



Course Outline

PSYC5004

Graduate Diploma of Psychology

Advanced Data Analysis and Methods of
Psychological Inquiry

School of Psychology

Faculty of Science

2022

1. Staff

Position	Name	Email	Consultation times and locations	Contact Details
Course Convenor			Email	Email

2. Course information

Units of credit:	6
Pre-requisite(s):	Program Pre-requisite: Bachelor's Degree of any kind (Australian Qualification standard or equivalent). PSYC5001 and PSYC5002 (or equivalent with advanced standing) and PSYC5003.
Teaching times and locations:	Online

2.1 Course summary

This course is designed to extend the existing knowledge concerning experimental research designs in behavioural sciences and the statistical techniques that deal with them. It provides intermediate knowledge of conceptual, methodological and statistical skills that are likely to be encountered in the future research and professional work. Students will be taught to perform descriptive and inferential statistical analyses using a computer-based statistical package. In addition, this course enables students to effectively communicate statistical and research data results in variety of formats and contexts.

2.2 Course aims

This course aims to provide students with an understanding of research methodology and inferential data analysis procedures that will allow them to choose appropriate analysis strategies for basic experimental and non-experimental designs, and to critically evaluate analyses of published experiments. Students will learn the skills necessary to carry out these analyses using the statistical software Jamovi.

2.3 Course learning outcomes (CLO)

At the successful completion of this course the student should be able to:

1. Demonstrate an advanced level of knowledge and understanding of evidence-based research in behavioural sciences, enabling you to develop an advanced capacity to apply disciplinary knowledge to explaining, predicting and managing human behaviour.
2. Demonstrate an understanding for the importance of research methods and statistics in psychology enabling you to perform descriptive and inferential statistical analysis using a computer software for data analysis.

3. Develop advanced critical thinking skills with the focus on research methods and data analysis of behavioural sciences enabling you to assess the validity of conclusions based on statistical analysis of empirical evidence.
4. Develop understanding of the values, research and professional ethics in experimental research, enabling you to value empirical evidence in research and data analysis in behavioural sciences.
5. Demonstrate advanced communication skills in the area of statistics and research methods, enabling you to effectively communicate, in a variety of formats, the results of directional and confidence inferences regarding the estimates of treatment effect outcomes, experimental results and conclusions.
6. Apply advanced knowledge about statistics, research methods and research ethics in behavioural sciences enabling you to identify both intentional and unintentional errors in data analysis and presentation.

2.4 Relationship between course and program learning outcomes and assessments

Program Learning Outcomes							
CLO	1. Knowledge	2. Research Methods	3. Critical Thinking Skills	4. Values and Ethics	5. Communication, Interpersonal and Teamwork	6. Application	Assessment
1.	Lectures Tutorials Online activities Readings Formative revision quizzes	Lectures Tutorials Online activities Readings Formative revision quizzes	Tutorials Online activities Readings Formative revision quizzes	Tutorials Online activities Readings Formative revision quizzes	Tutorials Study Group Forum	Tutorials Online activities Study Group Forum	“Secured” Quiz (Week 1-6) Data Analysis Research Report
2.		Tutorials Online activities Formative revision quizzes	Tutorials Study Group Forum			Tutorials Online activities	“Secured” Quiz (Week 1-6) Data Analysis Research Report
3.	Lectures Tutorials Online activities Readings Formative revision quizzes	Tutorials Online activities Readings Formative revision quizzes	Lectures Tutorials Online activities Readings Formative revision quizzes		Tutorials Study Group Forum		“Secured” Quiz (Week 1-6) Data Analysis Research Report
4.		Tutorials Online activities		Tutorials Online activities	Tutorials	Tutorials Online activities	“Secured” Quiz (Week 1-6)

		Readings Formative revision quizzes		Readings Formative revision quizzes	Study Group Forum		Data Analysis Research Report
5.					Tutorials Study Group Forum		Data Analysis Research Report
6.		Tutorials Online activities Readings Formative revision quizzes	Tutorials Online activities Readings Formative revision quizzes			Tutorials Online activities Readings Formative revision quizzes	"Secured" Quiz (Week 1-6) Data Analysis Research Report

3. Strategies and approaches to learning

3.1 Learning and teaching activities

This is a fully online course, all materials, lectures and tutorials are delivered through Moodle.

