



PSY 248

Design and Statistics II

S1 Day 2013

Psychology

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General Information

Unit convenor and teaching staff

Unit Convenor

Eugene Chekaluk

eugene.chekaluk@mq.edu.au

Contact via eugene.chekaluk@mq.edu.au

C3A 527

Tues 9-11am; Fri 10-11am

Other Staff

Tim Power

tim.power@mq.edu.au

Contact via tim.power@mq.edu.au

Credit points

3

Prerequisites

STAT122(P) or STAT170(P) or STAT171(P) or PSY122(P) 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 formal. 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

Assessment Tasks

Name	Weighting	Due
<u>Examination</u>	60%	Final exam period
<u>Assignments</u>	20%	TBA
<u>Practical worksheets</u>	20%	TBA
<u>Class tests</u>	0%	During semester

Examination

Due: **Final exam period**

Weighting: **60%**

One examination worth 40%, 50% or 60% in total. The worth of this examination will be determined on an individual basis: your best test performance is the determining factor. If, for example you perform better in BOTH optional tests than the exam, then the examination will count 40%. If, on the other hand you perform better in the exam than both tests (or you choose not to sit the optional tests), then the examination will count 60%. The examination will be under the control of the Examination Branch of the University during the official examination period (14th November to 2nd December) and will be subject to the standard examination rules and regulations. The format of the examination is multiple choice.

On successful completion you will be able to:

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

Assignments

Due: **TBA**

Weighting: **20%**

Two assignments worth a total of 20% (each worth 10%). You will be advised of the precise due times and dates in due course.

Details of assignments will be available four weeks prior to them being due. Students will be advised on how to present assignments.

All assignments should be submitted in the appropriate box in foyer of C3A or in the single Psychology Essay Box located outside the entrance of C3A after hours.

The assignment boxes are cleared at 10am on Mondays to Fridays and again at 4pm ONLY ON FRIDAYS. Assignments received at 4pm on Fridays are counted as 1 day late, assignments submitted after the 4 pm clearing on Fridays will be cleared on Monday at 10 am and will incur a weekend (counted as two days) penalty.

All assignments submitted must be accompanied by a completed and signed Department of Psychology coversheet http://humansciences.mq.edu.au/current_students/undergraduate/assignment_cover_sheet

Assignments may not be accepted unless a coversheet is completed and signed. Ensure that your assignments are proofread and legible.

Ensure that your Tutorial Time and Tutor's Name are on your assignment.

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. For example, an assignment handed in one day late with a medical certificate covering the due date only WILL BE DEEMED LATE. Please note that computer failures, printer crashes etc are not considered to be misadventures.

Ordinarily, no extensions of time for submission of written work will be granted since ample time for its preparation will have been given. If an extension is required for medical or other extenuating circumstances, students may request this by submitting an online request via ask.mq.edu.au with supporting documentary evidence (such as medical certificate, counsellor note, or similar). The staff in the FHSSSC will make all decisions regarding extensions. Neither individual tutors nor the course convenor will grant extensions. All requests for extensions must be made prior to the due date for the assignment.

If an extension is granted, you will need to print the approval email and attach to the assignment. Failure to do so will result in a late penalty being applied as the marker will not know that an extension has been granted.

If you have any queries, please contact the staff in the Faculty of Human Sciences Student Services Centre in Level 3, Building C3A.

Assignments will not be accepted after marked assignments are returned. Students who through illness or other circumstances are unable to submit until after assignments are returned should contact the course chair.

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.

Submitted assignments must be originals – photocopies and electronic copies of the assignments are not acceptable. Assignments submitted by post will not be accepted.

In all cases, it is your responsibility to keep a photocopy of your assignment. This is in case of an

assignment being "lost" in the system (possible in large courses such as this) or in the case of a re-mark request. Before considering asking for a re-mark, please read the grounds considered acceptable for re-marking assignments in the Application for Re-mark form which is available from the Psychology Office (C3A334).

As soon as possible after the due date for assignments, a list of assignments received will be posted on the following site:

<http://www.psy.mq.edu.au/assrec/>

It is your responsibility to check with this list to ensure that your assignment has been duly received. If an assignment is not noted as being received, it is the student's responsibility to immediately contact the staff in the Psychology Office in writing to inform them. The student will then be required to submit a fresh copy of the assignment and the date of receipt will be the date the Psychology Office was informed of the non-receipt in writing. The student must inform the staff in the Psychology Office that his/her assignment has not been received PRIOR to the first day that assignments are returned or risk a mark of zero (0) being recorded for his/her assignment.

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

Practical worksheets

Due: **TBA**

Weighting: **20%**

Practical worksheets worth a total 20%. Ten weekly worksheets count 2% each. These are based on the weekly practical work. Worksheet answers will be submitted as online quizzes in iLearn.

