

PSY400

Research Methods and Analysis 4

School: School of Health - Psychology

2024 | Semester 1

UniSC Sunshine Coast
UniSC Moreton Bay**BLENDED
LEARNING**

Most of your course is on campus but you may be able to do some components of this course online.

Please go to usc.edu.au for up to date information on the teaching sessions and campuses where this course is usually offered.

1. What is this course about?

1.1. Description

This course develops advanced knowledge in multivariate research design and statistics for null hypothesis significance testing (NHST), as well as developing intermediate level knowledge in alternatives to the NHST approach (Bayesian models) and qualitative data analysis. Multivariate research designs, data cleaning, assumption testing in multivariate designs, as well as power, effect size, and conditional probability will be examined. Proficiency in the use of MANOVA, MANCOVA, repeated measures MANOVA, logistic regression, discriminant function analysis/profile analysis, factor analytic approaches, structural equation modelling, thematic analysis, Thematic Analysis, sensitivity/specificity analysis, and receiver operating curve (ROC) analysis will be developed. The course prepares you to undertake Honours and higher degree dissertations and to conduct professional research.

1.2. How will this course be delivered?

ACTIVITY	HOURS	BEGINNING WEEK	FREQUENCY
BLENDED LEARNING			
Tutorial/Workshop 1 – Whole of class workshop covering design and methodology	1hr	Week 1	13 times
Tutorial/Workshop 2 – Lab based workshop focusing on skills of statistical analysis using multiple platforms.	2hrs	Week 1	13 times
Learning materials – 7 hour asynchronous learning materials including assessment preparation and revision	7hrs	Week 1	13 times

1.3. Course Topics

- Experimental design principles
- Univariate, bivariate and multivariate research designs
- Sources of statistical error in multivariate designs
- Sampling, sample size, power and effect size
- Data cleaning – missing values, skewed data and use/misuse of data transformation
- Refresher on ANOVA, ANCOVA and repeated measures ANOVA
- Multiple DV designs – using MANOVA, MANCOVA and repeated measures MANOVA
- Multiple predictor designs – using Multiple Regression and Logistic Regression
- Extending beyond MANOVA and regression – Multiple Discriminant Analysis
- Exploring the structure of relationships between variables – Factor Analysis (Confirmatory and Exploratory)
- Exploring multivariate relationships between IVs and DVs – Mediation/Moderation Analysis and Structural Equation Modelling
- Qualitative research design and analysis
- Alternatives to NHST – Bayes Theorem and conditional probability
- Non NHST statistical techniques – odds ratio, likelihood ratio, sensitivity/specificity, receiver operating curve analysis
- Big issues in research design and analysis – big n sample sizes, effect size and meaningfulness of probabilities.

2. What level is this course?

400 Level (Graduate)

Demonstrating coherence and breadth or depth of knowledge and skills. Independent application of knowledge and skills in unfamiliar contexts. Meeting professional requirements and AQF descriptors for the degree. May require pre-requisites where discipline specific introductory or developing knowledge or skills is necessary. Normally undertaken in the third or fourth full-time study year of an undergraduate program.

3. What is the unit value of this course?

12 units

4. How does this course contribute to my learning?

COURSE LEARNING OUTCOMES	GRADUATE QUALITIES MAPPING	PROFESSIONAL STANDARD MAPPING *
On successful completion of this course, you should be able to...	Completing these tasks successfully will contribute to you becoming...	Australian Psychology Accreditation Council
1 Demonstrate knowledge of a range of advanced research designs and methodologies used in psychological research.	Knowledgeable	2, 2.1, 2.5
2 Demonstrate appropriate use of multivariate statistical techniques for the analysis of psychological data.	Creative and critical thinker Empowered	2, 2.5
3 Apply multivariate quantitative techniques and qualitative techniques and to the analysis of psychological data.	Creative and critical thinker Empowered	2, 2.5
4 Write and present complex research findings in a scientific fashion.	Empowered	2, 2.1, 2.5
5 Demonstrate competence in the use of SPSS and AMOS for complex statistical analysis of psychological data.	Empowered	2, 2.1, 2.5
6 Demonstrate knowledge and application of Bayes theorem and statistical techniques in psychological research	Knowledgeable	2, 2.5

