived data and scientific evidence relating to research design and statistics in psychology (Capability 1: Scientist and Scholar).

**ULO2:** Communicate a breadth of understanding of psychological research design, analysis, and interpretation, to convey thoughtful, scientifically driven information to multiple audiences (Capability 2: Practitioner).

**ULO3:** Apply psychological research design and analysis knowledge effectively to achieve positive impact in real-world scenarios (Capability 2: Practitioner)

**ULO4:** Demonstrate systems-thinking skills and the capacity to effectively navigate uncertain and ambiguous situations by critically evaluating alternatives, and making informed decisions grounded in scientific evidence (Capability 3: Citizen).

## General Assessment Information

Grade descriptors and other information concerning grading are contained in the [Macquarie University Assessment Policy](#).

All final grades are determined by a grading committee, in accordance with the Macquarie University Assessment Policy, and are not the sole responsibility of the Unit Convenor.

Students will be awarded a final grade and a mark which must correspond to the grade descriptors specified in the [Assessment Procedure](#) (clause 128).

To pass this unit, you must demonstrate sufficient evidence of achievement of the learning outcomes, meet any ungraded requirements, and achieve a final mark of 50 or better.

Further details for each assessment task will be available on iLearn.

## Late Submissions

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 11.55pm. A 1-hour grace period is provided to students who experience a technical concern.

For example:

Number of days (hours) late	Total Possible Marks	Deduction	Raw mark	Final mark
1 day (1-24 hours)	100	5	75	70

2 days (24-48 hours)	100	10	75	65
3 days (48-72 hours)	100	15	75	60
7 days (144-168 hours)	100	35	75	40
>7 days (>168 hours)	100	-	75	0

For any late submissions 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.

No further submissions will be accepted after the marked assignments are returned and feedback is released to students.

The final exam for this unit will occur on Macquarie University campus. Students are expected to make themselves available for the final exam, at the date and time set by the University, in line with the Assessment Policy and Procedure. Sitting the final exam is compulsory in order to be eligible to pass the unit. Any student who does not attempt the final exam will be granted a Fail Absent grade.

**Word count penalty:** 5% of the possible mark will be deducted per 100 words over the word limit for the assessment task. An additional 99 words beyond the limit can be written without penalty.

## Assessment Tasks

Name	Weighting	Hurdle	Due
<a href="#"><u>Practical exercises</u></a>	10%	No	Every Sunday from Week 2
<a href="#"><u>Mid-session exam</u></a>	20%	No	Week 8
<a href="#"><u>Data analysis report</u></a>	30%	No	Week 10
<a href="#"><u>Course Capability Reflection</u></a>	0%	No	Week 10
<a href="#"><u>Final examination</u></a>	40%	No	University Exam Period

### Practical exercises

Assessment Type <sup>1</sup>: Problem set

Indicative Time on Task <sup>2</sup>: 12 hours

Due: **Every Sunday from Week 2**

Weighting: **10%**

You will develop your practical skills in data analysis and communication by completing regular practical exercises.

On successful completion you will be able to:

- Analyse, interpret, critique, and discuss empirically derived data and scientific evidence relating to research design and statistics in psychology (Capability 1: Scientist and Scholar).
- Communicate a breadth of understanding of psychological research design, analysis, and interpretation, to convey thoughtful, scientifically driven information to multiple audiences (Capability 2: Practitioner).
- Apply psychological research design and analysis knowledge effectively to achieve positive impact in real-world scenarios (Capability 2: Practitioner)
- Demonstrate systems-thinking skills and the capacity to effectively navigate uncertain and ambiguous situations by critically evaluating alternatives, and making informed decisions grounded in scientific evidence (Capability 3: Citizen).

## Mid-session exam

Assessment Type <sup>1</sup>: Quiz/Test

Indicative Time on Task <sup>2</sup>: 15 hours

Due: **Week 8**

Weighting: **20%**

You will sit a mid-session exam testing your understanding and application of content up to this point.

On successful completion you will be able to:

- Analyse, interpret, critique, and discuss empirically derived data and scientific evidence relating to research design and statistics in psychology (Capability 1: Scientist and Scholar).
- Communicate a breadth of understanding of psychological research design, analysis, and interpretation, to convey thoughtful, scientifically driven information to multiple audiences (Capability 2: Practitioner).