The course web page is available through the e-learning Moodle site:

<https://moodle.telt.unsw.edu.au/login/index.php>. Login with your student number and password, and follow the links to the PSYC page.

The course will be delivered over six weeks, covering six major topic areas. The major topics will be delivered in Weeks 1 to 6, with a new topic presented each week. Students are expected to engage with all materials delivered each week. There will be a combination of formative and summative assessments throughout the course. The expected level of engagement is 18-19 hours per week, including preparation for the “secured” quizzes and written assessments.

Each week students can expect the following:

Lectures will be digitally recorded. Links to the lecture recordings will be available on the course web page. Lecture slides will be also available on the Moodle course page. This will be broken down into 5-6 lectures covering the main concepts for each sub-topic of the week

Online Tutorials will be held in weeks 1-6. There are six (6), two (2) hour tutorials delivered through Blackboard Collaborate on the Moodle course page each week. All tutorials will be live streamed for synchronous participation and recorded for asynchronous participation, should a student be unable to join the synchronous tutorial at the designated time. Students will be able access the recorded tutorials for the remainder of the course. Tutorial discussions are based on lecture content and readings. In order to participate in class discussions, you will need to prepare for tutorials by reviewing the available materials.

Online activities: Each week there will be a range of online activities, including formative revision quizzes, interactive learning modules using a range of adaptive learning platforms. These activities will allow students to explore the topics of the week in greater depth and provide formative assessment for the students and revision opportunities.

Readings: There will be assigned readings each week that cover the major topic of the week. Students will need to read the scientific journal articles in order to prepare for the online tutorials. In addition, as part of this preparation students are encouraged to post one comment/discussion point on the Group Forum and reply to the comment of at least two other students in the course (**4.5 hours**).

The Group Forum connects students in the course to encourage discussion of weekly content, revision, or topics of interest with each other. Regular engagement in the Group Forum will help students gain an understanding of the material, critique the contributions of fellow students, and help develop written communication skills.

The Q and A Discussion Forum provides students with an opportunity to question and clarify the concepts and ideas mentioned in the lectures. Students are strongly encouraged to engage with this forum by posting questions or comments, and reading, answering, or replying to other student's posts to enhance understanding of the content, critical thinking, and written communication skills.

Formative topic revision quizzes are available for students that provide an opportunity to evaluate understanding of course material on a weekly basis. Timely completion of the weekly quizzes will assist students in gaining a proper understanding of each topic so that this knowledge can be built on in future content. The formative revision quizzes will be available through the MindTap section

available on the Moodle course page. **NB: These formative quizzes do not contribute to the student's final grade and are not to be confused with the "secured weekly quizzes".**

3.2 Expectations of students

Moodle contains lectures, tutorials, content topic materials, assessment materials, and any updated information. You are expected to check Moodle regularly. You are also expected to regularly check your UNSW email. All news updates and announcements will be made on the 'Announcements' forum on the Moodle page and/or by email. It is the student's responsibility to check Moodle and their student emails regularly to keep up to date.

Given that the course content and all assessable components are delivered online, it is the responsibility of the student to ensure that they have access to a computer with a stable internet connection and a browser capable of handling the features of the Moodle eLearning website and any of its content. There will be no special consideration granted due to internet connection or computer issues arising from personal technical issues. If an internet disconnection takes place during an assessment/exam, there will be no way of changing a mark and these will be allocated according to the progress that was saved. To help students establish whether or not their computer/internet access is suitable for the online exam/s, a test quiz is available. This quiz will not contribute to final marks and will be able to be completed multiple times in order to test computer/internet connection prior to assessments/exams.

