



# PSY 248

## Design and Statistics II

S3 Day 2015

*Department of Psychology*

### Contents

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<a href="#"><u>General Information</u></a>	2
<a href="#"><u>Learning Outcomes</u></a>	3
<a href="#"><u>General Assessment Information</u></a>	3
<a href="#"><u>Assessment Tasks</u></a>	5
<a href="#"><u>Delivery and Resources</u></a>	7
<a href="#"><u>Unit Schedule</u></a>	8
<a href="#"><u>Learning and Teaching Activities</u></a>	9
<a href="#"><u>Policies and Procedures</u></a>	9
<a href="#"><u>Graduate Capabilities</u></a>	11
<a href="#"><u>Changes from Previous Offering</u></a>	13
<a href="#"><u>Course Overview</u></a>	13

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#### **Disclaimer**

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## General Information

Unit convenor and teaching staff

Unit convener

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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; analysis of variance with repeated measures; correlation; and regression. 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:

An appreciation of the way statistical techniques are used to support theory in psychology

An ability to perform analyses of simple and complex experimental designs in psychology

An ability to critically evaluate designs and analyses in experimental psychology

## General Assessment Information

### Assessment Submission

Both assignments and the optional test are to be submitted electronically, via the PSY248 iLearn page. Assessments 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 one week after the due date.

Both assignments and the optional test 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 (5% per day late) will be applied to assignments that are received after the due time. Specific details on assessment submission will be provided closer to the time.

After submission, it is the student's responsibility to check that the assignment has been uploaded successfully. Any technological problems must be identified before the due time, or a late penalty will be applied. If on the off chance that you do experience technological problems when submitting your assignment, make sure you raise a OneHelp ticket (see 'technical support' section below for information) and email a copy of your assignment to the unit convener, Alissa Beath, before the assignment due time, to avoid a late penalty.

### Request for Extensions

Ordinarily, no extension of time for submission of written work will be granted since all assessment tasks are available from the start of S3, i.e., ample time is given. If an extension is required for medical or other extenuating circumstances, students may request this in writing through [ask.mq.edu.au](https://ask.mq.edu.au) with supporting documentary evidence (such as medical certificate, counsellor note, or similar). The staff in the Faculty of Human Sciences Student Services Centre will make all decisions regarding extensions. Course convenors or tutors will not grant extensions.

All requests for extensions must be made *prior* to the due date for the assignment. If an extension is granted the approval must be printed out and attached to the assignment, or

emailed directly to the unit convener (Alissa Beath). Failure to do so will result in a late penalty being applied as the marker will not know that an extension has been granted.

NOTE: during Session 3 the Faculty Student Centre will only grant extensions of up to 7 days. Students who through illness or other circumstances are unable to submit within this time should contact the course convenors or Faculty Student Centre.

## Assessment Overall

Your mark on all pieces of assessment for PSY248 will be a straightforward sum of correct answers (with the optional exam only being used if it maximises your grade compared to performance in the end of year exam).

In order to be eligible for a passing grade in PSY248, students must:

(i) Complete BOTH assignments, (ii) Attend 80% of (4 out of 5) tutorials, AND (iii) Sit the final examination

In order to complete PSY248 successfully (i.e., achieve a Pass grade or higher), in addition to being eligible (by meeting the above three criteria) students will require a final mark, calculated by adding together the marks for all assessment tasks, of 50 or higher.

## Collusion and Plagiarism

**Academic integrity** means you submit only your own work, and make it easy for the reader to work out which parts of your assignment are original and which parts come from named sources.

Collusion needs to be avoided

We value students collaborating together as part of their learning experience. Often students form informal study groups, where they share understanding of unit content, and approaches to the assessments. However, it is important to realize that unless you are doing Group Work for an assignment, all of the work you submit for individual assessment should be completely your own independent work. Students are encouraged to form study groups, but this must not involve collusion to present group work as the work of the individual.

