



PSYU3349

Design and Statistics III

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

School of Psychological Sciences

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General Information

Unit convenor and teaching staff

Convenor & Professor

Erik Reichle

erik.reichle@mq.edu.au

By appointment

Credit points

10

Prerequisites

((Admission to BPsych(Hons) and 60cp in PSY or PSYU or PSYX units at 2000 level including (PSY248 or PSYU2248 or PSYX248 or PSYX2248)) OR ((60cp from PSY234 or PSYU2234 or PSYX234 or PSYX2234 or PSY235 or PSYU2235 or PSYX235 or PSYX2235 or PSY236 or PSYU2236 or PSYX236 or PSYX2236 or PSY246 or PSYU2246 or PSYX246 or PSYX2246 or PSY247 or PSYU2247 or PSYX247 or PSYX2247 or PSY248 or PSYU2248 or PSYX248 or PSYX2248) and (30cp(Cr) from PSY234 or PSYU2234 or PSYX234 or PSYX2234 or PSY235 or PSYU2235 or PSYX235 or PSYX2235 or PSY236 or PSYU2236 or PSYX236 or PSYX2236 or PSY246 or PSYU2246 or PSYX246 or PSYX2246 or PSY247 or PSYU2247 or PSYX247 or PSYX2247 or PSY248 or PSYU2248 or PSYX248 or PSYX2248))

Corequisites

Co-badged status

Unit description

This unit builds on and unifies statistical and design topics introduced in previous units, particularly PSYU2248 Design and Statistics II. Topics include: repeated measures and mixed design ANOVA, multiple regression (linear, curvilinear, and logistic); analysis of variance and covariance; and model reduction procedures. The unit also illustrates the links between these different methods through placing them in the context of the generalised linear model; in so doing the unit enhances students' understanding of statistical methods and their relationship with research design. Practical classes utilise the Stata statistical package.

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: Clearly and concisely communicate quantitative research results

ULO2: Demonstrate an understanding of the connection between research design and data analytic methods: Apply the appropriate data analytic methods to the respective research designs, and vice versa

ULO3: Communicate an understanding of the complexities of various research designs with respect to their data analysis and interpretation

ULO4: Demonstrate and apply an understanding of the framework of data analysis methods that exist within the Generalized Linear Model

ULO5: Appropriately apply analysis methods to a given research design, type of data and research question

ULO6: Undertake data analysis using Stata that answers practical questions in psychology research

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
Online quizzes	10%	No	Weekly
Mid session Examination	10%	No	Week 7 (Details see Timetable)
Practical Project	40%	No	Week 8
Final Examination	40%	No	Formal University Examination Period

Online quizzes

Assessment Type ¹: Quiz/Test

Indicative Time on Task ²: 12 hours

Due: **Weekly**

Weighting: **10%**

Regular online quizzes requiring practical data analysis

On successful completion you will be able to:

- Clearly and concisely communicate quantitative research results
- Demonstrate an understanding of the connection between research design and data analytic methods: Apply the appropriate data analytic methods to the respective research designs, and vice versa
- Communicate an understanding of the complexities of various research designs with respect to their data analysis and interpretation
- Demonstrate and apply an understanding of the framework of data analysis methods that exist within the Generalized Linear Model
- Appropriately apply analysis methods to a given research design, type of data and research question
- Undertake data analysis using Stata that answers practical questions in psychology research

Mid session Examination

Assessment Type ¹: Examination

Indicative Time on Task ²: 10 hours

Due: **Week 7 (Details see Timetable)**

Weighting: **10%**

Practical exam requiring data analysis

On successful completion you will be able to:

- Demonstrate an understanding of the connection between research design and data analytic methods: Apply the appropriate data analytic methods to the respective research designs, and vice versa
- Communicate an understanding of the complexities of various research designs with respect to their data analysis and interpretation
- Demonstrate and apply an understanding of the framework of data analysis methods that exist within the Generalized Linear Model
- Appropriately apply analysis methods to a given research design, type of data and research question
- Undertake data analysis using Stata that answers practical questions in psychology research

Practical Project

Assessment Type ¹: Quantitative analysis task

Indicative Time on Task ²: 40 hours

Due: **Week 8**

Weighting: **40%**

Practical project requiring data analysis and a written report to address a research question within the context of psychology research