NOTE: THIS COURSE REQUIRES SIGNIFICANT WEEKLY ASSESSABLE ENGAGEMENT THROUGH MOODLE. Students are expected to engage with all materials delivered each week. There will be a combination of formative and summative assessments throughout the course. **The expected level of engagement is on average 18-19 hours per week** (in the 6-week term). Average engagement levels are as follows (a) **2-2.5 hours** of engagement with the lecture content; (b) Tutorial attendance, **3 hours** per week including preparation for the tutorial discussion. Note we recommend that you complete the synchronous tutorial, however completion of the recorded asynchronous tutorial will also be accepted; (c) **4.5 hours** to complete the assigned activities, including revision modules; (d) **4.5 hours** to complete the assigned weekly readings, there will be three readings each week that accompany the content for each lecture topic; (e) **4-5 hours** to complete the weekly assessments (secured quizzes) and prepare for the major assessments.

Under no circumstances will employment be accepted as an excuse not to meet expectations for class participation or assessments. Remember, the term times are very short, so it is your responsibility to ensure that you do not fall behind with the ongoing assessment demands of the course.

Tutorial Attendance: All tutorials will be delivered in an online mode, through Blackboard Collaborate, given that this is a fully online course, it is understood that some students may be unavailable at the designated live tutorial time. Therefore, students will be required to participate in the tutorial in either a synchronous (as the tutorial is streamed live) or asynchronous (a recorded version of the tutorial). NB: Engagement with online tutorials and timely completion of asynchronous online tutorials is essential in accordance with UNSW Assessment Implementation Procedure.

It is expected that students are aware of UNSW Assessment policy and understand how to apply for special consideration within the framework of the Graduate Diploma Special consideration policies and procedures if they are unable to complete an assignment/exam due to illness and/or misadventure.

It is expected that students have read through the Graduate Diploma Student Guide and the School of Psychology Student Guide.

4. Course schedule and structure-

Each week this course typically consists of 2-2.5 hours of lecture material, 2 hours of face to face tutorials, and 4.5 hours of online activities. Students are expected to take an additional 5-6 hours each week of self-determined study to complete assessments, readings, and exam preparation.

Week	Lecture topic/s	Tutorial/lab topics	Online modules	Self-determined activities
Week 1	<p>Inferential Statistics</p> <p>Lecture 1 and 2: Sampling and standard error</p> <p>Lecture 3 and 4: Confidence interval</p> <p>Lecture 5 and 6: z-test in hypothesis testing</p>	<p>Online tutorial exercises based on lectures and readings. Students will practice how to calculate and interpret standard error and confidence intervals, and how to use z-test and z tables to estimate probabilities.</p>	<p>Online activities based on lectures and assigned readings</p>	<p>Formative revision quizzes</p> <p>Additional textbook readings</p> <p>Additional textbook resources (Mindtap)</p>
Week 2	<p>t-Test: Single Mean and Two Related Means Designs</p> <p>Lecture 1 and 2: Errors in hypothesis testing</p> <p>Lecture 3 and 4: Single mean t-test</p> <p>Lecture 5 and 6: Dependent means t-test</p>	<p>Online tutorial discussion based on lectures and readings. Students will discuss how to use t-statistics to test hypotheses about a single sample when the population standard deviation is unknown and the use of t-test to analyse two sets of data obtained from from the same sample</p>	<p>Online activities based on lectures and assigned readings</p>	<p>Formative revision quizzes</p> <p>Additional textbook readings</p> <p>Additional textbook resources (Mindtap)</p>
Week 3	<p>t-Test: Independent Means</p> <p>Lecture 1 and 2: Between-subject design</p>	<p>Online tutorial discussion based on lectures and readings. Students will discuss the hypothesis testing and experimental design used with two independent samples t-test</p>	<p>Online activities based on lectures and assigned readings</p>	<p>Formative revision quizzes</p> <p>Additional textbook readings</p>