* Competencies by Professional Body

CODE	COMPETENCY
AUSTRALIAN PSYCHOLOGY ACCREDITATION COUNCIL	
2	PRE-PROFESSIONAL COMPETENCIES: Graduates of programs at this level have basic knowledge and skills in the professional practice of psychology and the independent conduct and evaluation of scientific research. Programs for pre-professional competencies are typically a Bachelor Honours Degree or Graduate Diploma (if the graduate competencies in research can be met).
2.1	Taking into account broad diversity, and consistent with current relevant legal frameworks and codes of ethical practice, graduates apply psychological knowledge to competently and ethically demonstrate successful (prior or concurrent) achievement of foundational competencies.
2.5	Taking into account broad diversity, and consistent with current relevant legal frameworks and codes of ethical practice, graduates apply psychological knowledge to competently and ethically investigate a substantive individual research question relevant to the discipline of psychology.

5. Am I eligible to enrol in this course?

Refer to the [UniSC Glossary of terms](#) for definitions of “pre-requisites, co-requisites and anti-requisites”.

5.1. Pre-requisites

Enrolled in Program AR403, AR405 or AR645

5.2. Co-requisites

Not applicable

5.3. Anti-requisites

Not applicable

5.4. Specific assumed prior knowledge and skills (where applicable)

Not applicable

6. How am I going to be assessed?

6.1. Grading Scale

Standard Grading (GRD)

High Distinction (HD), Distinction (DN), Credit (CR), Pass (PS), Fail (FL).

6.2. Details of early feedback on progress

Content material to be assessed in the first Task assessment in Week 6.

6.3. Assessment tasks

DELIVERY MODE	TASK NO.	ASSESSMENT PRODUCT	INDIVIDUAL OR GROUP	WEIGHTING %	WHAT IS THE DURATION / LENGTH?	WHEN SHOULD I SUBMIT?	WHERE SHOULD I SUBMIT IT?
All	1	Quiz/zes	Individual	20%	60 minutes	Week 6	In Class
All	2	Essay	Individual	35%	2000 words maximum	Week 9	Online Submission
All	3	Examination - Centrally Scheduled	Individual	45%	2 hours with 10 minutes reading time	Exam Period	Exam Venue

All - Assessment Task 1: Quiz/zes

GOAL:	Demonstrate the ability to correctly performing data cleaning, MVA, ANOVA, MANOVA analyses using SPSS. This assessment involves an in-class test to be undertaken in Week 6. The test will be taken in the computer laboratory and involve performing data analytical techniques covered Weeks 1-4 using provided data sets. Students will be assessed on proficiency in use of SPSS to perform specific analyses, correct interpretation of statistical test results, and assumption testing.						
PRODUCT:	Quiz/zes						
FORMAT:	As students need to use UniSC statistical software, the test will only be available during the scheduled tutorial times and students must attend their allocated tutorial in order to sit the test. The full tutorial time (110 minutes) will be allowed for completion of the test. The test will be open-book/lecture notes.						
CRITERIA:	No.						Learning Outcome assessed
	1	Identification and application in SPSS of appropriate statistical analyses					1 2 3
	2	Correct interpretation of statistical results					4
	3	Correct APA formatting of results					4

All - Assessment Task 2: Essay

GOAL:	Understanding of research topic literature, hypotheses and appropriate data analyses.
PRODUCT:	Essay
FORMAT:	This assessment focuses on you providing a 2000 word structured response, and discussion, of a research topic, hypotheses, and appropriate research design planning. This will lead to a clear statement as to the intended data analysis techniques, including a discussion of planned assumption testing and managing potential violations. The essay must describe the topic, key concepts, hypotheses, key variables/measurements, appropriate research design, statistical techniques and assumption tests and discuss potential strategies, including data transformations, that could be employed in instances where statistical assumptions have been violated. Where appropriate, qualitative research approaches should feature, following presentation of research question and literature review, the case for a qualitative methodology and method, sampling, ethics and data analysis.

