COURSE OUTLINE

SCI202 Advanced Research Methods and Statistics

School: School of Science, Technology and Engineering

2026 | Trimester 2

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 unisc.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 builds on the foundation of SCI110 and will introduce you to more sophisticated statistical analyses. Theoretical knowledge introduced in the learning materials will be enhanced by detailed illustration in tutorials and hands-on application in computer workshops. In each case, the theory will be applied to real-world problems. On completion of this course, you will be confident in critically assessing the range of statistical tests that might be employed in a given situation, in identifying which test best suits the scenario, and in conducting this test using cutting-edge computer software.

1.2. How will this course be delivered?

ACTIVITY	HOURS	BEGINNING WEEK	FREQUENCY
BLENDED LEARNING			
Learning materials – Asynchronous online learning materials.	2hrs	Week 1	12 times
Tutorial/Workshop 1 – On-campus tutorial.	1hr	Week 1	12 times
Laboratory 1 – On-campus laboratory.	1hr	Week 1	12 times
Seminar – On Campus seminar	1hr	Week 1	3 times

1.3. Course Topics

Experimental design; testing hypotheses; qualitative vs quantitative analyses; designing and administering questionnaires; correlation, multiple and logistic regression; analysis of variance; non-parametric statistical tests; using SPSS

2. What level is this course?

200 Level (Developing)

Building on and expanding the scope of introductory knowledge and skills, developing breadth or depth and applying knowledge and skills in a new context. May require pre-requisites where discipline specific introductory knowledge or skills is necessary. Normally, undertaken in the second or third full-time year of an undergraduate programs.

3. What is the unit value of this course?

12 units

4. How does this course contribute to my learning?

COURSE LEARNING OUTCOMES On successful completion of this course, you should be able to...		GRADUATE QUALITIES Completing these tasks successfully will contribute to you becoming...
1	Formulate research questions and select appropriate research designs	Empowered Ethical
2	Select appropriate sampling strategies and calculate required sample sizes	Knowledgeable Empowered
3	Perform exploratory data analysis	Knowledgeable
4	Use a computer program to produce publication-quality graphs and descriptive statistics	Knowledgeable Empowered
5	Evaluate the suitability of different statistical models using a range of diagnostic tools	Creative and critical thinker Empowered
6	Conduct statistical tests and write concise summaries of their results, as would be required for publication in scientific journals	Knowledgeable Empowered

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

SCI110 or BUS101

5.2. Co-requisites

Not applicable

5.3. Anti-requisites

ANM203

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

Basic statistical concepts including measurement scales, basic sampling strategies, presentation of data, the Normal distribution and basic parametric tests including Z scores and t tests.

5.5. Microcredential Information

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

In weeks three and four workshops will be held during the tutorials to assist you in writing the assignment proposal

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	40%	5 x quizzes, 20 questions, 30 minutes each	Throughout teaching period (refer to Format)	Online Test (Quiz)
All	2	Artefact - Technical and Scientific	Group	20%	500 words	Week 7	Online Submission
All	3	Report	Group	40%	2500 words	Week 12	Online Submission

All - Assessment Task 1: Trimester Quizzes

GOAL:	To assess knowledge gleaned from the entire 12 Weeks of the course; the language of statistics, research design, designing and administering questionnaires, correlation, multiple and logistic regression, Analysis of Variance, Non-parametric statistical tests and using SPSS.
PRODUCT:	Quiz/zes
AUTHORSHIP STATEMENT:	
FORMAT:	Online in weeks 2, 5, 8, 10 and 12
CRITERIA:	**No.** / **Learning Outcome assessed** 1 Clarity of thinking through development of problem solutions — 1 2 Accuracy of outcomes through appropriate use of a calculator, tables and figures — 2 3 Appropriate use of SPSS — 2 3 4 Demonstrated understanding of statistical language — 3 5 Demonstrated understanding and application of hypothesis testing — 4
GENERIC SKILLS:	Problem solving, Applying technologies, Information literacy

All - Assessment Task 2: Assignment proposal

GOAL:	You will design a proposal for a qualitative survey to investigate a campus issue.You will demonstrate this by selecting an appropriate research design, and designing and evaluating questions with preliminary data analysis techniques.
PRODUCT:	Artefact - Technical and Scientific
AUTHORSHIP STATEMENT:	
FORMAT:	Individual or group submission; online submission via Canvas
CRITERIA:	