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

Class tests

Due: **During semester**

Weighting: **0%**

Two OPTIONAL class tests worth a possible total of 20% (each worth 10%). The first optional test will be held towards the middle of first semester and the second approximately at the end of semester. These will be held in lecture time and will consist of one question and will be of 50 minutes duration. NO supplementary optional tests will be given. Both tests are open book.

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

Classes

There are 3 hours of lectures (3 x 1 hour lecture) and 1 x 1 hour practical for this unit. Lecture and practical times can be found on the University web-site <http://www.timetables.mq.edu.au> Procedures for changing practical times will be dealt with in the first lecture.

Managing classes: Changes to all units can be done on-line via eStudent. After week 2, no further changes will be entertained unless supporting documentation is provided.

Students enrolled in the Composite attendance mode can access the iLecture recording of the lecture.

Tutorial

Staff: Tutorial staff contact details will be provided at the first tutorial/practical class. Note that all administrative enquiries are to be directed to the course convenor. All lecturers are on e-mail and voice-mail – you will gain access to e-mail in the first week of semester and voice-mail is activated whenever you ring the staff members.

Timetable

	Day	Start	Finish	Duration	Location aka	Staff
Lecture	Wednesday	2:00pm	4:00pm	2:00	W2.4A_MQTH	Eugene Chekaluk
Lecture	Wednesday	2:00pm	4:00pm	2:00	#iLec_10	Recorded iLecture
Lecture	Thursday	5:00pm	6:00pm	1:00	W2.4A_MQTH	Eugene Chekaluk
Lecture	Thursday	5:00pm	6:00pm	1:00	#iLec_10	Recorded iLecture
Practical	Thursday	1:00pm	2:00pm	1:00	C4A_245	
Practical	Thursday	2:00pm	3:00pm	1:00	C4A_245	
Practical	Thursday	3:00pm	4:00pm	1:00	C4A_245	
Practical	Monday	11:00am	12:00pm	1:00	C4A_245	

Practical	Monday	12:00pm	1:00pm	1:00	C4A_245	
Practical	Wednesday	12:00pm	1:00pm	1:00	C4A_245	
Practical	Wednesday	11:00am	12:00pm	1:00	C4A_245	
Practical	Thursday	12:00pm	1:00pm	1:00	C4A_245	
Practical	Wednesday	1:00pm	2:00pm	1:00	C4A_245	
Practical	Thursday	10:00am	11:00am	1:00	C4A_245	
Practical	Wednesday	5:00pm	6:00pm	1:00	C4A_245	
Practical	Thursday	4:00pm	5:00pm	1:00	C4A_245	
Practical	Tuesday	11:00am	12:00pm	1:00	C4A_245	
Practical	Tuesday	10:00am	11:00am	1:00	C4A_245	
Practical	Wednesday	4:00pm	5:00pm	1:00	C4A_245	
Practical	Thursday	9:00am	10:00am	1:00	C4A_245	

Teaching and Learning Strategy

LECTURES

Attendance at lectures is not compulsory. 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 iLecture. If you miss a lecture, listening to iLecture and looking at the overheads/slides should provide an alternative to attendance. Please do not approach the lecturer for lecture notes as these are not available.

If you feel the need to bring a mobile phone with you to lectures, please ensure that it is SWITCHED OFF DURING THE LECTURE.

TUTORIAL (PRACTICAL) CLASSES

Practicals commence in WEEK 2 and continue throughout the semester.

Students will be assigned to practical classes via the automated enrolment procedure. Note that there are a limited number of evening practical times and these are reserved in the first instance for evening students. Also note that there are over 600 students enrolled in this unit, with 25 practical groups arranged throughout the week.

EACH PRACTICAL HAS A LIMIT OF 30 STUDENTS. This is for both safety and pedagogical reasons. Placing students into practical classes that please both students' preferences and the above limitation is a difficult logistical exercise. Information on changing practical 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 reading, calculations etc BEFORE attending your practical class. Tutors are instructed not to do the practical exercises for you, but rather to discuss your work, resolve difficulties etc.

Practical exercises will be available on the unit's web page.

Required and Recommended Texts and/or Materials

Textbook:

Howell, D.C. (2013) (8th Edition) *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.

Course notes are available in iLearn

Chekaluk, E. (2012) *PSY248 – Design and Statistics 2 Notes on ANOVA lecture topics*

References- Statistics:

Christensen, L.B. & Stoup, C.M. (1991) (2nd Edition) *Introduction to statistics for the social and behavioral sciences*. 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 which covers the material in this course and more. It is not all that easy to read, but makes an excellent reference source.

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.

