



PSY 248

Design and Statistics II

S2 Day 2016

Department of Psychology

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Disclaimer

Macquarie University has taken all reasonable measures to ensure the information in this publication is accurate and up-to-date. However, the information may change or become out-dated as a result of change in University policies, procedures or rules. The University reserves the right to make changes to any information in this publication without notice. Users of this publication are advised to check the website version of this publication [or the relevant faculty or department] before acting on any information in this publication.

General Information

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Credit points

3

Prerequisites

STAT122(P) or STAT170(P) or STAT171(P) or PSY122(P) or (PSYC104 and PSYC105) or admission to GDipPsych

Corequisites

Co-badged status

Unit description

This is an intermediate statistics unit, which covers both the design and statistical components of experiments common to psychological research. The importance of interpretation based on both the design and statistics components is emphasised, together with concepts of power and sample size requirements for efficient research. Statistical methods covered include: descriptive statistics; one-way and two-way analysis of variance; correlation; and regression and non parametric equivalents of ANOVA. The unit includes instruction on the presentation of statistical results in report format. Practical classes are based on the use of the SPSS 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:

- Appreciate the way statistical techniques are used to support theory in psychology
- Perform analyses of simple and complex experimental designs in psychology
- Critically evaluate designs and analyses in experimental psychology

General Assessment Information

Assignments

Details of assignments will be available at least four weeks prior to them being due. Both assignments are to be submitted electronically, via the unit's iLearn page. Assignments submitted by post or emailed to tutors/lecturers will not be accepted. Submission of both assignments is required to be eligible to pass the unit. Marks and feedback will be released to students via iLearn.

Both assignments are due at 5pm. Please also note that iLearn can lag when large numbers of students are uploading documents at the same time. Submission time for assignments is counted as the time the assessment was received, not the time the uploading began. Because of this, make sure you don't leave your submission to 4:55pm the day it is due! Late penalties will be applied to assignments that are received after the due time.

Penalties for late submission of assignments will accrue at 5% per day (weekends included) until the marked assignments are returned. Since assignment details will be available for approximately 4 weeks prior to their due date, medical or misadventure bases for extensions must be certified FOR A SUBSTANTIAL PART OF THE FOUR WEEKS PRIOR TO AND INCLUDING THE DUE DATE. Please note that computer failures or other technological difficulties are not considered to be misadventures.

All requests for extensions must be made prior to the due date for the assignment. Request for Extensions for Assignments are granted by the Student Centre. Ordinarily, no extensions of time

for submission of written work will be granted since ample time for preparation will have been given. If an extension is required for medical or other extenuating circumstances, students may request this in writing through ask.mq.edu.au with supporting documentary evidence (such as medical certificate, counsellor note, or similar). The staff in the Student Centre will make all decisions regarding extensions. Neither individual tutors nor the course convenor will grant extensions. Assignments will not be accepted after marked assignments are returned to students online via iLearn.

Please check your University Handbook of Undergraduate Studies and the Psychology Department's Policy on plagiarism for the consequences attached to copying others' work and claiming it as your own.

Final Exam

The University Examination period in Session 2 is **14 November - 2 December 2016**. You are expected to present yourself for examination at the time and place designated in the University Examination Timetable. The timetable will be available in Draft form approximately eight weeks before the commencement of the examinations and in Final form approximately four weeks before the commencement of the examinations.

http://students.mq.edu.au/student_admin/exams/

The only exception to not sitting an examination at the designated time is because of documented illness or unavoidable disruption. In these circumstances you may wish to consider applying for Special Consideration. Information about unavoidable disruption and the special consideration process is available at <http://www.psy.mq.edu.au/speccond/scrules.htm>

If a Supplementary Examination is granted as a result of the Special Consideration process, the examination will be scheduled after the conclusion of the official examination period. Supplementary Examination in the Department of Psychology will be held on the **15 and 16 of December 2016**. The format of a supplementary examination is at each unit convener's discretion and is subject to change from the original final examination. Supplementary Exams are only offered to students who have satisfactorily completed all other assessments for the unit and were unable to sit the final exam because of documented illness or unavoidable disruption.