- Apply psychological research design and analysis knowledge effectively to achieve positive impact in real-world scenarios (Capability 2: Practitioner)
- Demonstrate systems-thinking skills and the capacity to effectively navigate uncertain and ambiguous situations by critically evaluating alternatives, and making informed decisions grounded in scientific evidence (Capability 3: Citizen).

## Data analysis report

Assessment Type <sup>1</sup>: Quantitative analysis task

Indicative Time on Task <sup>2</sup>: 25 hours

Due: **Week 10**

Weighting: **30%**

You will apply analytic skills to critically analyse a given research problem, conducting analysis and communicating the results in both formal academic and non-academic formats.

On successful completion you will be able to:

- Analyse, interpret, critique, and discuss empirically derived data and scientific evidence relating to research design and statistics in psychology (Capability 1: Scientist and Scholar).
- Communicate a breadth of understanding of psychological research design, analysis, and interpretation, to convey thoughtful, scientifically driven information to multiple audiences (Capability 2: Practitioner).
- Apply psychological research design and analysis knowledge effectively to achieve positive impact in real-world scenarios (Capability 2: Practitioner)
- Demonstrate systems-thinking skills and the capacity to effectively navigate uncertain and ambiguous situations by critically evaluating alternatives, and making informed decisions grounded in scientific evidence (Capability 3: Citizen).

## Course Capability Reflection

Assessment Type <sup>1</sup>: Portfolio

Indicative Time on Task <sup>2</sup>: 5 hours

Due: **Week 10**

Weighting: **0%**

You will complete an exercise to reflect, with evidence, on how this unit has further developed your capabilities and psychological literacy, including development towards your personal and

professional goals.

On successful completion you will be able to:

- Apply psychological research design and analysis knowledge effectively to achieve positive impact in real-world scenarios (Capability 2: Practitioner)
- Demonstrate systems-thinking skills and the capacity to effectively navigate uncertain and ambiguous situations by critically evaluating alternatives, and making informed decisions grounded in scientific evidence (Capability 3: Citizen).

## Final examination

Assessment Type <sup>1</sup>: Examination

Indicative Time on Task <sup>2</sup>: 29 hours

Due: **University Exam Period**

Weighting: **40%**

You will sit the final examination held within the University's formal exam period, in accordance with relevant requirements.

On successful completion you will be able to:

- Analyse, interpret, critique, and discuss empirically derived data and scientific evidence relating to research design and statistics in psychology (Capability 1: Scientist and Scholar).
- Communicate a breadth of understanding of psychological research design, analysis, and interpretation, to convey thoughtful, scientifically driven information to multiple audiences (Capability 2: Practitioner).
- Apply psychological research design and analysis knowledge effectively to achieve positive impact in real-world scenarios (Capability 2: Practitioner)
- Demonstrate systems-thinking skills and the capacity to effectively navigate uncertain and ambiguous situations by critically evaluating alternatives, and making informed decisions grounded in scientific evidence (Capability 3: Citizen).

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<sup>1</sup> 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.

<sup>2</sup> 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

### In person-scheduled-weekday offering

As a student enrolled in this unit, you will engage in a range of face-to-face or online learning activities, including lectures and practicals, etc.

Details can be found on the iLearn site for this unit. Students can enroll in either an on-campus lecture (space permitting) or an online/live-streamed lecture classes. Practical classes all run on campus only. Students should not attend on-campus classes if you are unwell or have any cold and flu-like symptoms.

For general information on unit versions, see this website <https://students.mq.edu.au/study/enrolling/choosing-units>

### Online-scheduled-In person assessment offering

As a student enrolled in this unit, you will engage in a range of face-to-face or online learning activities, including lectures and practicals, etc.

Practical classes all run online via Zoom. Lectures will run live online at the time and day indicated in the timetable. The final exam for this unit will be on Macquarie University campus.

For general information on unit versions, see this website <https://students.mq.edu.au/study/enrolling/choosing-units>

## Recommended Readings

Howell, D. C. (2016). *Fundamental statistics for the behavioral sciences*. Cengage learning.