### What is collusion?

This is the unauthorised presentation of group work as your own. It may involve

- Working with someone to provide one piece of work
- Allowing others to share your assignment answer or copy your work
- Using the assignment answer or work of another student (past or present) with or without their permission. It is collusion even if only small parts of the assignment are used
- Allowing others to edit and write your work
- Editing or writing the work of another student
- Offering to do work for another student or seeking payment for preparing academic work for someone else

### How can you avoid collusion?

- Do not share your findings or answers to an assignment
- Do not use another student's case studies, findings or ideas about an assignment
- Do not ask another student for a copy of their assignment
- Do not share your current or past assignments with another student (whether to “look at the structure” or any other reason).

## Assessment Tasks

Name	Weighting	Due
<a href="#"><u>Assignment 1</u></a>	20%	5pm, 18th Dec 2015
<a href="#"><u>Optional test</u></a>	10%	5pm, 8th Jan 2016
<a href="#"><u>Assignment 2</u></a>	20%	5pm, 15th Jan 2016
<a href="#"><u>Final exam</u></a>	50%	University examination period

### Assignment 1

Due: **5pm, 18th Dec 2015**

Weighting: **20%**

Assignment 1 is 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:

- An appreciation of the way statistical techniques are used to support theory in psychology
- An ability to critically evaluate designs and analyses in experimental psychology

### Optional test

Due: **5pm, 8th Jan 2016**

Weighting: **10%**

The take home exam will require calculations and brief written responses and will require students to apply information from lectures and tutorials to a worked example. The take home exam may assess content covered in lectures and tutorials during the first two weeks of session (i.e., revision of design & statistics, one-way ANOVA, second stage analysis).

On successful completion you will be able to:

- An appreciation of the way statistical techniques are used to support theory in psychology

- An ability to perform analyses of simple and complex experimental designs in psychology
- An ability to critically evaluate designs and analyses in experimental psychology

## Assignment 2

Due: **5pm, 15th Jan 2016**

Weighting: **20%**

A practical assignment involving use of SPSS, data analysis, interpretation of results and communication of findings. Assignment 2 will require brief responses to worked examples relating to lecture and tutorial material. The aim of this assignment is not to provide extensive written explanation but demonstrate an understanding of the lecture material within the context of a practical example. However, it is a good idea to show working out so that your logic is clearly demonstrated.

On successful completion you will be able to:

- An appreciation of the way statistical techniques are used to support theory in psychology
- An ability to perform analyses of simple and complex experimental designs in psychology
- An ability to critically evaluate designs and analyses in experimental psychology

## Final exam

Due: **University examination period**

Weighting: **50%**

During the final exam period, students will complete a 2-hour exam (plus 10 minutes reading time). The format of the exam will be a mixture of worked problems and multiple choice questions. The final exam will assess recall, understanding and application of content covered throughout the course (including a working knowledge of SPSS). The final exam will be open book. No tables or formula will be provided; it is the student's responsibility to take any paperwork into the exam that they wish. Textbooks and dictionaries are also allowed. Calculators can be taken into the exam. However, please note that open book does NOT mean electronic devices (e.g., laptops etc) are accepted into examination rooms, as per the University's Examination Policy.

The final exam will be weighted either 50 or 60%, determined on an individual basis: your best exam performance is the determining factor. If, for example, you perform better in the optional take home exam than the final exam, then the final examination will count for 50% and the optional take home exam will count for 10% of your final grade. If, on the other hand, you perform better in the final exam than the optional take home exam (or you choose not to submit the optional take home exam), then the final examination will count for 60% of your final grade and the optional take home exam will not contribute to your final grade.

On successful completion you will be able to:

- An appreciation of the way statistical techniques are used to support theory in psychology
- An ability to critically evaluate designs and analyses in experimental psychology

## Delivery and Resources

### Lectures

Lectures will be available for download from the unit's iLearn page via Echo. An outline of the lecture topics and associated lecture duration is provided in the following pages and on iLearn. Lectures have been recorded with the associated visual footage to enhance learning.

NOTE: lectures are recordings from Session 2, 2015 but have been saved under topic headings. Because lectures are from a previous Session IGNORE information about assessment tasks as these are not necessarily accurate for Session 3. Instead, refer to information in the unit outline about assessment tasks for Session 3.