Instructions on applying for sitting of a supplementary exam are available from the website, www.psy.mq.edu.au/speccond. It is the student's responsibility to follow the steps outlined in this website. An email will be sent to the student advising them of the outcome of their request for a supplementary exam. If a supplementary exam has been granted, it is the student's responsibility to check the Department of Psychology Special Consideration website for information relating to the date and location of the supplementary exam. Students who are granted to sit for a supplementary exam must make themselves available to sit for the supplementary exam on the specified date. There will only be one time. It is the student's responsibility to email Student Centre to confirm attendance at the supplementary exam.

You are advised that 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, which is the final day of the official examination period.

Assessment Tasks

Name	Weighting	Due
Revision quiz	5%	Midnight, Sunday 07/08/2016
Weekly quizzes	15%	Midnight, each Sunday
Assignment 1	10%	5pm, 08/09/2016 (Week 6)
Optional test 1	10%	In class, 16/09/2016 (Week 7)
Assignment 2	10%	5pm, 03/11/2016 (Week 12)
Optional test 2	10%	In class, 11/11/2016 (Week 13)
Final exam	40%	University examination period

Revision quiz

Due: **Midnight, Sunday 07/08/2016**

Weighting: **5%**

An online quiz to assess revision of design and statistics content from previous studies. This quiz will be available via iLearn and students can have multiple attempts to complete it until the due date.

On successful completion you will be able to:

- Appreciate the way statistical techniques are used to support theory in psychology
- Critically evaluate designs and analyses in experimental psychology

Weekly quizzes

Due: **Midnight, each Sunday**

Weighting: **15%**

Practical exercises will be provided on iLearn weekly, which students must complete before attempting the weekly quiz. Each week's quiz is relevant to the following week's practical exercise.

Access to SPSS is required for these weekly quizzes. Quizzes must be completed within iLearn by midnight each Sunday night, with the **first due by midnight Sunday the 07/08/2016**. The iLearn system will not accept submissions after midnight each Sunday and a mark of zero for that week will be recorded if no quiz is submitted on-time.

On successful completion you will be able to:

- Appreciate the way statistical techniques are used to support theory in psychology
- Perform analyses of simple and complex experimental designs in psychology
- Critically evaluate designs and analyses in experimental psychology

Assignment 1

Due: **5pm, 08/09/2016 (Week 6)**

Weighting: **10%**

A take-home assignment, which involves reading a journal article and answering questions relating to the design and analysis of the study and data.

On successful completion you will be able to:

- Appreciate the way statistical techniques are used to support theory in psychology
- Critically evaluate designs and analyses in experimental psychology

Optional test 1

Due: **In class, 16/09/2016 (Week 7)**

Weighting: **10%**

An in-class, open book optional test, worth *up to* 10% (dependent on performance).

On successful completion you will be able to:

- Appreciate the way statistical techniques are used to support theory in psychology
- Perform analyses of simple and complex experimental designs in psychology

Assignment 2

Due: **5pm, 03/11/2016 (Week 12)**

Weighting: **10%**

A practical assignment involving use of SPSS, data analysis, interpretation of results and communication of findings.

On successful completion you will be able to:

- Appreciate the way statistical techniques are used to support theory in psychology
- Perform analyses of simple and complex experimental designs in psychology

Optional test 2

Due: **In class, 11/11/2016 (Week 13)**

Weighting: **10%**

An in-class, open book optional test, worth *up to* 10% (dependent on performance).

On successful completion you will be able to:

- Appreciate the way statistical techniques are used to support theory in psychology
- Perform analyses of simple and complex experimental designs in psychology

Final exam

Due: **University examination period**

Weighting: **40%**

Final open-book examination in the University's exam period. Your final exam is worth *between 40% and 60%* of your final mark for PSY248 (dependent on performance in both Optional Tests).