CRITERIA:	No.	Learning Outcome assessed
	1	The effective presentation of an Introduction (maximum 500 word summary of the thesis topic, including a minimum of five key references. This section should include a discussion of conceptual relevance and relationships) 4
	2	The effective presentation of research Hypotheses (at least two alternative hypotheses should be provided with the presentation of null hypotheses). 4
	3	An effective short description of Measurements/Variables. 4
	4	Demonstrated competence in identifying and reporting the appropriate statistical technique planned for assessing each of the hypotheses, and presentation of a discussion of any key analytic features of the statistical technique (e.g. effect size) 1 2 3
	5	Provision of a hypothetical example of APA Publication Style format reporting of each chosen statistical technique's key statistics. 4
	6	Demonstrated competence in identifying and reporting the assumption tests appropriate to the chosen statistical techniques. 1 3 5 6
	7	Correct identification of appropriate data transformations and other strategies to address any violations of statistical assumptions. 2 3 5 6
	8	Demonstrated knowledge of SPSS functions relevant to assumption testing and data transformation. 3 5 6
	9	Demonstrated knowledge of APA Publication Style for the Running-Head/Title Page, Introduction, Method Sections, and References. 4

All - Assessment Task 3: Final examination

GOAL:	You will demonstrate understanding of multivariate research design and the use and interpretation of advanced research analytic techniques covered in the course between weeks 1-13.								
PRODUCT:	Examination - Centrally Scheduled								
FORMAT:	Open book, multiple choice and short answer format examination.								
CRITERIA:	<table> <tr> <th>No.</th><th>Learning Outcome assessed</th></tr> <tr> <td>1</td><td>Identification of appropriate statistical analyses 1 3 5 6</td></tr> <tr> <td>2</td><td>Correct interpretation of statistical results 2 3 5 6</td></tr> <tr> <td>3</td><td>Correct APA formatting of results 4</td></tr> </table>	No.	Learning Outcome assessed	1	Identification of appropriate statistical analyses 1 3 5 6	2	Correct interpretation of statistical results 2 3 5 6	3	Correct APA formatting of results 4
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1	Identification of appropriate statistical analyses 1 3 5 6								
2	Correct interpretation of statistical results 2 3 5 6								
3	Correct APA formatting of results 4								

7. Directed study hours

A 12-unit course will have total of 150 learning hours which will include directed study hours (including online if required), self-directed learning and completion of assessable tasks. Student workload is calculated at 12.5 learning hours per one unit.

8. What resources do I need to undertake this course?

Please note: Course information, including specific information of recommended readings, learning activities, resources, weekly readings, etc. are available on the course Canvas site– Please log in as soon as possible.

8.1. Prescribed text(s) or course reader

Please note that you need to have regular access to the resource(s) listed below. Resources may be required or recommended.

REQUIRED?	AUTHOR	YEAR	TITLE	EDITION	PUBLISHER
Required	Andy Field	2018	Discovering Statistics Using IBM SPSS Statistics	5th	SAGE Publications Limited

8.2. Specific requirements

Access to UniSC computer laboratory for IBM SPSS Statistics, IBM SPSS AMOS, and NVIVO; and/or access to a stable internet connection to access UniSC's virtual machine environment (which then accesses SPSS and NVIVO remotely)

9. How are risks managed in this course?

Health and safety risks for this course have been assessed as low. It is your responsibility to review course material, search online, discuss with lecturers and peers and understand the health and safety risks associated with your specific course of study and to familiarise yourself with the University's general health and safety principles by reviewing the [online induction training for students](#), and following the instructions of the University staff.

10. What administrative information is relevant to this course?

10.1. Assessment: Academic Integrity

Academic integrity is the ethical standard of university participation. It ensures that students graduate as a result of proving they are competent in their discipline. This is integral in maintaining the value of academic qualifications. Each industry has expectations and standards of the skills and knowledge within that discipline and these are reflected in assessment.

Academic integrity means that you do not engage in any activity that is considered to be academic fraud; including plagiarism, collusion or outsourcing any part of any assessment item to any other person. You are expected to be honest and ethical by completing all work yourself and indicating in your work which ideas and information were developed by you and which were taken from others. You cannot provide your assessment work to others. You are also expected to provide evidence of wide and critical reading, usually by using appropriate academic references.

In order to minimise incidents of academic fraud, this course may require that some of its assessment tasks, when submitted to Canvas, are electronically checked through Turnitin. This software allows for text comparisons to be made between your submitted assessment item and all other work to which Turnitin has access.