All lecture material is examinable (either in exam or assignment formats).

### Tutorials

There are five 3-hour weekly tutorials associated with this unit.

Prior to their weekly tutorial class, students must have listened to the specified lectures and read any relevant supplementary material, as well as have completed the tutorial exercises.

All tutorial material is examinable (either in exam or assignment formats). A tutorial outline will be available on the unit's iLearn page.

Attendance at tutorials is **compulsory** – the material is examinable, but more importantly, it allows an opportunity to apply and discuss material from lectures.

According to University policy, in order to be eligible to pass this course, **students are required to attend at least 80% of classes** (i.e., 4 of the 5 tutorials). Students who must miss TWO tutorials due to unavoidable circumstances (see University definition of unavoidable circumstances) are required to lodge an application for special consideration via [ask.mq.edu.au](http://ask.mq.edu.au).

Please attend the tutorial in which you are officially enrolled. Tutorial changes can be made via e-Student until 12th December 2015. After this date, no further changes will be entertained unless supporting documentation including the reason for changing is provided and there is space in the alternate tutorial you wish to attend.

A schedule of tutorial classes and tutors will be available on the iLearn page.

### Resources

#### 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 are also available for downloading on the PSY248 web page:

- Chekaluk, E. (2014). *PSY248 – Design and Statistics 2: Notes on ANOVA lecture topics*.

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

- Chekaluk, E. (2012). *Using the MANOVA command in SPSS*.
- Taylor, A. (2011). *Introduction to IBM SPSS Statistics (The Red Book)*.

A list of additional resources is available on the iLearn page, if students want supplementary materials.

## 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 requests by calling the IT HelpDesk on (02) 9850 HELP (4357), emailing [onehelp@mq.edu.au](mailto:onehelp@mq.edu.au), or visiting the IT HelpDesk located in C5C. Track requests directly at [onehelp.mq.edu.au](https://onehelp.mq.edu.au). 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.

## Unit Schedule

Week	Lecture	Length of Lecture	Practical exercises	Text	Assessment
1	Revision 1 + 2	3 hours	Pracs 1 + 2	Field, Chapters 1-5  The Red Book	
2	ANOVA 1 - 3  Second-stage analyses 1-5	3 hours  4.5 hours	Pracs 3 - 5	Field, Chapter 11	Assignment 1 due 18/12/15
Mid-session Break: Christmas + New Year					



3	Trend, Power, Effect sizes 1 + 2	2.5 hours	Pracs 6 - 8	Field, Chapter 11, chapters 13 - 14	Optional test due 08/ 01/16
	Two-way ANOVA 1-4	4.5 hours			
4	Random effects 1 - 5	5 hours	Pracs 9 + 10	Field, Chapters 14 - 15	Assignment 2 due 15/ 01/16
5	Non-parametric analyses	6 hours	Pracs 11 + 12	Field, Chapter 6	
Examination period 25/01/16 - 08/02/16					

## Learning and Teaching Activities

### Peer Assisted Learning (PAL)

PAL sessions are student-run study sessions, focused on course content, facilitated by a MQ student who has previously completed PSY248. Students of all levels will benefit from attending PAL sessions, as they are designed to revise material in a friendly, accessible way. Information about PAL sessions will be provided on the iLearn page.

### Numeracy Centre

The Numeracy Centre offers free help given the mathematic nature of the course. A drop-in facility for individual assistance is available in the numeracy centre rooms (C5A 225). A timetable of available tutors is available from the Numeracy Centre Website (<http://maths.mq.edu.au/numeracy/>) or on the door of the numeracy centre. A copy of the Numeracy Centre Timetable (when it is made available) will be loaded onto the iLearn website for the unit. Tutors that will be able to assist with the statistics presented in this unit are Carolyn Kennett and Nan Carter. Additional workshops will also be run throughout the Session. Information about workshops that will be provided can be accessed via the Numeracy Centre, and information will be loaded onto iLearn when it is made available to the Unit Convenor. Any student that lacks the knowledge of mathematics or statistics needed for PSY248 is encouraged to seek the help of the Centre. The following services are offered to PSY248 students: (i) Advice on supplementary work needed; (ii) Independent study using self-study materials; (iii) Supplementary workshops on specific topics (there is a small charge for these workshops); (iv) Help with assumed mathematical knowledge.

