School of Medicine and Public Health

BIOS6070: Linear Regression Modelling

Online
Semester 1 - 2024

COURSE OUTLINE

OVERVIEW

Course Description	Introduces the core theoretical concepts and practical application issues relating to the most widely used analysis technique in contemporary health related research and linear regression modelling.
Academic Progress Requirements	Nil
Contact Hours	**ONLINE** **Self-Directed Learning** Self-Directed 10 hour(s) per week(s) for 13 week(s) starting Week 1 Suggest 8-12 hours time commitment per week (guide only).
Unit Weighting	10
Workload	Students are required to spend on average 120-140 hours of effort (contact and non-contact) including assessments per 10 unit course.

www.newcastle.edu.au
CRICOS Provider 00109J

CONTACTS

Course Coordinator

Online
Dr Daniel Barker
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(02) 4042 0503

Teaching Staff

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

School Office

School of Medicine and Public Health
Education Office
SMPH-edoffice@newcastle.edu.au
(02) 4042 0667

SYLLABUS

Course Content

Students will learn the fundamental theory behind linear modelling and how this is applied in health related research. The importance of correct specification of the regression model and other model assumptions are explained, along with diagnostic tools for assessing how well the model fits the data. Multiple linear regression is then introduced along with the concepts of confounding, interaction and model building. Correct inference of regression parameters is emphasised throughout the course.

Course Learning Outcomes

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

1. Express linear regression models mathematically and construct mathematical arguments about regression concepts;
2. List and describe the assumptions of linear regression;
3. Use statistical software (such as SAS or Stata) to fit appropriate linear regression models answering specific questions;
4. Interpret and describe the results of regression models using non-technical language that clinicians or other clients can understand;
5. Use appropriate diagnostic tools to evaluate the reliability of fitted regression models;
6. Apply model building strategies which take into account interactions and confounders where applicable;
7. Recognise situations in which an analysis of covariance (ANCOVA) model should be applied, and implement this regression model using statistical software.

Course Materials

Other Resources:

- See Canvas for course materials

ASSESSMENTS

This course has 3 assessments. Each assessment is described in more detail in the sections below.

	Assessment Name	Due Date	Involvement	Weighting	Learning Outcomes
1	Assignment 1	See Canvas for due date	Individual	30%	1, 2, 3, 4
2	Assignment 2	See Canvas for due date	Individual	30%	1, 2, 3, 4, 5, 6
3	Assignment 3	See Canvas for due date	Individual	40%	1, 2, 3, 4, 5, 6, 7

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 - Assignment 1

Assessment Type Written Assignment
Description See Canvas for assignment details
Weighting 30%
Due Date See Canvas for due date
Submission Method Online

Assessment 2 - Assignment 2

Assessment Type Written Assignment
Description See Canvas for assignment details
Weighting 30%
Due Date See Canvas for due date
Submission Method Online

Assessment 3 - Assignment 3

Assessment Type Written Assignment
Description See Canvas for assignment details
Weighting 40%
Due Date See Canvas for due date
Submission Method Online

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).

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.

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.