



UNSW Course Outline

PSYC5004 Advanced Data Analysis and Methods of Psychological Inquiry - 2024

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General Course Information

Course Code : PSYC5004

Year : 2024

Term : Hexamester 4

Teaching Period : KN

Is a multi-term course? : No

Faculty : Faculty of Science

Academic Unit : School of Psychology

Delivery Mode : Online

Delivery Format : Standard

Delivery Location : Distance Education

Campus : Sydney

Study Level : Postgraduate

Units of Credit : 6

Useful Links

[Handbook Class Timetable](#)

Course Details & Outcomes

Course Description

This course provides students with advanced knowledge of statistics and research methods in

behavioural sciences. The course activities will teach students how to analyse data obtained in various experimental designs using a computer-based statistical package. This course is appropriate for students who have acquired foundational knowledge of research methods and statistics taught in PSYC5003 course. The course content will be delivered via asynchronous (pre-recorded) lectures, synchronous tutorials, readings and self-paced modules and quizzes.

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.

Relationship to Other Courses

Students need to have completed PSYC5001, PSYC5002 and PSYC5003 in order to enrol in PSYC5004. The PSYC5001 - PSYC5004 sequence is prerequisite for the advanced courses.

Course Learning Outcomes

Course Learning Outcomes
CLO1 : Apply knowledge of advanced statistics and research methods to analyse and interpret experimental results.
CLO2 : Select appropriate statistical methods and perform data analysis using relevant computational tools.
CLO3 : Evaluate research designs with multiple group comparisons, including factorial and mixed designs, focusing on data analysis and interpretation of the results.
CLO4 : Identify gaps in previous research and develop arguments for different experimental designs and data analysis to answer research questions and test hypotheses.
CLO5 : Report experimental results, analytical details, relevant theoretical and empirical information, and conclusions, communicating in written format.
CLO6 : Assess ethical issues in data analysis and reporting and identify errors in data presentation.

Course Learning Outcomes	Assessment Item
CLO1 : Apply knowledge of advanced statistics and research methods to analyse and interpret experimental results.	<ul style="list-style-type: none">• Weekly Quizzes• Research Report• Data Analysis
CLO2 : Select appropriate statistical methods and perform data analysis using relevant computational tools.	<ul style="list-style-type: none">• Research Report• Data Analysis
CLO3 : Evaluate research designs with multiple group comparisons, including factorial and mixed designs, focusing on data analysis and interpretation of the results.	<ul style="list-style-type: none">• Research Report• Data Analysis
CLO4 : Identify gaps in previous research and develop arguments for different experimental designs and data analysis to answer research questions and test hypotheses.	<ul style="list-style-type: none">• Research Report
CLO5 : Report experimental results, analytical details, relevant theoretical and empirical information, and conclusions, communicating in written format.	<ul style="list-style-type: none">• Research Report
CLO6 : Assess ethical issues in data analysis and reporting and identify errors in data presentation.	<ul style="list-style-type: none">• Weekly Quizzes• Data Analysis

Learning and Teaching Technologies

Moodle - Learning Management System

Learning and Teaching in this course

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 check your UNSW email regularly. All news updates and announcements will be made on the 'Announcements' forum on the Moodle page and/or by email. You must check Moodle and your student emails regularly to keep up to date.

Given that the course content and all assessable components are delivered online, you must ensure that you 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. No special consideration will be 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 you establish whether your computer/internet access is suitable for the online exam/s, a test quiz is available. This quiz will not contribute to final marks and can be completed multiple times to test computer/internet connection prior to assessments/exams.

NOTE: THIS COURSE REQUIRES SIGNIFICANT WEEKLY ASSESSABLE ENGAGEMENT THROUGH MOODLE. You 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 approximately 20 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 (5-6 lectures per week); (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 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: Attendance and participation in tutorials is compulsory. 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, you will be required to participate in the tutorial either synchronously (as the tutorial is streamed live) or asynchronously (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. You are expected to be aware of the UNSW Assessment policy and understand how to apply for special consideration within the Graduate Diploma Special consideration policies and procedures if you cannot complete an assignment/exam due to illness and/or misadventure. It is expected that students have read through the Graduate Diploma in Psychology (5331) Guide.

Additional Course Information

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 Moodle: <https://moodle.telt.unsw.edu.au/login/index>. 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 approximately 20 hours per week, including preparation for the weekly 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 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, including a transcript of tutor and student contributions, 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 and interactive learning modules. 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 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 Study Group Forum and reply to the comment of at least two other students in the course.