	Lecture 3 and 4: Paired vs. independent design comparison Lecture 5 and 6: Statistical power			Additional textbook resources (Mindtap)
Week 4	Correlation Lecture 1 and 2: The Pearson correlation and Hypothesis test Lecture 3 and 4: Prediction (Regression) Lecture 5 and 6: Prediction (Regression)	Online tutorial discussion based on lectures and readings. Students will discuss how correlations are used and interpreted, focusing on the direction of the relationship, the form of the relationship and the strength of the relationship. This will be explained using the Pearson correlation. The principles of prediction will be explained and illustrated with examples.	Online activities based on lectures and assigned readings	Formative revision quizzes Additional textbook readings Additional textbook resources (Mindtap)
Week 5	Factorial designs Lecture 1 and 2: Main effects and interactions Lecture 3 and 4: Assumptions and peer review Lecture 5 and 6: Replication	Online tutorial discussion based on lectures and readings. Students will discuss how to explain the effect of two or more independent variables upon a single dependent variable. Replication crisis in psychology will also be discussed.	Online activities based on lectures and assigned readings	Formative revision quizzes Additional textbook readings Additional textbook resources (Mindtap)

<p>Week 6</p>	<p>Finding relationships in categorical data Lecture 1 and 2: chi-square and test for goodness of fit Lecture 3 and 4: Assumptions for the chi-square tests Lecture 5 and 6: Effect size and chi-square tests</p>	<p>Online tutorial discussion based on lectures and readings. Students will discuss the chi-square tests which use sample frequencies and proportions to test hypotheses about the corresponding population values.</p>	<p>Online activities based on lectures and assigned readings</p>	<p>Formative revision quizzes Additional textbook readings Additional textbook resources (Mindtap)</p>
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5. Assessment

5.1 Assessment tasks

All assessments in this course have been designed and implemented in accordance with UNSW Assessment Policy.

Assessment task	Length	Weight	Mark	Due date (normally midnight on due date)
Assessment 1: “Secured” Quiz (Week 1-6)	20 MCQ questions per quiz	30%	30	Sunday 11:59pm week of release (Weeks 1,2,3,4,5,6)
Assessment 2: Data Analysis	1000 words	30%	100	Sunday Week 3
Assessment 3: Research Report	2000 words	40%	100	Sunday Week 6

Assessment 1: “Secured” Quizzes (cumulative assessment): Students will be required to complete 6 quizzes under official exam conditions. These quizzes will cover the content of the **lectures and readings**. The quizzes will be held in weeks 1-6. The “Secured” quizzes form part of a cumulative assessment. Each Quiz will include 20 multiple choice questions. The five highest marks will be counted towards the final grade.

Assessment 2: Data Analysis: Students will be given a set of raw experimental data to analyse. They will be required to complete an analysis of the data using the assigned statistical software. They will then interpret and present the data. For this assessment students will need to submit their statistical output as well as their brief interpretation and presentation of the data.

Assessment 3: Research Report: Students will be given a research question, experimental method information and raw experimental data. They will be required to complete a literature review and to analyse the data using a statistical software for data analysis. Students will need to write up their findings in the format of a research report, including an introduction, method, results and discussion section. This report will involve different statistical analysis from assessment 1, providing students with the opportunity to develop a range of practical skills in data analysis.

UNSW grading system: <https://student.unsw.edu.au/grades>

UNSW assessment policy: <https://student.unsw.edu.au/assessment>

5.2 Assessment criteria and standards

Further details and marking criteria for each assessment will be provided to students closer to the assessment release date (see 4.1: UNSW Assessment Design Procedure).

5.3 Submission of assessment tasks

Written assessments: In accordance with UNSW Assessment Policy written pieces of assessment must be submitted online via Turnitin. No paper or emailed copies will be accepted.

Late penalties: deduction of marks for late submissions will be in accordance with School policy (see: [Psychology Student Guide](#)).