On successful completion you will be able to:

- Appreciate the way statistical techniques are used to support theory in psychology
- Perform analyses of simple and complex experimental designs in psychology
- Critically evaluate designs and analyses in experimental psychology

Delivery and Resources

Technology

Students must have access to SPSS, a statistical software package, for this course. SPSS can be bought from the Co-Op bookshop, accessed on University computers (e.g. C5C labs), and/or accessed online via iLab. See <https://wiki.mq.edu.au/display/iLab/About> for more information about accessing SPSS via iLab.

Technical Support

If you experience technological difficulties with iLearn or iLab, make sure you take a screenshot of any error messages or difficulties that occur, and contact the university's technical support team via OneHelp. Raise and track requests directly at onehelp.mq.edu.au. Alternatively, you can log an issue by calling the IT HelpDesk on (02) 9850 HELP (4357), email onehelp@mq.edu.au, or visit the IT HelpDesk located in C5C. Because iLearn and use of SPSS are fundamental to PSY248, it is your responsibility to make sure you can access both throughout the semester, especially when needed for weekly quizzes and the assignments. See <http://www.mq.edu.au/onehelp/FAQ.html> for more information.

Lecture and Practical Times

There are 3 x 1-hour lectures and 1 x 1-hour practical per week. Practicals commence in Week 2. Students will be assigned to practicals via the automated enrolment procedure. Please note that if you are enrolled as a full-time student, work commitments need to be structured around your study, not vice versa. Changes of practical times will only be sanctioned where unresolved clashes have occurred and free spaces in a practical class exist.

Required and Additional Readings

Textbook

- Field, A. (2014). *Discovering statistics using IBM SPSS Statistics* (4th ed.). London: SAGE.

This is a very student-friendly text that combines statistical principles and the use of SPSS. This text will also be used in PSY349 and PSY418 in coming years, and thus goes beyond the scope of this course.

Course notes

These are also available for downloading on the PSY248 iLearn page:

- Chekaluk, E. (2015). PSY248 – Design and Statistics 2: Notes on ANOVA lecture topics.
- Beath, A. (2016). Using the General Linear Model (GLM) Command in SPSS in PSY248.
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Additional Statistics References

- Christensen, L.B. & Stoup, C.M. (1991). *Introduction to statistics for the social and behavioral sciences* (2nd ed.). Pacific Grove, CA: Brooks/Cole

The best of the introductory texts, which covers knowledge assumed for this course. The approach is consistent with the present course, but it is not comprehensive enough to be a text.

- Harris, R.J. (1994) *ANOVA: An analysis of variance primer*. Itasca, Ill: Peacock

This book probably best follows the approach taken to the analysis of experimental data in this course. It is reasonably advanced and requires some level of mathematical sophistication (despite the author denying this).

- Hays, W.L. (1994) (5th Edition) *Statistics*. Harcourt Brace: Sydney

This is a classical, complete statistics text that covers the material in this course and more. It is not all that easy to read, but makes an excellent reference source.

- Howell, D. C. (2013) (8th ed.) *Statistical methods for psychology*. Belmont, CA: Wadsworth Cengage Learning.

This is comprehensive introductory to intermediate level text that overlaps to a reasonable level with this course.

- Ott, L. (1988) (3rd Edition) *An introduction to statistical methods and data analysis*. Boston: PWS-Kent

A comprehensive book that suffers because the examples rarely use psychological designs. Goes well beyond the current course.

Computing References

As well as the textbook, and course notes, the main reference materials for more technical computing information are the following, which will be available on the PSY248 website:

- Taylor, A. (2011). Introduction to IBM SPSS Statistics (The Red Book).

If students want additional material, any of the following might be helpful. Please note that most of these are introductory, but some cover more complex procedures than those covered in this course.