The general discussion forum connects students in the course to encourage discussion of weekly content, revision, or topics of interest with each other. Regular engagement in the Study 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 forum provides students with an opportunity to question and clarify the concepts and ideas mentioned in the lectures and readings. Students are strongly encouraged to engage with this forum by posting questions or comments, and reading, answering, or replying to other students' 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.

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Weekly Quizzes Assessment Format: Individual	30%	Start Date: Thursday Week 1-6 at 7am Due Date: Sunday Week 1-6 at 11:59pm
Research Report Assessment Format: Individual	40%	Start Date: Week 1 Due Date: Week 3
Data Analysis Assessment Format: Individual	30%	Start Date: Week 1 Due Date: Week 6

Assessment Details

Weekly Quizzes

Assessment Overview

The aim of this assessment is to help you review weekly topics. You will be required to complete 6 quizzes. Quizzes are conducted under timed conditions and are designed to be taken without reference to lecture notes or study resources. These quizzes will cover the content of the lectures and readings. The quizzes will be held in weeks 1-6 and will cover content presented in the week they are released, as well as the content presented in previous weeks of the course.

The weekly quizzes form part of a continuous assessment. The top five grades out of the six quizzes will be used to count towards the final weekly quiz grade which accounts for 30% of the course mark. The purpose of this assessment is to test your level of comprehension regarding the course material. Your marks and solutions will be provided on completing each quiz.

Course Learning Outcomes

- CLO1 : Apply knowledge of advanced statistics and research methods to analyse and interpret experimental results.
- CLO6 : Assess ethical issues in data analysis and reporting and identify errors in data presentation.

Assessment Length

20 multiple choice questions

Submission notes

Moodle quiz

Assessment information

Not applicable

Assignment submission Turnitin type

Not Applicable

Research Report

Assessment Overview

In this assessment you will analyse data and report the results of the analysis in the formal psychological research reporting style.

You will be given a research question, the experimental method information and raw experimental data. You will be required to complete a literature review and to analyse the data using statistical software and applying the appropriate statistical tests. You will need to write up the findings in the format of a research report, including an introduction, method, results and discussion section. You will be provided with research report writing resources that will help you with structuring and formatting your research report. The assessment should be no longer than 2000 words. The assessment information will be available on the first day of the course. The assessment is due in Week 3. You will receive feedback through annotated marking rubric and a series of in-text comments.

Course Learning Outcomes

- CLO1 : Apply knowledge of advanced statistics and research methods to analyse and interpret experimental results.
- CLO2 : Select appropriate statistical methods and perform data analysis using relevant computational tools.
- CLO3 : Evaluate research designs with multiple group comparisons, including factorial and mixed designs, focusing on data analysis and interpretation of the results.
- CLO4 : Identify gaps in previous research and develop arguments for different experimental designs and data analysis to answer research questions and test hypotheses.
- CLO5 : Report experimental results, analytical details, relevant theoretical and empirical information, and conclusions, communicating in written format.

Assessment Length

2000 words

Submission notes

Text file

Assessment information

Not applicable

Assignment submission Turnitin type

This assignment is submitted through Turnitin and students do not see Turnitin similarity reports.

Data Analysis

Assessment Overview

In this assessment, you will conduct data analysis using appropriate statistical methods, interpret the results, and write about the outcomes of your analysis.

You will be given sets of raw experimental data to analyse, interpret and draw appropriate conclusions from. You will be required to analyse data using the assigned statistical software and identifying and applying the appropriate statistical tests. You will interpret data and report results in a written format answering a series of questions. You will also need to submit statistical outputs of the analyses. The assessment information will be available on the first day of the course. The assessment is due in Week 6. You will receive feedback through a series of in-text comments. You will prepare for this assessment by participating in tutorial activities, reading the assigned readings and completing self-paced activities.

Course Learning Outcomes

- CLO1 : Apply knowledge of advanced statistics and research methods to analyse and interpret experimental results.
- CLO2 : Select appropriate statistical methods and perform data analysis using relevant computational tools.
- CLO3 : Evaluate research designs with multiple group comparisons, including factorial and mixed designs, focusing on data analysis and interpretation of the results.
- CLO6 : Assess ethical issues in data analysis and reporting and identify errors in data presentation.

Assessment Length

Approximately 3-5 pages

Submission notes

Text file

Assessment information

Not applicable

Assignment submission Turnitin type

This assignment is submitted through Turnitin and students do not see Turnitin similarity

reports.