Special Consideration: Students who are unable to complete an assessment task by the assigned due date can apply for special consideration. Special consideration applications must be submitted to Student Central within 3 working days of the assessment due date along with a physical copy of the supporting documentation. Students who have experienced significant illness or misadventure during the assessment period may be eligible. Only circumstances deemed to be outside of the student's control are eligible for special consideration (see - <https://student.unsw.edu.au/special-consideration>)

In the case of take-home assessment tasks, misadventure must occur for at least 3 consecutive days during the assessment period. If approved, students may be given an extended due date to complete take-home assessments, or an alternative assessment may be set.

Alternative assessments: will be subject to approval and implemented in accordance with UNSW Assessment Implementation Procedure.

Supplementary examinations: There will be no supplementary examinations available due to the intensive nature of the course. Please refer to the Graduate Diploma Student Guide for policies and procedures relating to misadventure.

5.4. Feedback on assessment

Feedback on all pieces of assessment in this course will be provided in accordance with UNSW Assessment Policy.

Assessment	When	Who	Where	How
Assessment 1: "Secured" Quiz (Week 1-6)	Monday following quiz submission	Course coordinator	Online	Moodle
Assessment 2: Data Analysis	10 working days after submission	Course coordinator	Online	Moodle
Assessment 3: Research Report	10 working days after submission	Course coordinator	Online	Moodle

6. Academic integrity, referencing and plagiarism

The APA (7th edition) referencing style is to be adopted in this course. Students should consult the publication manual itself (rather than third party interpretations of it) in order to properly adhere to APA style conventions. Students do not need to purchase a copy of the manual, it is available in the library or online.

Referencing is a way of acknowledging the sources of information that you use to research your assignments. You need to provide a reference whenever you draw on someone else's words, ideas or research. Not referencing other people's work can constitute plagiarism.

Further information about referencing styles can be located at <https://student.unsw.edu.au/referencing>

Academic integrity is fundamental to success at university. Academic integrity can be defined as a commitment to six fundamental values in academic pursuits: honesty, trust, fairness, respect, responsibility and courage.¹ At UNSW, this means that your work must be your own, and others' ideas should be appropriately acknowledged. If you don't follow these rules, plagiarism may be detected in your work.

Further information about academic integrity and **plagiarism** can be located at:

- The *Current Students* site <https://student.unsw.edu.au/plagiarism>, and
- The *ELISE* training site <http://subjectguides.library.unsw.edu.au/elise/presenting>

The *Conduct and Integrity Unit* provides further resources to assist you to understand your conduct obligations as a student: <https://student.unsw.edu.au/conduct>.

7. Readings and resources

Textbook	Howell, D.C. <i>Fundamental Statistics for the Behavioural Sciences</i> , 9 th edition E-book available on Moodle
Course information	Available on Moodle
Required readings	School of Psychology Student Guide .
Recommended internet sites	UNSW Library UNSW Learning centre ELISE Turnitin Student Code of Conduct Policy concerning academic honesty Email policy UNSW Anti-racism policy statement UNSW Equity and Diversity policy statement UNSW Equal opportunity in education policy statement

8. Administrative matters

The [School of Psychology Student Guide](#) contains School policies and procedures relevant for all students enrolled in undergraduate or Masters psychology courses, such as:

- Attendance requirements
- Assignment submissions and returns
- Assessments

¹ International Center for Academic Integrity, 'The Fundamental Values of Academic Integrity', T. Fishman (ed), Clemson University, 2013.

- Special consideration
- Student code of conduct
- Student complaints and grievances
- Disability Support Services
- Health and safety

It is expected that students familiarise themselves with the information contained in this guide.

9. Additional support for students

- The Current Students Gateway: <https://student.unsw.edu.au/>
- Academic Skills and Support: <https://student.unsw.edu.au/academic-skills>
- Student Wellbeing, Health and Safety: <https://student.unsw.edu.au/wellbeing>
- Disability Support Services: <https://student.unsw.edu.au/disability-services>
- UNSW IT Service Centre: <https://www.it.unsw.edu.au/students/index.html>