School of Information and Physical Sciences

STAT1020: Statistical Reasoning and Literacy

Callaghan

Semester 1 - 2024

COURSE OUTLINE

OVERVIEW

Course Description

This course introduces students to statistical thinking, statistical methods and the interpretation of results from these methods. Examples from a range of science related disciplines are used to illustrate the key concepts.

Interested in studying further statistics courses to develop your skills and improve your employability? Information about available statistics courses can be found here: https://www.newcastle.edu.au/school/mathematical-and-physical-sciences/study/statistics-courses

Contact Hours

Callaghan
Workshop
Face to Face on Campus
2 hour(s) per week(s) for 13 week(s) starting Week 1
Students are expected to complete 4 hours of guided learning via online preparation, lectures, interactive workshops, tutorials, discussion groups or self-directed learning and an additional 6 hours of independent study per week.

Unit Weighting
Workload

10
Students are required to spend on average 120-140 hours of effort (contact and non-contact) including assessments per 10 unit course.

CONTACTS

Course Coordinator

Callaghan
Dr Lin Yue
Lin.Yue@newcastle.edu.au
(02) 4921 5209
Consultation: Via weekly workshop session or by email appointment

Teaching Staff

Other teaching staff will be advised on the course Canvas site.

School Office

School of Information and Physical Sciences
SR233, Social Sciences Building
Callaghan
CESE-SIPS-Admin@newcastle.edu.au
+61 2 4921 5513
9am-5pm (Mon-Fri)

SYLLABUS

Course Content

Topics will include:

1. Critical statistical appraisal of scientific papers and government reports
2. Study designs;
3. Descriptive statistics;
4. Presentation and interpretation of data in tables and graphs;
5. Confidence intervals and hypothesis testing;
6. Data analysis techniques;
7. Business writing formats: applying good writing rules to fact sheets, backgrounders, pitch letters, position papers, reports, and biographies; A strong emphasis of the concepts will be made using a range of literature appearing in peer review journals and government reports.

Course Learning Outcomes

On successful completion of this course, students will be able to:

1. Identify appropriate methods of data collection (sampling and study designs) and analysis (e.g., for comparison of groups) for scientific studies;
2. Identify and interpret appropriate graphs and summary statistics;
3. Describe conceptually confidence intervals and hypothesis testing and interpret these in reports and articles;
4. Describe conceptually statistical models and interpret corresponding results in reports and articles;
5. Critically appraise statistical techniques/elements/aspects/issues in the scientific literature.

Course Materials

Other Resources:

We will be reading examples from published papers. The suggested text is available from Pearson as an e-book.

Suggested Reading:

1. Research Methods for the Behavioural and Social Sciences
   Bart L. Weathington, Christopher J/L. Cunningham, David J. Pittenger
   ISBN: 978-0-470-45803-7 January 2010, copyright 2009 Wiley
2. Research Methods: A process of Inquiry, 8th edition
   Anthony M. Graziano and Michael L. Raulin
   ISBN-10: 0205907695 - ISBN-13: 9780205907694 copyright 2-13 Pearson
   Also available as an e-book http://www.pearson.com.au/9781292053301

COMPULSORY REQUIREMENTS

In order to pass this course, each student must complete ALL of the following compulsory requirements:

Contact Hour Requirements:
Workshop. There is a compulsory attendance requirement in this course. Students must attend a minimum of **80%** of workshops.

SCHEDULE

Week	Week Begins	Topic	Learning Activity	Assessment Due
1	26 Feb	Data and Graphing	Online Lecture, Face to Face Workshop	
2	4 Mar	Graphing and Descriptive Statistics	Online Lecture, Face to Face Workshop	
3	11 Mar	Sampling and Research Design 1	Online Lecture, Face to Face Workshop	
4	18 Mar	Research Design 2 and Optimal Writing	Online Lecture, Face to Face Workshop	Assignment 1 is due online by 11:59 pm Sunday, 24 Mar
5	25 Mar	Probability	Online Lecture, Face to Face Workshop	
6	1 Apr	Statistical Inference 1	Online Lecture, Face to Face Workshop	
7	8 Apr	Statistical Inference 2	Online Lecture, Face to Face Workshop	
Mid-Semester Recess				
Mid-Semester Recess				
8	29 Apr	Statistical Inference 3	Online Lecture, Face to Face Workshop	
9	6 May	Correlation and Regression	Online Lecture, Face to Face Workshop	Assignment 2 is due online by 11:59 pm Sunday, 12 May
10	13 May	Factorial Design	Online Lecture, Face to Face Workshop	
11	20 May	Crossover Design	Online Lecture, Face to Face Workshop	
12	27 May	Revision	Online Consultation, Prepare for Final Exam	Assignment 3 is due online by 11:59 pm Sunday, 2 Jun
13	3 Jun	Revision	Online Consultation, Prepare for Final Exam	
Examination Period				
Examination Period				

ASSESSMENTS

This course has 2 assessments. Each assessment is described in more detail in the sections below.