General Assessment Information

Not applicable

Grading Basis

Standard

Requirements to pass course

Not applicable

Course Schedule

Teaching Week/Module	Activity Type	Content
Week 1 : 1 July - 7 July	Lecture	Prediction (simple regression) 2.1 Introduction to prediction 2.2 z-score method 2.3 Raw score method 2.4 Partitioning variability 2.5 Assumptions of regression 2.6 Standard error of estimate
	Tutorial	Online tutorial discussion based on lectures and readings. You will discuss the principles and assumptions of regression, how to use z-test method and the raw core method and the concepts of variability and standard error of estimate.
Week 2 : 8 July - 14 July	Lecture	Multiple comparisons and Tukey tests 3.1 Multiple comparisons 3.2 Tukey Theory 3.3 Tukey example (Part 1) 3.4 Tukey example (Part 2) 3.5 Tukey with Jamovi 3.6 Tukey with SPSS
	Tutorial	Online tutorial discussion based on lectures and readings. You will learn the principles of multiple comparisons and Tukey tests.
Week 3 : 15 July - 21 July	Lecture	One-way ANOVA (between subjects) 4.1 ANOVA Introduction 4.2 Performing ANOVA 4.3 ANOVA using software 4.4 Contrasts (Part 1) 4.5 Contrasts (Part 2) 4.6 Summary
	Tutorial	Online tutorial discussion based on lectures and readings. You will discuss how one-way ANOVA is used and interpreted.
Week 4 : 22 July - 28 July	Lecture	Two Way ANOVA (between subjects) 5.1 Factorial designs 5.2 Two-way ANOVA 5.3 3x 3 Example 5.4 Bonferroni with PSY 5.5. Scheffe with Software 5.6. Simple effects
	Tutorial	Online tutorial discussion based on lectures and readings. You will learn the principles of factorial design. They will discuss how to explain the effect of two or more independent variables upon a single dependent variable.
Week 5 : 29 July - 4 August	Lecture	Within subjects and mixed designs 6.1 MANOVA Introduction 6.2 One-way within-subjects designs 6.3 Mixed designs standard 6.4 Mixed designs simple effects 6.5 Within by within standard design 6.6 Within by within simple effects
	Tutorial	Online tutorial discussion based on lectures and readings. You will learn to use MANOVA with different experimental designs
Week 6 : 5 August - 11 August	Lecture	Worked Examples
	Tutorial	In the tutorial, you will be provided with problem sets that are similar to the worked examples from the lecture, but with different data or slightly altered scenarios. This would test your ability to apply the learned statistical methods independently.

Attendance Requirements

Students are strongly encouraged to attend all classes and review lecture recordings.

General Schedule Information

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 quiz preparation.

Course Resources

Prescribed Resources

Howell, D. C. (2020). Fundamental statistics for the behavioural sciences (9th ed.). Cengage Learning.

E-book available on Moodle.

Recommended Resources

Not applicable

Additional Costs

Not applicable

Course Evaluation and Development

In order to gather comprehensive student feedback on the course, we utilise the anonymous myExperience survey as one of the primary methods. This survey provides a structured platform for students to share their thoughts, opinions, and suggestions regarding various aspects of the course. Additionally, students are encouraged to email their feedback directly to the program authorities for further discussion and consideration. The myExperience survey will be administered towards the end of the course to capture students' experiences and perspectives. The survey will cover different dimensions of the course, including teaching quality, course materials, assessments, and overall learning environment. The anonymous nature of the survey ensures that students can express their feedback freely and honestly.

Once the survey responses are collected, they will be analysed. The analysis will involve examining both quantitative and qualitative data to identify common themes, patterns, and areas for improvement. Quantitative data, such as ratings responses, will be aggregated and summarised to gain a quantitative overview of student satisfaction and areas of concern. Qualitative feedback, such as open-ended comments, will be carefully reviewed and categorised

to extract valuable insights and specific suggestions.

Based on the findings from the analysis, appropriate actions will be taken to address the identified areas for improvement. These actions may include revising course materials, adjusting teaching approaches, providing additional support resources, or modifying assessment methods.

Feedback from students is considered a valuable asset in shaping the course. We aim to create a more student-centred learning experience by actively seeking and incorporating student input. The feedback students provide serves as a catalyst for continuous improvement and ensures that the course responds to their needs and expectations.

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Program director	Lidija Krebs-Lazendic					No	Yes
Administrator	Deliana Freky					No	No

Other Useful Information

School Contact Information

For GD Psych courses (PSYC5001 - PSYC5010), please email: gdpsychology@unsw.edu.au.

For GCChildDev courses (PSYC5111 - PSYC5116), please email: gcchilddev@unsw.edu.au