- Francis, G. (2007). Introduction to SPSS for Windows. Fifth Edition, Versions 15.0 and 14.0. Sydney: Pearson.
- Coakes, S., & Steed, L. (2010). SPSS analysis without anguish. Version 18. Sydney: John Wiley.
- George, D., & Mallery, P. (2014). IBM SPSS Statistics 23 step by step: a simple guide and reference. 14th Edition. Sydney: Pearson.
- Brace, N., Kemp, R., & Snelgar, R. (2012) SPSS for psychologists: 5th Edition. Hampshire: Macmillan.
- Corston, R. & Colman, A. (2008). A Crash Course in SPSS for Windows. 4th Edition. Oxford:Blackwell.
- Bryman, A. & Cramer, D. (2005) Quantitative Data Analysis with SPSS 12 and 13. London: Routledge.

Unit Schedule

Proposed lecture schedule (subject to change)

Weeks	Topics	Reading
1	Introduction to Course Design and Methods in Psychology Revision of Descriptive Statistics Revision of Inferential Statistics up to and including t-tests	Field, Chapters 1-5 <i>Taylor, Introduction to SPSS Statistics (The Red Book)</i>
2 - 3	Revision of Correlation Introduction to Simple Linear Regression	Field, Chapter 7-8
4-5	Introduction to One-Way ANOVA Contrast testing in One-Way ANOVA	Field, Chapter 11
6 - 7	Introduction to the analysis of trend ANOVA Via Regression	Field, Chapters 11

8 - 10	Introduction to Factorial Designs & Two-Way ANOVA Contrast testing in Two-Way ANOVA	Field, Chapters 13
11 - 12	Non-parametric tests Power	Field, Chapter 6
13	Summary and Revision	

Learning and Teaching Activities

Tutorial (practical) classes

The names ‘tutorials’ and ‘practicals’ are used interchangeably in this unit. Students need to attend 1 x tutorial class per week. Tutorials commence in Week 2 and continue throughout the semester. The last tutorial is in week 13. Students will be assigned to tutorials via the automated enrolment procedure. EACH TUTORIAL HAS A MAXIMUM LIMIT OF 30 STUDENTS (although some are smaller, depending on the room). This is for both safety and pedagogical reasons. Placing students into practical classes that pleases both students' preferences and the above limitation is a difficult logistical exercise. Information on changing tutorial class preferences will be dealt with in the first lecture. Please note that if you are enrolled as a full-time student, work commitments need to be structured around your study, and not vice versa. Changes of practical time will only be sanctioned where unresolvable clashes have occurred and free spaces in a practical class exist. You are expected to have completed the relevant practical exercise BEFORE attending your tutorial class. These exercises are the same used for the weekly online worksheets. Tutors are instructed not to do the practical exercises for you, but rather to discuss your work, resolve difficulties, etc. throughout tutorial classes. Practical exercises for each tutorial class will be available on the unit’s web page.

Lectures

Attendance at lectures is not compulsory, though HIGHLY recommended - listening to the lecture online via iLearn is not the same as attending the lecture in person! The size of class and the shape of the lecture theatre mean that stray chatter becomes very distracting for other students - questions to the lecturer are encouraged, but if you wish to pursue a conversation, please leave the lecture theatre. Lectures will be available on Echo360 via iLearn. If you miss a lecture, listening to the recording and looking at the overheads/slides should provide an alternative to attendance. If you feel the need to bring a mobile phone with you to lectures, please ensure that it is SWITCHED OFF DURING THE LECTURE.

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

New Assessment Policy in effect from Session 2 2016 http://mq.edu.au/policy/docs/assessment/policy_2016.html. For more information visit <http://students.mq.edu.au/events/2016/07/19/ne>

[w assessment policy in place from session 2/](#)

Assessment Policy prior to Session 2 2016 <http://mq.edu.au/policy/docs/assessment/policy.html>

Grading Policy prior to Session 2 2016 <http://mq.edu.au/policy/docs/grading/policy.html>

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

Complaint Management Procedure for Students and Members of the Public http://www.mq.edu.au/policy/docs/complaint_management/procedure.html

Disruption to Studies Policy 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/

Results

Results shown in *iLearn*, 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.