Or, Howell, D. C. (2013). *Statistical methods for psychology*. Belmont, CA: Wadsworth Cengage Learning.

Or, Weinberg, S. L. & Abramowitz, S. K. (2020). *Statistics using Stata: An Integrative Approach (2nd ed.)*. New York: Cambridge University Press.

## Technology Used

Active participation in the learning activities throughout the unit will require students to have access to a tablet, laptop or similar device. Students who do not own their own laptop computer may borrow one from the university library.



You will be using the software package **Stata** throughout the unit including for all of the assessments and practical classes. Details on how to access Stata for free can be found on: <https://students.mq.edu.au/support/technology/software/stata>

## Unit Schedule

Please note that the schedule may change; see iLearn for more details.

Weeks	Topic/Theme
Week 1	Introduction to the unit + Revision: Psychological Design & Methods
Week 2	Revision: Correlation + Simple Linear Regression I
Week 3	Simple Linear Regression II + Multiple Linear Regression I
Week 4	Multiple Linear Regression II
Week 5	Revision: t-test + One-Way Analysis of Variance (ANOVA) I
Week 6	One-Way Analysis of Variance (ANOVA) II
Week 7	Factorial ANOVA I
Week 8	Mid-session Review
Week 9	Factorial ANOVA II
Week 10	Factorial ANOVA III
Week 11	Non-parametric Tests
Week 12	Power + Loose Ends
Week 13	Final Review

## 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](#)
- [Assessment Procedure](#)
- [Complaints Resolution Procedure for Students and Members of the Public](#)
- [Special Consideration Policy](#)

Students seeking more policy resources can visit [Student Policies \(https://students.mq.edu.au/support/study/policies\)](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](http://ask.mq.edu.au) or if you are a Global MBA student contact [globalmba.support@mq.edu.au](mailto: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/>

## The Writing Centre

[The Writing Centre](#) 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 [AskMQ](#), 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/](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.

## INCLUSION AND DIVERSITY

Social inclusion at Macquarie University is about giving everyone who has the potential to benefit from higher education the opportunity to study at university, participate in campus life and flourish in their chosen field. The University has made significant moves to promote an equitable, diverse and exciting campus community for the benefit of staff and students. It is your responsibility to contribute towards the development of an inclusive culture and practice in the areas of learning and teaching, research, and service orientation and delivery. As a member of the Macquarie University community, you must not discriminate against or harass others based on their sex, gender, race, marital status, carers' responsibilities, disability, sexual orientation, age, political conviction or religious belief. All staff and students are expected to display appropriate behaviour that is conducive to a healthy learning environment for everyone.

## PROFESSIONALISM

In the Faculty of Medicine, Health and Human Sciences, professionalism is a key capability

embedded in all our courses.

As part of developing professionalism, students are expected to attend all small group interactive sessions including clinical, practical, laboratory, work-integrated learning (e.g., PACE placements), and team-based learning activities. Some learning activities are recorded (e.g., face-to-face lectures), however you are encouraged to avoid relying upon such material as they do not recreate the whole learning experience and technical issues can and do occur. As an adult learner, we respect your decision to choose how you engage with your learning, but we would remind you that the learning opportunities we create for you have been done so to enable your success, and that by not engaging you may impact your ability to successfully complete this unit. We equally expect that you show respect for the academic staff who have worked hard to develop meaningful activities and prioritise your learning by communicating with them in advance if you are unable to attend a small group interactive session.

Another dimension of professionalism is having respect for your peers. It is the right of every student to learn in an environment that is free of disruption and distraction. Please arrive to all learning activities on time, and if you are unavoidably detained, please join activity as quietly as possible to minimise disruption. Phones and other electronic devices that produce noise and other distractions must be turned off prior to entering class. Where your own device (e.g., laptop) is being used for class-related activities, you are asked to close down all other applications to avoid distraction to you and others. Please treat your fellow students with the utmost respect. If you are uncomfortable participating in any specific activity, please let the relevant academic know.

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Unit information based on version 2024.02 of the [Handbook](#)