## 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](http://mq.edu.au/policy/docs/academic_honesty/policy.html)

Assessment Policy <http://mq.edu.au/policy/docs/assessment/policy.html>

Grading Policy <http://mq.edu.au/policy/docs/grading/policy.html>

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

Grievance Management Policy [http://mq.edu.au/policy/docs/grievance\\_management/policy.html](http://mq.edu.au/policy/docs/grievance_management/policy.html)

Disruption to Studies Policy [http://www.mq.edu.au/policy/docs/disruption\\_studies/policy.html](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/](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](http://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](http://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](http://ask.mq.edu.au)

## IT Help

For help with University computer systems and technology, visit <http://informatics.mq.edu.au/help/>.

When using the University's IT, you must adhere to the [Acceptable Use Policy](#). The policy applies to all who connect to the MQ network including students.

## Graduate Capabilities

### 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

- An appreciation of the way statistical techniques are used to support theory in psychology
- An ability to perform analyses of simple and complex experimental designs in psychology
- An ability to critically evaluate designs and analyses in experimental psychology

#### Assessment tasks

- Assignment 1
- Optional test
- Assignment 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

- An appreciation of the way statistical techniques are used to support theory in psychology
- An ability to critically evaluate designs and analyses in experimental psychology

#### Assessment tasks

- Assignment 1

- Optional test
- Assignment 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

- An appreciation of the way statistical techniques are used to support theory in psychology
- An ability to perform analyses of simple and complex experimental designs in psychology
- An ability to critically evaluate designs and analyses in experimental psychology

### Assessment tasks

- Assignment 1
- Optional test
- Assignment 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 outcomes

- An appreciation of the way statistical techniques are used to support theory in psychology
- An ability to critically evaluate designs and analyses in experimental psychology

### Assessment tasks

- Assignment 1

- Optional test
- Assignment 2

## Changes from Previous Offering

Course content has changed slightly since PSY248 was offered over Session 3 2014/2015.

There are no changes to the course since Session 2 2015, other than changes to scheduling due to the nature of Session 3.

## Course Overview

This course is an intermediate statistics and methods course which covers both the design and statistical components of experiments common in psychological research. The experimental method is, of course, not the only method of performing psychological investigation, but this course is devoted to it; your other methods and statistics courses (e.g. PSY349) will cover the design and analysis of non-experimental research. Note also that the course is one in psychology - it is assumed that all students have a rudimentary knowledge of the scope of psychological investigation and are familiar with common psychological variables. The importance of both the experimental design and interpretation of statistical analysis is emphasized together with concepts of power and sample size requirements for efficient research.

Statistical methods covered include descriptive statistics, analysis of frequency data, one-way and two-way analysis of variance, analysis of variance with repeated measures, correlation and regression. Practical classes are based on the use of the computer with the statistical program SPSS.

As this is an intermediate level subject we assume you have mastered all the material in STAT170 / PSY122 / (PSYC104 & PSYC105) (or an equivalent introductory course in statistics) which includes:

- (i) Graphical methods and descriptive statistics (mean, median, standard deviation etc.);
- (ii) The normal distribution, and how to find areas under it;
- (iii) Single sample t-test, independent groups t-test and paired t-test;
- (iv) Ability to read statistical tables such as the t-test tables; and,
- (v) A moderate level of mathematical background, i.e. basic numeracy and basic algebra.

If you feel that you lack the above knowledge, it is essential that you review your STAT170/ PSY122/PSYC104&105 notes. Alternatively, the Numeracy Centre will provide refresher workshops, as well as continuing extra tutorials throughout the session. Achieving a pass grade in STAT170, STAT171, PSY122 or (PSYC104 & PSYC105) is a prerequisite for enrolling in this unit.

Please be aware that there is an expectation of an intensive workload during Session 3. The estimated workload is 24 hrs/week for this unit in Session 3.