No.		Learning Outcome assessed
1	clarity of thinking through development of appropriate survey questions	1 2
2	demonstrated understanding of statistical language	2
3	use of a diversity of survey questions to demonstrate appreciation of question format	1
4	ability to work in a group	3

GENERIC SKILLS:	Communication, Collaboration, Problem solving, Organisation, Applying technologies, Information literacy

All - Assessment Task 3: Scientific report

GOAL:	You will use the results from your qualitative survey already completed and write a full scientific IMRaD format report
PRODUCT:	Report
AUTHORSHIP STATEMENT:	
FORMAT:	Individual or group submission; online submission via Canvas
CRITERIA:	

No.		Learning Outcome assessed
1	clarity of thinking through development of appropriate survey questions	1
2	demonstrated understanding of statistical language	3 4 5 6
3	use of a diversity of presentation and analytical techniques to disseminate information.	3
4	adherence to scientific protocols when presenting and reporting results	4
5	ability to work in a group	1
6	160 demonstrated understanding of statistical language	2 3 4

GENERIC SKILLS:	Communication, Collaboration, Problem solving, Organisation, Applying technologies, Information literacy

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

You need regular access to the resource(s) below. Many texts are available as ebooks through the Library at no additional cost.

REQUIRED?	AUTHOR	YEAR	TITLE	EDITION	PUBLISHER
Recommended	Wayne W. Daniel	1999	Biostatistics	n/a	John Wiley & Sons Incorporated
Recommended	George Diekhoff	1992	Statistics for the Social and Behavioral Sciences	n/a	WCB/McGraw-Hill
Recommended	Jim Fowler,Lou Cohen,Phil Jarvis	1998	Practical Statistics for Field Biology	n/a	John Wiley & Sons
Recommended	Natalie L. Sproull	1995	Handbook of Research Methods	n/a	Metuchen, N.J. : Scarecrow Press
Recommended	Woodward M	1999	Epidemiology: Study Design and Data Analysis	n/a	Chapman & Hall/CRC
Recommended	Jerrold H. Zar	1999	Biostatistical Analysis	n/a	n/a
Recommended	D. A. De Vaus	2002	Surveys in Social Research	n/a	n/a

8.2. Specific requirements

You need access to a calculator with statistical functionality. Examples include, but are not limited to: CasioFX100AU Scientific Calculator; Casio FX82 AU PLUS-BP Scientific Calculator; Sharp EL531WHBLK Scientific Calculator. You need access to IBM SPSS Statistics (commonly called simply SPSS). SPSS is available in most USC computer laboratories. You do not need to purchase SPSS. However, you may find completing the assessment tasks easier if you have access to SPSS on your own personal computer. Unfortunately, student editions of SPSS are no longer available, and the USC licensing arrangements do not allow SPSS to be loaded onto student computers. You may wish to explore purchasing an SPSS license from (for example) www.onthehub.com. (At the time of writing, a six-month licence for IBM SPSS Statistics Base Grad Pack version 21 is about $60.)

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

Eligibility for Supplementary Assessment

Your eligibility for supplementary assessment in a course is dependent of the following conditions applying:
(a) The final mark is in the percentage range 47% to 49.4%; and
(b) The course is graded using the Standard Grading scale

10.3. Assessment: Submission penalties

Late submissions may be penalised up to and including the following maximum percentage of the assessment task's identified value, with weekdays and weekends included in the calculation of days late:
(a) One day: deduct 5%;
(b) Two days: deduct 10%;
(c) Three days: deduct 20%;
(d) Four days: deduct 40%;
(e) Five days: deduct 60%;
(f) Six days: deduct 80%;
(g) Seven days: A result of zero is awarded for the assessment task.

The following penalties will apply for a late submission for an online examination:
Less than 15 minutes: No penalty
From 15 minutes to 30 minutes: 20% penalty
More than 30 minutes: 100% penalty

10.4. 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

10.5. 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.

10.6. General Enquiries

For course-specific questions, contact your teaching staff or Course Coordinator.

For other enquiries or to access support, please contact Student Central:

- UniSC Student Central
- UniSC Adelaide Student Central