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 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

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.

Graduate Capabilities

Capable of Professional and Personal Judgement and Initiative

We want our graduates to have emotional intelligence and sound interpersonal skills and to demonstrate discernment and common sense in their professional and personal judgement. They will exercise initiative as needed. They will be capable of risk assessment, and be able to handle ambiguity and complexity, enabling them to be adaptable in diverse and changing environments.

This graduate capability is supported by:

Learning outcomes

- Appreciate the way statistical techniques are used to support theory in psychology
- Perform analyses of simple and complex experimental designs in psychology

Commitment to Continuous Learning

Our graduates will have enquiring minds and a literate curiosity which will lead them to pursue knowledge for its own sake. They will continue to pursue learning in their careers and as they participate in the world. They will be capable of reflecting on their experiences and relationships with others and the environment, learning from them, and growing - personally, professionally and socially.

This graduate capability is supported by:

Assessment task

- Revision quiz

Discipline Specific Knowledge and Skills

Our graduates will take with them the intellectual development, depth and breadth of knowledge, scholarly understanding, and specific subject content in their chosen fields to make them competent and confident in their subject or profession. They will be able to demonstrate, where relevant, professional technical competence and meet professional standards. They will be able to articulate the structure of knowledge of their discipline, be able to adapt discipline-specific knowledge to novel situations, and be able to contribute from their discipline to inter-disciplinary solutions to problems.

This graduate capability is supported by:

Learning outcomes

- Appreciate the way statistical techniques are used to support theory in psychology
- Perform analyses of simple and complex experimental designs in psychology
- Critically evaluate designs and analyses in experimental psychology

Assessment tasks

- Revision quiz
- Weekly quizzes
- Assignment 1
- Optional test 1
- Assignment 2
- Optional test 2
- Final exam

Critical, Analytical and Integrative Thinking

We want our graduates to be capable of reasoning, questioning and analysing, and to integrate and synthesise learning and knowledge from a range of sources and environments; to be able to critique constraints, assumptions and limitations; to be able to think independently and systemically in relation to scholarly activity, in the workplace, and in the world. We want them to have a level of scientific and information technology literacy.

This graduate capability is supported by:

Learning outcomes

- Appreciate the way statistical techniques are used to support theory in psychology
- Perform analyses of simple and complex experimental designs in psychology
- Critically evaluate designs and analyses in experimental psychology

Assessment tasks

- Revision quiz
- Weekly quizzes
- Assignment 1
- Optional test 1
- Assignment 2
- Optional test 2
- Final exam

Problem Solving and Research Capability

Our graduates should be capable of researching; of analysing, and interpreting and assessing

data and information in various forms; of drawing connections across fields of knowledge; and they should be able to relate their knowledge to complex situations at work or in the world, in order to diagnose and solve problems. We want them to have the confidence to take the initiative in doing so, within an awareness of their own limitations.

This graduate capability is supported by:

Learning outcomes

- Appreciate the way statistical techniques are used to support theory in psychology
- Perform analyses of simple and complex experimental designs in psychology
- Critically evaluate designs and analyses in experimental psychology

Assessment tasks

- Revision quiz
- Weekly quizzes
- Assignment 1
- Optional test 1
- Assignment 2
- Optional test 2
- Final exam

Effective Communication

We want to develop in our students the ability to communicate and convey their views in forms effective with different audiences. We want our graduates to take with them the capability to read, listen, question, gather and evaluate information resources in a variety of formats, assess, write clearly, speak effectively, and to use visual communication and communication technologies as appropriate.

This graduate capability is supported by:

Learning outcome

- Critically evaluate designs and analyses in experimental psychology

Assessment tasks

- Assignment 1
- Optional test 1
- Assignment 2
- Optional test 2

Changes since First Published

Date	Description
29/07/2016	The date for the first optional test was originally published as the 17/9/16 which is in fact a Saturday. This was a typo and has been changed to reflect the accurate date which is Friday the 16/9/16.