	Assessment Name	Due Date	Involvement	Weighting	Learning Outcomes
1	Assignments	Assignment 1 in Week 4 (by 11.59pm Sunday, 24 Mar) 15% Assignment 2 in Week 9 (by 11.59pm Sunday, 12 May) 15% Assignment 3 in Week 12 (by 11.59pm Sunday, 2 Jun) 20%	Individual	50%	1, 2, 3, 4, 5
2	Formal Examination		Individual	50%	1, 2, 3

Late Submissions The mark for an assessment item submitted after the designated time on the due date, without an approved extension of time, will be reduced by 10% of the possible maximum mark for that assessment item for each day or part day that the assessment item is late. Note: this applies equally to week and weekend days.

Assessment 1 - Assignments

Assessment Type Written Assignment
Purpose To assess understanding of statistical reporting
Description Assignments requiring written responses
Weighting 50%
Due Date Assignment 1 in Week 4 (by 11.59pm Sunday, 24 Mar) 15%
Assignment 2 in Week 9 (by 11.59pm Sunday, 12 May) 15%
Assignment 3 in Week 12 (by 11.59pm Sunday, 2 Jun) 20%
Submission Method Online
Assessment Criteria Understanding of statistical results, writing quality
Return Method Online
Feedback Provided Online - Feedback will be provided within 15 University working days (3 weeks) of submission of an assessment item

Assessment 2 - Formal Examination

Assessment Type Online Open Book Formal Examination
Purpose The final formal examination is designed to test the individual student's knowledge of the course material and their ability to describe, analyse and hypothesise from this material
Description Formal exam
Weighting 50%
Due Date Final Exam Period
Submission Method Formal Exam
Assessment Criteria Understanding of statistical results, writing quality
Return Method Not Returned
Feedback Provided No Feedback

ADDITIONAL INFORMATION

Grading Scheme

This course is graded as follows:

Range of Marks	Grade	Description
85-100	High Distinction (HD)	Outstanding standard indicating comprehensive knowledge and understanding of the relevant materials; demonstration of an outstanding level of academic achievement; mastery of skills*; and achievement of all assessment objectives.
75-84	Distinction (D)	Excellent standard indicating a very high level of knowledge and understanding of the relevant materials; demonstration of a very high level of academic ability; sound development of

		skills*; and achievement of all assessment objectives.
65-74	Credit (C)	Good standard indicating a high level of knowledge and understanding of the relevant materials; demonstration of a high level of academic achievement; reasonable development of skills*; and achievement of all learning outcomes.
50-64	Pass (P)	Satisfactory standard indicating an adequate knowledge and understanding of the relevant materials; demonstration of an adequate level of academic achievement; satisfactory development of skills*; and achievement of all learning outcomes.
0-49	Fail (FF)	Failure to satisfactorily achieve learning outcomes. If all compulsory course components are not completed the mark will be zero. A fail grade may also be awarded following disciplinary action.

*Skills are those identified for the purposes of assessment task(s).

Attendance

Attendance/participation will be recorded in the following components:

- Workshop (Method of recording: UON Attendance check-in App and manual check-in by demonstrator)

Communication Methods

Communication methods used in this course include:

- Canvas Course Site: Students will receive communications via the posting of content or announcements on the Canvas course site.
- Email: Students will receive communications via their student email account.
- Face to Face: Communication will be provided via face to face meetings or supervision.

Course Evaluation

Each year feedback is sought from students and other stakeholders about the courses offered in the University for the purposes of identifying areas of excellence and potential improvement.

Oral Interviews (Vivas)

As part of the evaluation process of any assessment item in this course an oral examination (viva) may be conducted. The purpose of the oral examination is to verify the authorship of the material submitted in response to the assessment task. The oral examination will be conducted in accordance with the principles set out in the Oral Examination (viva) Procedure. In cases where the oral examination reveals the assessment item may not be the student's own work the case will be dealt with under the Student Conduct Rule.

Academic Misconduct

All students are required to meet the academic integrity standards of the University. These standards reinforce the importance of integrity and honesty in an academic environment. Academic Integrity policies apply to all students of the University in all modes of study and in all locations. For the Student Academic Integrity Policy, refer to https://policies.newcastle.edu.au/document/view-current.php?id=35.

Adverse Circumstances

The University acknowledges the right of students to seek consideration for the impact of allowable adverse circumstances that may affect their performance in assessment item(s). Applications for special consideration due to adverse circumstances will be made using the online Adverse Circumstances system where:

1. the assessment item is a major assessment item; or
2. the assessment item is a minor assessment item and the Course Co-ordinator has specified in the Course Outline that students may apply the online Adverse Circumstances system;
3. you are requesting a change of placement; or
4. the course has a compulsory attendance requirement.

Before applying you must refer to the Adverse Circumstance Affecting Assessment Items Procedure available at:
https://policies.newcastle.edu.au/document/view-current.php?id=236

Important Policy Information	The Help button in the Canvas Navigation menu contains helpful information for using the Learning Management System. Students should familiarise themselves with the policies and procedures at https://www.newcastle.edu.au/current-students/respect-at-uni/policies-and-procedures that support a safe and respectful environment at the University.

This course outline was approved by the Head of School. No alteration of this course outline is permitted without Head of School approval. If a change is approved, students will be notified and an amended course outline will be provided in the same manner as the original.