https://courseoutline.auckland.ac.nz/dco/course/INFOSYS/722/1213

Business and Economics

INFOSYS 722 : Data Mining and Big Data (15 POINTS)

2021 Semester One

Course Prescription

Data mining and big data involves storing, processing, analysing and making sense of huge volumes of data extracted in many formats and from many sources. Using information systems frameworks and knowledge discovery concepts, this project-based course uses cutting-edge business intelligence tools for data analytics.

Course Overview

To understand how the world's most successful companies use big data analytics to deliver extraordinary results, this course concentrates on learning how Big Data and Data Mining are currently used in Practice. To this end, Decision Making, Big Data, Machine Learning, and Data Mining are the foundational theoretical concepts covered. Practical experience is gained turning data into insights that deliver value using appropriate methodologies, processes, algorithms and approaches for big data analytics. This is a project-based course, with no written examinations. A functioning prototypical Big Data Analytics Solution to address one of the 17 Sustainable Development Goals (https://sdgsinaction.com/) of the UN (discussed in class) or a decision making situation facing an organization of your choice is expected as the final delivery.

Course Requirements

No pre-requisites or restrictions

Capabilities Developed in this Course

Capability 1: Disciplinary Knowledge and Practice
Capability 2: Critical Thinking
Capability 3: Solution Seeking
Capability 4: Communication and Engagement
Capability 5: Independence and Integrity
Capability 6: Social and Environmental Responsibilities

Graduate Profile: Bachelor of Commerce (Honours)

Learning Outcomes

By the end of this course, students will be able to:

1. Understand and explain foundational concepts of Decision Making and Decision Support from a variety of disciplines; also, understand fundamental principles of Data Mining, Machine Learning, and Big Data. (Capability 1, 4.2 and 4.3)
2. Compare, contrast and synthesize a process for Data Mining; also understand the key components of the computing environment for Big Data and Data Mining including hardware, software, distributed systems, and analytical tools. (Capability 1, 2, 3 and 4.2)
3. Develop an understanding of the process of turning data into insights that deliver value using predictive modelling, segmentation, incremental response modeling, time series data mining, text analytics, and recommendations. (Capability 1, 2, 3 and 4.2)
4. Understand, discuss, and reflect on how successful companies have applied big data and data mining methodologies, algorithms, and enabling technologies to deliver extraordinary results and value. (Capability 2, 3 and 4.3)
5. Design and implement a prototypical Big Data Analytics Solution to address one of the 17 Sustainable Development Goals (https://sdgsinaction.com/) of the UN or a decision making situation facing an organization of your choice. (Capability 3 and 6)
6. Write a research paper that details (a) the practical problem (b) the research problem (c) the research objectives (d) the literature that explores potential solutions and methodologies that addresses your objectives (e) the research methodology adopted (f) the design of the processes that converts data into insights and (g) the description of the implementation using various algorithms and enabling technologies (h) your interpretation of the patterns and results and (i) your proposed actions based on the discovered knowledge. (Capability 2, 4.2 and 5.1)

Assessments

Assessment Type	Percentage	Classification
Iteration 1 Proposal (Step 1-2)	0%	Individual Coursework
Iteration 2 ISAS - IBM Software Analytics Solution – SPSS Modeller. (Steps 1 – 8)	20%	Individual Coursework
Iteration 3 OSAS - Open Source Analytics Solution with Python- (Steps 1 – 8)	20%	Individual Coursework
Resubmission of Iteration 2	0%	Individual Coursework
Iteration 4 BDAS (Steps 1 – 8)	35%	Individual Coursework
Research Paper (Details of Steps 1 – 9)	25%	Individual Coursework
6 types	100%	

Assessment Type	Learning Outcome Addressed					
	1	2	3	4	5	6
Iteration 1 Proposal (Step 1-2)	✔				✔	
Iteration 2 ISAS - IBM Software Analytics Solution – SPSS Modeller. (Steps 1 – 8)	✔	✔	✔	✔	✔	
Iteration 3 OSAS - Open Source Analytics Solution with Python- (Steps 1 – 8)	✔	✔	✔	✔	✔	
Resubmission of Iteration 2	✔	✔	✔	✔	✔	
Iteration 4 BDAS (Steps 1 – 8)	✔	✔	✔	✔	✔	
Research Paper (Details of Steps 1 – 9)						✔

Workload Expectations

This course is a standard 15 point course and students are expected to spend 10 hours per week involved in each 15 point course that they are enrolled in.