On successful completion you will be able to:

- Clearly and concisely communicate quantitative research results
- Demonstrate an understanding of the connection between research design and data analytic methods: Apply the appropriate data analytic methods to the respective research designs, and vice versa
- Communicate an understanding of the complexities of various research designs with respect to their data analysis and interpretation
- Appropriately apply analysis methods to a given research design, type of data and research question
- Undertake data analysis using Stata that answers practical questions in psychology research

Final Examination

Assessment Type ¹: Examination

Indicative Time on Task ²: 31 hours

Due: **Formal University Examination Period**

Weighting: **40%**

Final examination held within the University's formal exam period, in accordance with relevant requirements.

On successful completion you will be able to:

- Demonstrate an understanding of the connection between research design and data analytic methods: Apply the appropriate data analytic methods to the respective research designs, and vice versa

- Communicate an understanding of the complexities of various research designs with respect to their data analysis and interpretation
- Demonstrate and apply an understanding of the framework of data analysis methods that exist within the Generalized Linear Model
- Appropriately apply analysis methods to a given research design, type of data and research question
- Undertake data analysis using Stata that answers practical questions in psychology research

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

In Person Scheduled Attendance Pattern:

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. **Both the mid-session exam and the final exam for this unit will be on campus.**

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

Online Scheduled In-Person Attendance Pattern:

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

Details can be found on the iLearn site for this unit. Practical classes all run online only, via Zoom. Lectures will run live online at the time and day indicated in the timetable. **Both the mid-session exam and the final exam for this unit will be on campus.**

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

Textbook

Agresti, A. (2018). *Statistical Methods for the Social Sciences* (5th ed.). Boston, USA: Pearson.

Additional weekly readings are available through Leganto on iLearn.

Computing

You are expected to have had prior experience in the use of Stata before coming into PSYU3349, and be able to read raw data files, access pre-existing data files and retrieve Stata data files. You are also expected to have some knowledge of syntax in Stata. You can directly download Stata to your own computer from MQ's website <https://students.mq.edu.au/support/technology/software/stata> following the instructions closely. If you experience technical issues, contact IT Help <https://students.mq.edu.au/support/technology/service-desk>

Competent use of Stata is required heading into PSYU3349. If you need a refresher on Stata, then this playlist offers a good place to start: https://www.youtube.com/playlist?list=PLN5lSkQdgXWnnlVeA_Y0OBGmnw21fvcmU

Unit Schedule

Week by week list of topics (<i>note: this is subject to change</i>)				
Week	Lecture Topic	Reading	Assessment	Prac Class Topic
1	Administration, Overview of the unit Multiple regression	Textbook Ch 9 (revision) Textbook Ch 11 (new)	Quiz - revision	<i>No prac classes</i>
2	ANOVA by regression I	Textbook 12.1 – 12.4	Quiz – simple regression	Revision
3	ANOVA by regression II	Textbook 12.1 – 12.4	Quiz – multiple regression	Simple regression
4	ANCOVA	Textbook 13.1 – 13.2	Quiz – ANOVA via regression	Multiple regression
5	Curvilinear relationships	Textbook 14.5	Quiz – ANCOVA	ANOVA via regression
6	Badly behaved data	Textbook 5.5, 14.2	Quiz - Curvilinear	ANCOVA
7	Model reduction	Textbook 14.1 Supplementary notes	Mid-session exam Quiz – badly behaved data	Curvilinear
8	Categorical data and logistic regression I	Textbook 8.1 – 8.2, 15.1	Prac project due (no quiz)	Badly behaved data

9	Logistic regression II	Textbook 15.1 – 15.3	Quiz – model reduction	<i>No prac classes</i>
10	Paired t-test and repeated measures	Howell 7.4	Quiz – logistic regression	Model reduction
11	Repeated measures I	Howell 14.1 – 14.5	Quiz – paired t-tests and one-way RM ANOVA	Logistic regression
12	Repeated measures II + Mixed designs	Howell 14.7	Quiz – two-way RM ANOVA	Paired t-tests and one-way RM ANOVA
13	End-of-session Recap		Quiz – Mixed designs	Two-way RM ANOVA

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 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/>

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/.

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.

Unit information based on version 2024.01R of the [Handbook](#)