

## BIOS6910: Biostatistics A

Callaghan and Online  
Semester 1 - 2024



THE UNIVERSITY OF  
NEWCASTLE  
AUSTRALIA

# OVERVIEW

<b>Course Description</b>	The aim is to provide students with an understanding of statistical reasoning and its application to epidemiological studies and the ability to read and critically evaluate the statistical section of journal articles. The course introduces basic statistical concepts of data presentation, probability distributions, confidence intervals hypothesis testing, sample size and power.
<b>Academic Progress Requirements</b>	Nil
<b>Assumed Knowledge</b>	Basic computer skills and mathematics (high school level algebra and functions)
<b>Contact Hours</b>	<b>CALLAGHAN Lecture</b> Face to Face On Campus 2 hour(s) per week(s) for 12 week(s) starting Week 1  <b>Online Activity</b> Online 2 hour(s) per week(s) for 13 week(s) starting Week 1  <b>Self-Directed Learning</b> Online 8 hour(s) per week(s) for 13 week(s) starting Week 1  <b>ONLINE Lecture</b> Face to Face On Campus 2 hour(s) per week(s) for 12 week(s) starting Week 1  <b>Online Activity</b> Online 2 hour(s) per week(s) for 13 week(s) starting Week 1  <b>Self-Directed Learning</b> Online 8 hour(s) per week(s) for 13 week(s) starting Week 1
<b>Unit Weighting</b>	10
<b>Workload</b>	Students are required to spend on average 120-140 hours of effort (contact and non-contact) including assessments per 10 unit course.

# COURSE OUTLINE

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# CONTACTS

<b>Course Coordinator</b>	<b>Online</b> Dr Natasha Weaver <a href="mailto:Natasha.Weaver@newcastle.edu.au">Natasha.Weaver@newcastle.edu.au</a> (02) 4921 7188
<b>Teaching Staff</b>	Other teaching staff will be advised on the course Canvas site.
<b>School Office</b>	<b>School of Medicine and Public Health Education Office</b> <a href="mailto:SMPH-edoffice@newcastle.edu.au">SMPH-edoffice@newcastle.edu.au</a> (02) 404 20667

# SYLLABUS

<b>Course Content</b>	<ul style="list-style-type: none"><li>• OV1: Introduction</li><li>• STATA Resource Kit</li><li>• S1: Exploratory data analysis</li><li>• S2: Sampling distributions and confidence intervals</li><li>• S3: Hypothesis testing</li><li>• S4: Sample size</li><li>• OV2: Overview: Statistical Methods</li></ul>
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The course includes practical exercises to illustrate the different concepts outlined, self-assessment exercises, progress assignments with model answers, practical computing exercises requiring interpretation and presentation of results.

<b>Course Learning Outcomes</b>	<p><b>On successful completion of this course, students will be able to:</b></p> <ol style="list-style-type: none"><li>1. Use properties of the probability distribution function to calculate Normal probabilities and Z-scores.</li><li>2. Apply exploratory data analysis methods to describe/summarise a distribution and assess whether data are normally distributed.</li><li>3. Calculate and interpret Confidence Intervals for means and proportions and state the assumptions on which they are based.</li><li>4. Conduct hypothesis tests relating to means and proportions and explain the role of the test statistic, p-value, and significance/Type I error rate.</li><li>5. Discuss the difference between statistical significance and clinical significance.</li><li>6. Describe the importance of considering power and the Type II error rate during study design.</li><li>7. Perform sample size calculations relating to means and proportions for common study designs.</li><li>8. Interpret results of commonly used statistical methods as they are presented in published literature.</li></ol>
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<b>Course Materials</b>	<b>Other Resources:</b> <ul style="list-style-type: none"><li>- See Canvas for course materials.</li></ul>
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# ASSESSMENTS

This course has 5 assessments. Each assessment is described in more detail in the sections below.

	Assessment Name	Due Date	Involvement	Weighting	Learning Outcomes
1	Quiz 1	See Canvas for due date.	Individual	5%	1, 2, 8
2	Assignment 1	See Canvas for due date.	Individual	20%	1, 2, 3, 8
3	Quiz 2	See Canvas for due date.	Individual	5%	1, 2, 3, 4, 5, 8
4	Assignment 2	See Canvas for due date.	Individual	25%	1, 2, 3, 4, 5, 6, 7, 8
5	Final Online Examination	See Canvas for due date.	Individual	45%	1, 2, 3, 4, 5, 6, 7, 8

**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 - Quiz 1

**Assessment Type** Quiz  
**Description** See Canvas for quiz details.  
**Weighting** 5%  
**Due Date** See Canvas for due date.  
**Submission Method** Online

## Assessment 2 - Assignment 1

**Assessment Type** Written Assignment  
**Description** See Canvas for quiz details.  
**Weighting** 20%  
**Due Date** See Canvas for due date.  
**Submission Method** Online

## Assessment 3 - Quiz 2

**Assessment Type** Quiz  
**Description** See Canvas for quiz details.  
**Weighting** 5%  
**Due Date** See Canvas for due date.  
**Submission Method** Online

## Assessment 4 - Assignment 2

**Assessment Type** Written Assignment  
**Description** See Canvas for quiz details.  
**Weighting** 25%  
**Due Date** See Canvas for due date.  
**Submission Method** Online

## Assessment 5 - Final Online Examination

**Assessment Type** In Term Test  
**Description** See Canvas for quiz details.  
**Weighting** 45%  
**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>.

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**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.*

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