For this course, you can expect 3 hours of lectures, a 2 hour tutorial, 2 hours of reading and thinking about the content and 3 hours of work on assignments.

Delivery Mode

Campus Experience or Online

This course is offered in two delivery modes:

Campus Experience

Attendance is expected at scheduled activities including labs to complete components of the course.
Lectures will be available as recordings. Other learning activities including labs will be available as recordings.
The course will not include live online events
There is no written exam for this course.
The activities for the course are scheduled as a standard weekly timetable.

Online

Attendance is not required at scheduled lectures but your required to listen to the recordings. Attendance in Labs are useful but not required as recordings are made of labs also.

The course will not include live online events. Office hours will be recorded.
Attendance on campus is not required exam as there is not examination for this course.
Where possible, study material will be released progressively throughout the course.
This course runs to the University semester timetable and all the associated completion dates and deadlines will apply.

Learning Resources

Readings will be given progressively throughout the course.

Student Feedback

At the end of every semester students will be invited to give feedback on the course and teaching through a tool called SET or Qualtrics. The lecturers and course co-ordinators will consider all feedback and respond with summaries and actions.

Your feedback helps teachers to improve the course and its delivery for future students.

Class Representatives in each class can take feedback to the department and faculty staff-student consultative committees.

Students were content from my teaching the course last year.

Digital Resources

Course materials are made available in a learning and collaboration tool called Canvas which also includes reading lists and lecture recordings (where available).

Please remember that the recording of any class on a personal device requires the permission of the instructor.

Academic Integrity

The University of Auckland will not tolerate cheating, or assisting others to cheat, and views cheating in coursework as a serious academic offence. The work that a student submits for grading must be the student's own work, reflecting their learning. Where work from other sources is used, it must be properly acknowledged and referenced. This requirement also applies to sources on the internet. A student's assessed work may be reviewed against online source material using computerised detection mechanisms.

Inclusive Learning

All students are asked to discuss any impairment related requirements privately, face to face and/or in written form with the course coordinator, lecturer or tutor.

Student Disability Services also provides support for students with a wide range of impairments, both visible and invisible, to succeed and excel at the University. For more information and contact details, please visit the Student Disability Services' website http://disability.auckland.ac.nz

Special Circumstances

If your ability to complete assessed coursework is affected by illness or other personal circumstances outside of your control, contact a member of teaching staff as soon as possible before the assessment is due.

If your personal circumstances significantly affect your performance, or preparation, for an exam or eligible written test, refer to the University's aegrotat or compassionate consideration page https://www.auckland.ac.nz/en/students/academic-information/exams-and-final-results/during-exams/aegrotat-and-compassionate-consideration.html.

This should be done as soon as possible and no later than seven days after the affected test or exam date.

Learning Continuity

In the event of an unexpected disruption we undertake to maintain the continuity and standard of teaching and learning in all your courses throughout the year. If there are unexpected disruptions the University has contingency plans to ensure that access to your course continues and your assessment is fair, and not compromised. Some adjustments may need to be made in emergencies. You will be kept fully informed by your course co-ordinator, and if disruption occurs you should refer to the University Website for information about how to proceed.

Student Charter and Responsibilities

The Student Charter assumes and acknowledges that students are active participants in the learning process and that they have responsibilities to the institution and the international community of scholars. The University expects that students will act at all times in a way that demonstrates respect for the rights of other students and staff so that the learning environment is both safe and productive. For further information visit Student Charter https://www.auckland.ac.nz/en/students/forms-policies-and-guidelines/student-policies-and-guidelines/student-charter.html.

Disclaimer

Elements of this outline may be subject to change. The latest information about the course will be available for enrolled students in Canvas.

In this course you may be asked to submit your coursework assessments digitally. The University reserves the right to conduct scheduled tests and examinations for this course online or through the use of computers or other electronic devices. Where tests or examinations are conducted online remote invigilation arrangements may be used. The final decision on the completion mode for a test or examination, and remote invigilation arrangements where applicable, will be advised to students at least 10 days prior to the scheduled date of the assessment, or in the case of an examination when the examination timetable is published.