https://courseoutline.auckland.ac.nz/dco/course/BUSAN/302/1213

Business and Economics

BUSAN 302 : Big Data and Machine Learning (15 POINTS)

2021 Semester One

Course Prescription

Provides essential skills to build data-driven digital innovations that augment business decisions. This involves identifying problems faced by different groups of individuals from different spheres of life, analysing the problem space and data needs, building a prototype for a selected design, and using machine learning tools and cloud-based big data analytics.

Course Overview

The purpose of this course is to acquire knowledge to apply appropriate Data Mining / Machine Learning techniques to gain information insights to various problems faced by an organisation. The focus of this course is to firstly identify a problem from a given case study that needs solving; secondly, consider various possible designs and select the most appropriate solution; thirdly, design the architecture for a system based on proven information systems frameworks, such as decision support systems and recommender systems frameworks; and finally, to specify a solid plan for building and evaluating the system designed. No implementation of the system is expected. However, preparation to work confidently in a career which requires SQL (T-SQL) including data warehousing, and data analytics is given this paper. Knowledge and experience of state of the art machine learning tools, from a key vendor, will be gained in the labs with opportunities and encouragement to explore other tools.

Course Requirements

Prerequisite: 15 points from BUSAN 201, INFOMGMT 292, INFOSYS 222 Restriction: INFOMGMT 393, INFOSYS 330

Capabilities Developed in this Course

Capability 1: Disciplinary Knowledge and Practice
Capability 2: Critical Thinking
Capability 3: Solution Seeking
Capability 4: Communication and Engagement

Graduate Profile: Bachelor of Commerce

Learning Outcomes

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

1. Analyse information needs of an organisation, department or functional division, and individual stakeholders involved in the business (Capability 1, 2 and 3)
2. Acquire knowledge on how to learn technology such as, T-SQL, data warehousing, data analytics with Machine Learning (Capability 1, 2 and 3)
3. Explain and apply concepts and principles related to decision support, data mining and data warehousing. (Capability 1, 2, 3 and 4.2)
4. Design and implement a Decision Support System in a collaborative and networked environment using state of the art data warehousing, data mining and business intelligence tools. (Capability 1, 2, 3 and 4.2)
5. Conduct research on one aspect of data mining and decision support and then suggest a design solution to a decision problem taking into consideration human, organizational, and technical issues, utilizing discussed technologies (Capability 1, 2 and 4.2)

Assessments

Assessment Type	Percentage	Classification
Lab Assignment: T-SQL	10%	Individual Coursework
Data Warehousing	10%	Individual Coursework
Assignment on Machine Learning and Emerging Technologies	30%	Individual Coursework
Final Exam	50%	Individual Examination
4 types	100%	

Assessment Type	Learning Outcome Addressed				
	1	2	3	4	5
Lab Assignment: T-SQL		✔			
Data Warehousing	✔	✔	✔		
Assignment on Machine Learning and Emerging Technologies	✔	✔	✔	✔	✔
Final Exam	✔	✔	✔	✔	✔

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 lab work, 2 hours of reading and thinking about the content and 3 hours of work on assignments and/or test preparation per week.

Delivery Mode

Campus Experience or Online

This course is offered in two delivery modes:

Campus Experience

Attendance is expected at scheduled labs to get assistance to complete technical components of the course.
Lectures and labs will be available as recordings.
Attendance on campus is required for the exam. There is no test for this paper.
The activities for the course are scheduled as a standard weekly timetable.

Online

Attendance is not expected at scheduled lectures and labs. The student will be expected to self-study from recordings. The student is expected to attend the zoom lab to get assistance to complete technical components of the course and attend office hours by the lecturer to better understand theoretical concepts.

Attendance on campus is not required for the exam but arrangements must be made with the central exams office.

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 given in te course schedule will apply.

Learning Resources

Recommended Reading:

“Sams Teach Yourself SQL in 10 Minutes”, By Ben Forta. ISBN-13: 978-0672336072; ISBN-10: 0672336073

"Sams Teach Yourself Transact-SQL in 21 Days ", by Ronald R. Plew (Author), Bryan Morgan (Author), Jeff Perkins (Author), Ryan K. Stephens (Author, Editor) ISBN-13: 978-0672311109 ; ISBN-10: 0672311100

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 seemed to like this paper as it is. Online labs materials given last year strengthened the paper incredibly.

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.