10.2. Assessment: Additional Requirements

Your eligibility for supplementary assessment in a course is dependent of the following conditions applying:

The final mark is in the percentage range 47% to 49.4%

The course is graded using the Standard Grading scale

You have not failed an assessment task in the course due to academic misconduct.

10.3. Assessment: Submission penalties

Late submission of assessment tasks may be penalised at the following maximum rate:

- 5% (of the assessment task's identified value) per day for the first two days from the date identified as the due date for the assessment task.

- 10% (of the assessment task's identified value) for the third day - 20% (of the assessment task's identified value) for the fourth day and subsequent days up to and including seven days from the date identified as the due date for the assessment task.

- A result of zero is awarded for an assessment task submitted after seven days from the date identified as the due date for the assessment task. Weekdays and weekends are included in the calculation of days late. To request an extension you must contact your course coordinator to negotiate an outcome.

10.4. SafeUniSC

UniSC is committed to a culture of respect and providing a safe and supportive environment for all members of our community. For immediate assistance on campus contact SafeUniSC by phone: [07 5430 1168](tel:0754301168) or using the [SafeZone](#) app. For general enquires contact the SafeUniSC team by phone [07 5456 3864](tel:0754563864) or email safe@usc.edu.au.

The SafeUniSC Specialist Service is a Student Wellbeing service that provides free and confidential support to students who may have experienced or observed behaviour that could cause fear, offence or trauma. To contact the service call [07 5430 1226](tel:0754301226) or email studentwellbeing@usc.edu.au.

10.5. Study help

For help with course-specific advice, for example what information to include in your assessment, you should first contact your tutor, then your course coordinator, if needed.

If you require additional assistance, the Learning Advisers are trained professionals who are ready to help you develop a wide range of academic skills. Visit the [Learning Advisers](#) web page for more information, or contact Student Central for further assistance: +61 7 5430 2890 or studentcentral@usc.edu.au.

10.6. Wellbeing Services

Student Wellbeing provide free and confidential counselling on a wide range of personal, academic, social and psychological matters, to foster positive mental health and wellbeing for your academic success.

To book a confidential appointment go to [Student Hub](#), email studentwellbeing@usc.edu.au or call 07 5430 1226.

10.7. AccessAbility Services

Ability Advisers ensure equal access to all aspects of university life. If your studies are affected by a disability, learning disorder mental health issue, injury or illness, or you are a primary carer for someone with a disability or who is considered frail and aged, [AccessAbility Services](#) can provide access to appropriate reasonable adjustments and practical advice about the support and facilities available to you throughout the University.

To book a confidential appointment go to [Student Hub](#), email AccessAbility@usc.edu.au or call 07 5430 2890.

10.8. Links to relevant University policy and procedures

For more information on Academic Learning & Teaching categories including:

- Assessment: Courses and Coursework Programs
- Review of Assessment and Final Grades
- Supplementary Assessment
- Central Examinations
- Deferred Examinations
- Student Conduct
- Students with a Disability

For more information, visit <https://www.usc.edu.au/explore/policies-and-procedures#academic-learning-and-teaching>

10.9. Student Charter

UniSC is committed to excellence in teaching, research and engagement in an environment that is inclusive, inspiring, safe and respectful. The [Student Charter](#) sets out what students can expect from the University, and what in turn is expected of students, to achieve these outcomes.

10.10. General Enquiries

In person:

- **UniSC Sunshine Coast** - Student Central, Ground Floor, Building C, 90 Sippy Downs Drive, Sippy Downs
- **UniSC Moreton Bay** - Service Centre, Ground Floor, Foundation Building, Gympie Road, Petrie
- **UniSC SouthBank** - Student Central, Building A4 (SW1), 52 Merivale Street, South Brisbane
- **UniSC Gympie** - Student Central, 71 Cartwright Road, Gympie
- **UniSC Fraser Coast** - Student Central, Student Central, Building A, 161 Old Maryborough Rd, Hervey Bay
- **UniSC Caboolture** - Student Central, Level 1 Building J, Cnr Manley and Tallon Street, Caboolture

Tel: +61 7 5430 2890

Email: studentcentral@usc.edu.au