



Prescription

This course addresses the use of machine learning tools and techniques for analysing data and automatically generating applications. The course will explore a range of tools and techniques for classification, regression, image analysis, clustering, text mining, and preprocessing data. It examines the applicability and limitations of the techniques and methods for analysing and evaluating the outcome of using machine learning tools. Students will gain practical experience in applying a range of tools to a range of different problems from different domains.

Course learning objectives

Students who pass this course should be able to:

1. Describe a range of standard machine learning problems, algorithms and techniques and discuss the applicability and limitations of the algorithms and techniques.
2. Classify a particular problem, find possible ML algorithms or tools from a range of resources, and justify their selection of an appropriate tool to solve the problem.
3. Prepare input data for a range of ML tools and apply the tools to the data in an appropriate way.
4. Evaluate and report on the results of applying an ML tool to a problem.

Course content

2022: The course is primarily offered in-person, and there are components such as tests, labs, tutorials, and marking sessions which require in-person attendance. There will be remote alternatives for all the components of the course, but these are only available to students studying from outside the Wellington region. The remote option for tests will use a Zoom-based system for online supervision of the tests.

Students taking this course remotely must have access to a computer with camera and microphone and a reliable high speed internet connection that will support real-time video plus audio connections and screen sharing. Students must be able to use Zoom; other communication applications may also be used. A mobile phone connection only is not considered sufficient. The computer must be adequate to support the programming required by the course: almost any modern windows, macintosh, or unix laptop or desktop computer will be sufficient, but an Android or IOS tablet will not.

Withdrawal from Course

Withdrawal dates and process:

<https://www.wgtn.ac.nz/students/study/course-additions-withdrawals>

Lecturers

Dr Qi Chen (Coordinator)

qi.chen@vuw.ac.nz 04 886 5631

CO 329 Cotton Building (All Blocks), Gate 7, Kelburn Parade, Kelburn

Dr Marcus Frean

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Teaching Format

This course will be offered in-person and online. For students in Wellington, there will be a combination of in-person components and web/internet based resources. It will also be possible to take the course entirely online for those who cannot attend on campus, with all the components provided in-person also made available online.

The course will be taught by a combination of online content, in-person lectures (that will be recorded) and tutorials (during the lecture slots). Tutorials will be used to enable students to use the tools and techniques from the lectures and assignments. Online forums will be available to ask questions to tutors remotely and help desks will be available in-person. The assignments and project will allow students to explore and apply their knowledge to practical data problems, where working at home or in laboratories is permitted. The project will use in-person marking where possible, while all other assignments are submitted online and marked remotely. The project can be marked remotely where the onus is on the student to provide functioning code including the machine learning models.

Student feedback

Student feedback on University courses may be found at: www.cad.vuw.ac.nz/feedback/feedback_display.php

Dates (trimester, teaching & break dates)

- Teaching: 11 July 2022 - 14 October 2022
- Break: 22 August 2022 - 04 September 2022
- Study period: 17 October 2022 - 20 October 2022
- Exam period: 21 October 2022 - 12 November 2022

Class Times and Room Numbers

11 July 2022 - 21 August 2022

- **Tuesday** 12:00 - 12:50 – LT101, Maclaurin, Kelburn
- **Thursday** 12:00 - 12:50 – LT101, Maclaurin, Kelburn
- **Friday** 12:00 - 12:50 – LT101, Maclaurin, Kelburn

05 September 2022 - 16 October 2022

- **Tuesday** 12:00 - 12:50 – LT101, Maclaurin, Kelburn
- **Thursday** 12:00 - 12:50 – LT101, Maclaurin, Kelburn
- **Friday** 12:00 - 12:50 – LT101, Maclaurin, Kelburn

Set Texts and Recommended Readings

Required

There are no required texts for this offering.

Mandatory Course Requirements

In addition to achieving an overall pass mark of at least 50%, students must:

- submit reasonable attempts for at least three of the four assignments, and
- submit a reasonable attempt at the final project.

If you believe that exceptional circumstances may prevent you from meeting the mandatory course requirements, contact the Course Coordinator for advice as soon as possible.

Assessment

This course is internally assessed.

Assessment Item	Due Date or Test Date	CLO(s)	Percentage
Assignment 1: Introduction to Machine Learning Problems, Tasks, and Techniques	week 5	CLO: 1,3	20%
Assignment 2: The Data Mining Process and Exploratory Data Analysis	Start of mid-term break	CLO: 1,2,3,4	15%
Assignment 3: Kaggle Competition	week 8	CLO: 2,3	20%
Assignment 4: Performance Evaluation and Optimisation	week 10	CLO: 1,4	15%
Capstone project (Code, scripts, and report on a solution to a problem)	Assessment period	CLO: 1,2,3,4	30%

Penalties

The penalty for assignments that are handed in late without prior arrangement (or use of "late days") is one grade reduction per day. Assignments that are more than one week late will not be marked.

Extensions

There will be three late days automatically available across the assessment in the course. These will be automatically applied in the assessment system. These are intended to cover common reasons for short extensions, such as overlapping deadlines; technical difficulties; or unforeseen changes in personal circumstance.

Individual extensions beyond the three late days will only be granted in **exceptional** personal circumstances, and should be negotiated with the course coordinator before the deadline whenever possible. Documentation (eg, medical certificate) may be required.

Submission & Return

All work should be submitted through the ECS submission system, accessible through the course web pages. Marks and comments will be returned through the ECS marking system, also available through the course web pages.

Turnitin may be used to check for plagiarism in written assessment.

Workload

Although the workload will vary from week to week, you should expect to spend approximately 10–12 hours per week on the course to give a total of 150 hours study time for the course.

Teaching Plan

See https://ecs.wgtn.ac.nz/Courses/COMP309_2022T2/LectureSchedule

Communication of Additional Information

All online material for this course can be accessed at https://ecs.wgtn.ac.nz/Courses/AIML421_2022T2/

Links to General Course Information

- Academic Integrity and Plagiarism: <https://www.wgtn.ac.nz/students/study/exams/integrity-plagiarism>
- Academic Progress: <https://www.wgtn.ac.nz/students/study/progress/academic-progress> (including restrictions and non-engagement)
- Dates and deadlines: <https://www.wgtn.ac.nz/students/study/dates>
- Grades: <https://www.wgtn.ac.nz/students/study/progress/grades>
- Special passes: Refer to the Assessment Handbook, at <https://www.wgtn.ac.nz/documents/policy/staff-policy/assessment-handbook.pdf>
- Statutes and policies, e.g. Student Conduct Statute: <https://www.wgtn.ac.nz/about/governance/strategy>
- Student support: <https://www.wgtn.ac.nz/students/support>
- Students with disabilities: https://www.wgtn.ac.nz/st_services/disability/
- Student Charter: <https://www.wgtn.ac.nz/learning-teaching/learning-partnerships/student-charter>
- Terms and Conditions: <https://www.wgtn.ac.nz/study/apply-enroll/terms-conditions/student-contract>
- Turnitin: <http://www.cad.vuw.ac.nz/wiki/index.php/Turnitin>
- University structure: <https://www.wgtn.ac.nz/about/governance/structure>
- VUWSA: <http://www.vuwsa.org.nz>

Offering CRN: [33066](#)

Points: 15

Prerequisites: 60 300-level COMP, DATA, NWEN, STAT or SWEN pts

Restrictions: COMP 309

Duration: 11 July 2022 - 13 November 2022

Starts: Trimester 2

Campus: Kelburn