https://courseoutline.auckland.ac.nz/dco/course/STATS/220/1223

STATS 220 : Data Technologies

Science

2022 Semester One (1223) (15 POINTS)

Course Prescription

Explores the processes of data acquisition, data storage and data processing using current computer technologies. Students will gain experience with and understanding of the processes of data acquisition, storage, retrieval, manipulation, and management. Students will also gain experience with and understanding of the computer technologies that perform these processes.

Course Overview

This course introduces R programming to handle a wide variety of data science challenges, from importing, wrangling, visualising data, to reproducible reporting, for effective data-driven decision making. Students will gain an understanding of tidy data principles, grammar of data manipulation, and grammar of graphics, using a set of data-oriented tools. Students will also learn to solve data-analytical problems in both business and research environments.

Course Requirements

Prerequisite: 15 points at Stage I in Computer Science or Statistics

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 Science

Learning Outcomes

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

1. Undertake a broad variety of data science challenges (Capability 1, 2, 3, 4 and 5)
2. Develop and demonstrate programming skills to import, wrangle and visualise data for decision making, using R (Capability 1, 2 and 3)
3. Describe and explain tidy data principles, grammar of data manipulation and grammar of graphics (Capability 1, 2 and 3)
4. Develop communication skills, including using reproducible reporting with R Markdown (Capability 1 and 4)
5. Gain practical skills of a range of data technologies, including HTML and CSS for web scraping (Capability 1, 2, 3 and 5)
6. Learn and apply good practice of project-oriented workflow and data-related responsibilities (Capability 1, 3, 4, 5 and 6)

Assessments

Assessment Type	Percentage	Classification
Labs	10%	Individual Coursework
Assignments	20%	Individual Coursework
Test	20%	Individual Test
Final Exam	50%	Individual Examination
4 types	100%	

Assessment Type	Learning Outcome Addressed					
	1	2	3	4	5	6
Labs	✔	✔	✔	✔	✔	✔
Assignments	✔	✔	✔	✔	✔	✔
Test	✔	✔	✔	✔	✔	
Final Exam	✔	✔	✔	✔	✔	

Special Requirements

Labs are marked and count towards your final grade but attendance is not mandatory.

Workload Expectations

This course is a standard 15 point course and students are expected to spend 150 hours per semester involved in each 15 point course that they are enrolled in.

For this course, you can expect 24 hours of lectures, 11 one-hour lab sessions, 40 hours of work on assignments, and 75 hours of combined reading, practising the material, and revising for exams.

Delivery Mode

Campus Experience or Online

This course is offered in two delivery modes:

- This course is available for students who are remote.
- Lectures will be available as recordings.
- Other learning activities (e.g. labs) will be available as online tasks.
- Attendance on campus is not required for the test or labs.

Learning 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.

- "R for Data Science" by Hadley Wickham and Garrett Grolemund (freely available online https://r4ds.had.co.nz)
- "Introduction to Data Technologies" by Paul Murrell (freely available online https://www.stat.auckland.ac.nz/~paul/ItDT/HTML/)
- Latest R (freely available from https://cran.stat.auckland.ac.nz) and contributed packages as needed
- RStudio IDE (freely available from https://rstudio.com/products/rstudio/download/)

Student Feedback

During the course Class Representatives in each class can take feedback to the staff responsible for the course and staff-student consultative committees.

At the end of the course 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.

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

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.

Class Representatives

Class representatives are students tasked with representing student issues to departments, faculties, and the wider university. If you have a complaint about this course, please contact your class rep who will know how to raise it in the right channels. See your departmental noticeboard for contact details for your class reps.

Copyright

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.

The delivery mode may change depending on COVID restrictions. Any changes will be communicated through Canvas.

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 students may be asked to submit 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. In exceptional circumstances changes to elements of this course may be necessary at short notice. Students enrolled in this course will be informed of any such changes and the reasons for them, as soon as possible, through Canvas.