References - Computing:

There are a number of texts that cover statistical material specifically using calculations and output produced by the statistical package that we are using (SPSS). Most of these are introductory, but some cover more complex procedures than those covered in this course. None of the books below describe exactly the kind of computing facilities you will use at Macquarie; the main source of information on this are in the handout Using SPSS for Windows for PSY 248,

which is available on the PSY248 Home Page.

Francis, G. (2001). *Introduction to SPSS for Windows*. Third Edition, Versions 9.0 and 10.0. Sydney: Pearson.

Coakes, S., & Steed, L. (2001). *SPSS analysis without anguish*. Version 10. Sydney: John Wiley.

George, D., & Mallery, P. (2001). *SPSS For Windows step by step: a simple guide and reference*. 10.0 update. Sydney: Pearson.

Brace, N., Kemp, R., & Snelgar, R. (2000) *SPSS for psychologists: a guide for data analysis using SPSS for windows (Versions 8, 9, & 10)*. Hampshire: Macmillan.

Corston, R. & Colman, A. (2000). *A Crash Course in SPSS for Windows*. Oxford:Blackwell.

Bryman, A. & Cramer, D. (1997) *Quantitative Data Analysis with SPSS for Windows*. London: Routledge

This contains some good information and advice on statistics, and is useful even though it was written for an older version of SPSS for Windows.

Levine, G. (1991) *A guide to SPSS for analysis of variance*. Hillsdale, NJ. : LEA

Very helpful for users of the MANOVA procedure

Also, keep an eye out for SPSS manuals which are held in the Macquarie Library.

The Numeracy Centre

The Numeracy Centre offers free help. A timetable of available tutors is available from the Centre. 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); and,
- (iv) Help with assumed mathematical knowledge

Unit Schedule

Proposed Lecture Topic Outline

Week(s)	Topic(s)	References
1 & 2	Introduction to Course : Eugene Chekaluk Design and Methods in Psychology Revision of Descriptive Statistics. Revision of Inferential Statistics up to and including t-tests	Howell, Ch. 1 , "Using SPSS for Windows in PSY222" by A. Taylor

3	Introduction to Correlation and Simple Linear Regression.	Howell, Ch. 9
4-5	Introduction to One-Way ANOVA Contrast testing in One-Way ANOVA. Introduction to the analysis of trend. Power.	Refs: Howell, Chs. 2-4, Chs. 7-8, Chs. 11-12
6-8	Introduction to Factorial Designs & Two-Way ANOVA. Contrast testing in Two-Way ANOVA. Introduction to Repeated Measures Designs. Analysis of Repeated Measures Designs using the Mixed Model. Contrast testing in Repeated Measures Designs	Howell, Chs. 13-14
9-10	Complex ANOVA Designs. ANOVA with 2 repeat factors. ANOVA with one repeat and one between factor.	Howell, Chs. 14
11-13	Multiple Regression.	Howell, Ch. 15

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://www.mq.edu.au/policy/docs/academic_honesty/policy.html

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

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

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

Grievance Management Policy http://mq.edu.au/policy/docs/grievance_management/policy.html

Special Consideration Policy http://www.mq.edu.au/policy/docs/special_consideration/policy.html

In addition, a number of other policies can be found in the [Learning and Teaching Category](#) of Policy Central.

Student Support

Macquarie University provides a range of Academic Student Support Services. Details of these services can be accessed at: <http://students.mq.edu.au/support/>

UniWISE provides:

- Online learning resources and academic skills workshops http://www.students.mq.edu.au/support/learning_skills/
- Personal assistance with your learning & study related questions.
- The Learning Help Desk is located in the Library foyer (level 2).
- Online and on-campus orientation events run by Mentors@Macquarie.

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

Details of these services can be accessed at <http://www.student.mq.edu.au/ses/>.

IT Help

If you wish to receive IT help, we would be glad to assist you at <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 and it outlines what can be done.

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 outcome

- An ability to critically evaluate designs and analyses in experimental psychology

Assessment task

- Class tests

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:

Learning outcome

- An ability to critically evaluate designs and analyses in experimental psychology

Assessment task

- Practical worksheets

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

Assessment tasks

- Examination
- Assignments
- Practical worksheets
- Class tests

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

Assessment tasks

- Examination
- Assignments
- Practical worksheets
- Class tests

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

- Examination
- Assignments
- Practical worksheets
- Class tests

Creative and Innovative

Our graduates will also be capable of creative thinking and of creating knowledge. They will be imaginative and open to experience and capable of innovation at work and in the community. We want them to be engaged in applying their critical, creative thinking.

This graduate capability is supported by:

Assessment task

- Assignments

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

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

Assessment tasks

- Examination
- Assignments
- Practical worksheets
- Class tests