

## Data Science at Victoria University of Wellington

### Undergraduate Data Science Major

In 2019 Victoria University of Wellington introduced a three year undergraduate programme in Data Science. It consists of core and elective courses in Computer Science, Machine Learning and Statistical methods, as well as courses in data ecosystems, information systems, data ethics, data visualisation and decision science.

The design of the programme ensures that graduates will be fluent the two most commonly used programming languages in Data Science (Python and R) as well as the database language SQL.

The programme is delivered through regular lecture courses with computing labs and group work. The programme also includes the opportunity of a work placement for high performing students.

Students can study for the degree under the Science, Arts or Commerce schedules. As with all Victoria degrees, Data Science can be combined with a second major. Typical choices include Computer Science, Statistics and Mathematics – and also Geography, Biology and Linguistics.

### Postgraduate Master of Data Science

From 2021 we will be introducing a new Master of Data Science.

Over a 12 month programme students will study advanced methods of Machine Learning and Statistical Analysis. They will complete courses in software design, online collaboration, and elective courses from a variety of data rich disciplines. Complementary courses in Engineering, Geographic Information Systems, Genetics and Quantitative Fisheries are available.

All students will complete a work placement in a Data Science setting – such as a Data Science consultancy firm, or a Government department.

Each student will complete a research methods course and then carry out their own research project under supervision.

Entry to the programme requires an undergraduate degree in Data Science, Computer Science or Statistics.

*For further information contact:*

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School of Mathematics and Statistics; <https://www.wgtn.ac.nz/sms>*

## Data Science Undergraduate Major Requirements

- a) DATA 101; one of (COMP 102, 112, 132, the pair (INFO 151, 226)); one of (MATH 177, QUAN 102, STAT 193)
- b) DATA 201, 202; one of (MATH 277, QUAN 203, STAT 292), one further course from (COMP 261, GEOG 215, INFO 264, MATH 245, 251, 261, 277, PHIL 269, QUAN 201, 203, STAT 292, 293)
- c) DATA 301, 303, COMP 309; one of (DATA 304-399, COMP 307, ECON 303, GEOG 315, INFO 377, MARK 317, MATH 353, MGMT 315, 316, STAT 392, 394, SWEN 304)

All of the 100 level courses in the major are open entry (with the exception of MATH 177). Nevertheless students are advised that NCEA Level 3 mathematics is desirable.

Year	Data Science	Computing	Statistics	Electives
1	DATA101 Introduction Contexts, Data Sources Modern Data Ecosystems Principles of information systems	COMP132 Introductory programming (Python)	STAT193 Introductory Applied Statistics (Excel, INZight)	Mathematics Computer Science Other disciplines
2	DATA201 Communication Ethical and Legal framework Mathematical Tools Probability Data simulation, integration (Python)	DATA202 Programming and data management Data transformation, cleaning, summary, display (R, SQL)	STAT292 Applied Statistics Regression Experimental Design (SAS - EG)	Philosophy Geography Economics, Finance Maths/CompSci/... ...
3	DATA301 Communication Visualisations Decision modelling Project assessment (R Shiny)	COMP309 Computational techniques for Data Science Machine Learning, AI, Graphical models, Data mining, Clustering (Python)	DATA303 Statistical techniques for Data Science Binary/Count/Categorical data Decision Theory (R)	Practicum GIS Info Management ...

# Master of Data Science

## Eligibility

- If you have an undergraduate degree in Data Science (or equivalent preparation in Statistics and Computer Science – such as a double major) you can enrol in a 180 point Masters, which can be completed in 12 months (March-February);
- If you have an undergraduate degree in one or other of Statistics or Computer Science you can enrol in a 240 point Masters, which can be completed in 21 months (March-November the following year);
- If you lack relevant undergraduate preparation in Statistics or Computer Science you can enrol first in a Graduate Diploma in Science, and take the courses you need;
- There is a requirement of a B+ grade average for entry to the Masters of Data Science.

## Programme of Study

Students completing the 180 point MDataSc are exempt from Part 1.

Part 1: 60 points from AIML 421, DATA 471-474 or approved alternatives

Part 2: (i) **AIML 427**, one of **AIML (425, 426, 429)**, **STAT 432, 438, DATA 480, 501, 581**

(ii) **DATA 487** or **489**

(iii) **30 or 45 further points** from AIML 400-479, COMP 400-479, DATA 400-469, DATA 490-499, MATH 400-483, STAT 400-483 or approved alternatives

## Alternative postgraduate programmes of study

- BSc (Hons) – 120 points of courses including a supervised research project
- Graduate Diploma in Science – 120 points of taught courses
- Graduate Certificate in Science – 60 points of taught courses
- MSc – 120 points of courses, followed by 120 point research thesis

Details of application procedures and deadlines will appear on the University website in late 2020.
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