School of Information and Physical Sciences

STAT6160: Data Analytics for Business Intelligence
Online
Semester 1 - 2024

OVERVIEW

Course Description
While data exploration is important, analytics and evidence-based decision-making is critical. This course extends visual explorations through formal analytical testing and modelling, and developing analytical techniques used in business. The emphasis is on applications in practice. The course provides methods which underpin effective business decision making. The course develops a student's ability to incorporate statistical thinking and to take account of variation in the real world during the processes of establishing project initiatives, defining objectives, data collection, data presentation, data analysis, reporting and decision making.

Academic Progress Requirements
Nil

Contact Hours
Online
Self-Directed Learning
Online
10 hour(s) per week(s) for 13 week(s) starting Week 1
There are opportunities for students to get individualised help from teaching staff in the course. 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.

CONTACTS

Course Coordinator	**Online** Dr Weijia Zhang Weijia.Zhang@newcastle.edu.au (02) 4055 0921 Consultation: See Canvas for details.
Teaching Staff	See Canvas for details of teaching staff.
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

The course will include the following topics:
- Data sources
- Brainstorming
- Inference
- Types of errors
- Statistical tests
- ANOVA
- Regression
- Reporting
- Data-based decision making

Course Learning Outcomes

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

1. describe and implement a structured approach to problem solving and decision making in business

2. understand the role of statistics in developing valid and reliable business intelligence

3. explain why data and the understanding of variation are important in making business decisions

4. identify and implement appropriate analytical techniques fundamental to developing Business Intelligence

5. employ statistical software to analyse data

6. draw conclusions and effectively communicate and report upon analytical outcomes

Course Materials

Lecture Materials:
- All course materials will be provided to students via the Canvas site.

Recommended Text:
- 1. P. Howley and R. Gerlach, Business Statistics in Australia: Methods & Applications, 2006.
  2. N.R. Sharpe, R.D. De Veaux, and P.F. Velleman, Business Statistics,

Pearson, 4th edition, 2018.

SCHEDULE

Week	Week Begins	Topic	Learning Activity	Assessment Due
1	26 Feb	Module 1: Foundations of Statistics	Videos, Course Notes & Exercises via Canvas - complemented by online consultation.	
2	4 Mar	Module 2: Brainstorming and Data Sources	As above	
3	11 Mar	Module 3: Descriptive Statistics	As above	
4	18 Mar	Module 3 (Continued)	As above	
5	25 Mar	Module 4: Introduction to Statistical Inference	As above	Quiz 1 (online - available from Monday Week 5, 25th March 2024. Once opened must complete within 60 minutes, due by 11:59pm AEDT Sunday Week 5, 31st March 2024)
6	1 Apr	Module 4 (Continued)	As above	
7	8 Apr	Module 5: T-tests	As above	Assignment 1 (available 2 weeks prior to the due date, due 11:59pm AEDT Sunday Week 7, 14th April 2024)
Mid-Semester Recess				
Mid-Semester Recess				
8	29 Apr	Module 5 (Continued)	As above	
9	6 May	Module 6: ANOVA	As above	Quiz 2 (online - available from Monday Week 9, 6th May 2024. Once opened must complete within 60 minutes, due by 11:59pm AEDT Sunday Week 9, 12th May 2024)
10	13 May	Module 7: Correlation and Simple Linear Regression	As above	
11	20 May	Module 7 (Continued)	As above	Assignment 2 (available 2 weeks prior to the due date, due 11:59pm AEDT Sunday Week 11, 26th May 2024)
12	27 May	Module 8: Business Applications	As above	
13	3 Jun			
Examination Period				Final Exam (Online, see Canvas for details)
Examination Period				

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	Online quiz	Quiz 1 (10%) due by 11:59pm AEST Sunday of Week 5, 31st March 2024. Quiz 2 (10%) due by 11:59pm AEST Sunday of Week 9, 12th May 2024.	Individual	20%	1, 2, 3, 4
2	Written Assignment	Assignment 1 (25%) due by 11:59pm AEST Sunday of Week 7, 14th April 2024. Assignment 2 (25%) due by 11:59pm AEST Sunday of Week 11, 26th May 2024.	Individual	50%	1, 2, 3, 4
3	Formal Examination	See Canvas for details.	Individual	30%	1, 2, 3, 4, 5, 6

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 - Online quiz

Assessment Type   Quiz

Description   Each online quiz consists of 10 multiple choice or matching style questions. Students are allowed up to 60 minutes to complete the quiz.

The quizzes test knowledge of the course materials and help students maintain engagement with the course.

The quizzes are designed to facilitate timely feedback on student learning and help students to self-assess their methods of studying and learning the course materials, and adjust practices as necessary in preparation for future assessments.

Weighting   20%

Due Date   Quiz 1 (10%) due by 11:59pm AEST Sunday of Week 5, 31st March 2024.
Quiz 2 (10%) due by 11:59pm AEST Sunday of Week 9, 12th May 2024.

Submission Method   Online
Criteria will be provided via Canvas

Assessment Criteria

Return Method   Online

Feedback Provided   Online - .

Opportunity to Reattempt   Students WILL NOT be given the opportunity to reattempt this assessment.

Assessment 2 - Written Assignment

Assessment Type   Written Assignment

Description   The assignments meet the course objectives of knowledge acquisition and demonstrated assimilation of data, upon reflection and analysis, through application of appropriate statistical methods to given problems and scenarios.

Weighting   50%

Due Date   Assignment 1 (25%) due by 11:59pm AEST Sunday of Week 7, 14th April 2024.
Assignment 2 (25%) due by 11:59pm AEST Sunday of Week 11, 26th May 2024.

Submission Method   Online
Assignments will be submitted electronically via Canvas

Assessment Criteria   Criteria will be provided via Canvas

Return Method	
Feedback Provided	Online - .
Opportunity to Reattempt	Students WILL NOT be given the opportunity to reattempt this assessment.

Assessment 3 - Formal Examination

Assessment Type	Formal Examination
Description	The final exam will be consists of two parts: a) (10%) online set of multiple choice questions (1-hr time limit once opened) similar to the online quizzes; b) (20%) short answer style responses based on output students create using the R software to support data analysis for provided scenarios and data sets, similar to the assignments.
Weighting	30%
Due Date	See Canvas for details.
Submission Method	Online
Assessment Criteria	
Return Method	Not Returned
Feedback Provided	No Feedback - .
Opportunity to Reattempt	Students WILL NOT be given the opportunity to reattempt this assessment.

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:

- Self-Directed Learning (Method of recording:)

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.

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.