



Prescription

This course addresses concepts and techniques of artificial intelligence (AI). It provides a brief overview of AI history and search techniques, as well as covering important machine learning topics and algorithms with their applications, including neural networks and evolutionary algorithms. Other topics include probability and Bayesian networks, planning and scheduling. The course will also consider a selection of other current topics in AI.

Course learning objectives

Students who pass this course will be able to:

1. Explain fundamental concepts and techniques of artificial intelligence, particularly in areas of advanced search, machine learning, reasoning under uncertainty, planning and scheduling.
2. Apply fundamental concepts and techniques of artificial intelligence to real world problems in regression, classification, clustering and simple planning tasks.
3. Understand a wide range of AI topics that are commonly used in common research and applications.

Course content

Artificial Intelligence (AI) is intelligence exhibited by machines. Examples include self-driving cars, automatically planning a holiday, generating sensible conversation, learning to predict fog at Wellington Airport, reading a web page to get the answer to a question, recognising handwritten digits, detecting identity by checking fingerprints, detecting network intrusions, controlling robot actuators, processing and recognising images and signals, discovering and detecting the mathematical or logical relationship between output variables and a large number of inputs in economic and engineering tasks, or optimising parameter values in complex engineering problems. COMP 420 is an introduction to the ideas and techniques that computer scientists have developed to address these kinds of tasks.

The lectures cover following main topics: search techniques, machine learning including basic learning concepts and algorithms, neural networks and evolutionary learning, reasoning under uncertainty, planning and scheduling, knowledge based systems and AI Philosophy. The course includes a substantial amount of programming. The course will cover both science and engineering applications.

Withdrawal from Course

Withdrawal dates and process:

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

Lecturers

Mengjie Zhang (Coordinator)

Mengjie.Zhang@vuw.ac.nz 04 4635654

355 Cotton, Kelburn

Yi Mei

yi.mei@vuw.ac.nz 04 4635233 ext 8016

353 Cotton, Kelburn

Teaching Format

Three lectures and tutorials per week.

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: 02 March 2020 - 07 June 2020
- Break: 13 April 2020 - 27 April 2020
- Study period: 08 June 2020 - 11 June 2020
- Exam period: 12 June 2020 - 27 June 2020

Class Times and Room Numbers

02 March 2020 - 22 March 2020

- **Tuesday** 14:10 - 15:00 – LT1, Te Toki a Rata, Kelburn
- **Thursday** 14:10 - 15:00 – LT1, Te Toki a Rata, Kelburn
- **Friday** 13:10 - 14:00 – LT101, Maclaurin, Kelburn

27 April 2020 - 07 June 2020

- **Tuesday** 14:10 - 15:00 – LT1, Te Toki a Rata, Kelburn
- **Thursday** 14:10 - 15:00 – LT1, Te Toki a Rata, Kelburn
- **Friday** 13:10 - 14:00 – LT101, Maclaurin, Kelburn

Other Classes

There will be some scheduled helpdesks.

Set Texts and Recommended Readings

Required

There is no set text for this course.

Recommended

A Reading List is available via the course website.

- Stuart J. Russell and Peter Norvig, *Artificial Intelligence. A Modern Approach*, Prentice-Hall, NJ, 3rd edition, 2009. Some online materials are available on the course website.

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.

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 will be assessed through assignments and final examination.

Assessment Item	Due Date or Test Date	CLO(s)	Percentage
Assignment 1 (3-4 weeks)	Week 5	CLO: 1,2	15%
Assignment 2 (3 weeks)	Week 8	CLO: 1,2	12%
Assignment 3 (2-3 weeks)	Week 10	CLO: 1,2	10%
Assignment 4 (2 weeks)	Week 12	CLO: 1,2	8%
Final exam (two hours)	Exam period	CLO: 1,2,3	55%

Penalties

The penalty for assignments that are handed in late without prior arrangement is one grade reduction per day. Assignments that are more than one week late will not be marked.

Extensions

Individual extensions 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.

Workload

Students are expected to work 10 hours on this course per week, including 3 hours lectures and tutorials.

Teaching Plan

See: https://ecs.wgtn.ac.nz/Courses/COMP420_2020T1/LectureSchedule

Communication of Additional Information

1. Course website: https://ecs.wgtn.ac.nz/Courses/COMP420_2020T1/
2. Course forum
3. Email sent by the lecturers to students at their ecs email addresses.

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: [32151](#)

Points: 15

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

Restrictions: COMP 307

Duration: 02 March 2020 - 28 June 2020

Starts: Trimester 1

Campus: Kelburn