1. Information about the course

The course content is coordinated by Associate Professor Daniel Falster and is delivered with contributions from Professor Alistair Poore, Professor Katrin Meissner, and Dr Adrian Fisher.

Year of Delivery	2022
Course Code	BEES 2041
Course Name	Data Analysis for Life and Earth Sciences
Academic Unit	School of Biological, Earth and Environmental Sciences Faculty of Science
Level of Course	Second year, undergraduate
Units of Credit	6 UOC
Session(s) Offered	Term 1
Assumed Knowledge, Prerequisites or Co - requisites	MATH1041
Hours per Week	7
Number of Weeks	10
Commencement Date	Feb 14th 2022

Summary of Course Structure (for details see 'Course Schedule' - not all lecture times are used in every week)*

Component	HPW	Time	Day	LocaOption

Demonstrators	Gary Truong Rebecca Stolper Ben Walker Charlotte Page		

3. Course details

Course descriptio n	Development of skills in applying statistics to biological, earth and spatial data; design and analysis of experiments in life and earth sciences; sampling strategies for estimating sample size; analysis of community and environment structure using multivariate statistics; simulation modeling in population biology, and statistical fitting of non-linear models to population growth data; correlation and both simple and multiple regression; improving statistical models using analysis of residuals; analysis of spatial data. Examples are drawn from ecological, geographical, earth, behavioural, and genetic and immunological data. Practical work emphasis problem-solving and hands-on experience with R and other specialist software. Assumed Knowledge: MATH1041
Course aim s	The aim of the course (BEES2041) is the development of skills in: • applying quantitative methods to biological, earth and spatial data • the design of sampling and experimental research • interpretation and communication of statistical results The course will be based on a series of worked examples from a wide variety of disciplines, and practical work emphasises problem-solving and hands-on experience with the statistical software R and other specialist software. The course is designed to provide you with skills in performing a variety of statistical tests and in recognising when to apply which statistical test. A number of different types of tests will be covered and at the end of the course you will be expected to know how and when to apply each of these tests. We will cover a suite of tests that are relevant to most areas of life and earth sciences including medicine, physiology, ecology, environmental science, geography, geology, genetics, and behavioural biology.
Student learning outcome s	After studying this subject, you should be able to: • Outline the logical process involved in hypothesis testing • Identify appropriate statistical tests for a given sampling or experimental design, execute and interpret the results of such tests • Conduct and interpret contingency table analyses • Explain the assumptions of linear models (regression, ANOVA) • Test the assumptions of linear models and outline appropriate options if assumptions are violated • Outline the logical process of conducting, interpreting and reporting results from linear models • Calculate the key components of linear models • Explain the basic principles of geostatistical analysis • Interpret figures and statistical output derived from multivariate analyses (cluster analyses, MDS, PCA) • Communicate the results of experiments or sampling exercises with appropriate integration of text, figures and statistical support for results.

Graduate attributes developed in this course

Science Graduate Attributes	Select the level of FOCUS 0 = NO FOCUS 1 = MINIMAL 2 = MINOR 3 = MAJOR	Activities/Assessment
Research, inquiry and analytical thinking abilities	3	Practical projects and fieldtrip. Assessment by written reports & final exam.
Capability and motivation for intellectual development	3	Practical projects, fieldtrip. Assessment by written reports. Emphasis on the need for statistical analyses in the students' disciplinestBDC 36 677.16 05.3 (e)-3.2 (s)]TJ ET Q (s)-8.1 (es)-8 (i)3.1 (

Multivariate

February
2018

7. Administration matters

	• https://my.unsw.edu.au/student/academiclife/assessment/examinations/examinations.html The conditions for special consideration are given at • https://my.unsw.edu.au/student/atoz/SpecialConsideration.html
Equity and diversity	Those students who have a disability that requires some adjustment in their teaching or learning environment are encouraged to discuss their study needs with the course Convenor prior to, or at the commencement of, their course, or with the Equity Officer (Disability) in the Equity and Diversity Unit (9385 4734 or http://www.studentequity.unsw.edu.au/). Issues to be discussed may include access to materials, signers or note-takers, the provision of services and additional exam and assessment arrangements. Early notification is essential to enable any necessary adjustments to be made.

Grievance policy

School contact	Faculty contact	University contact
BEES Grievance Officer Associate Professor Jes Sammut j.sammut@unsw.edu.au Phone: 9385 8281	Dr Gavin Edwards Associate Dean (Undergraduate Programs) g.edwards@unsw.edu.au Phone: 9385 4652	Student Conduct and Appeals Office The Student Conduct and Appeals Office (Student Life and Learning) can help you at any stage of the complaints process. Phone: (02) 9385 8515 Email: studentcomplaints@unsw.edu.au