



Prescription

This course covers a range of algorithms and data structures building on the fundamental structures and algorithms from COMP 103. The major areas covered are: graph algorithms, graphics algorithms and advanced data structures. This course takes a practical approach focusing on the implementation of a wide variety of algorithms.

Course learning objectives

Students who pass this course should be able to:

1. Select, adapt, and implement a wide range of standard algorithms and data structures to construct software solutions to complex problems (BE 3(a), 3(d), 3(f), BSc 1, 2).
2. Understand algorithms described in pseudocode and to use analysis of an algorithm's time and space requirements to determine applicability to a problem (BE 3(a), 3(b), BSc 3).
3. Recognise the distinction between "easy" problems, 'hard' (NP) problems, and uncomputable problems and the consequences for constructing algorithms and programs for such problems (BE 3(b), BSc 3,4).
4. Know and be able to implement important algorithms related to graphs, searching, parsing, basic graphics rendering, and B-Trees (BE 3(a), BSc 2).

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 Simon McCallum (Coordinator)

simon.mccallum@vuw.ac.nz 04 463 5352

CO 257 Cotton Building (All Blocks), Gate 7, Kelburn Parade, Kelburn

Dr Jyoti Sahni

jyoti.sahni@vuw.ac.nz 04 463 5509

Zohar Levi

zohar.levi@vuw.ac.nz 04 886 5330

CO 338 Cotton Building (All Blocks), Gate 7, Kelburn Parade, Kelburn

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.

During the trimester there will be up to three lectures and a tutorial for you to sign up and attend during the 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: 28 February 2022 - 03 June 2022
- Break: 11 April 2022 - 24 April 2022
- Study period: 06 June 2022 - 09 June 2022
- Exam period: 10 June 2022 - 25 June 2022

Class Times and Room Numbers

28 February 2022 - 10 April 2022

- **Tuesday** 12:00 - 12:50 – LT205, Hugh Mackenzie, Kelburn
- **Thursday** 17:10 - 18:00 – LT103, Maclaurin, Kelburn
- **Friday** 11:00 - 11:50 – LT103, Maclaurin, Kelburn

25 April 2022 - 05 June 2022

- **Tuesday** 12:00 - 12:50 – LT205, Hugh Mackenzie, Kelburn
- **Thursday** 17:10 - 18:00 – LT103, Maclaurin, Kelburn
- **Friday** 11:00 - 11:50 – LT103, Maclaurin, Kelburn

Other Classes

There are tutorials as shown in the Timetable page of the course home page hosted by ECS.

Set Texts and Recommended Readings

Required

There are no required texts for this offering.

Mandatory Course Requirements

There are no mandatory course requirements for this course.

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

The two tests will take place in the lectures during weeks 7 and the exam period. The four assignments will be due during the normal 12 main teaching weeks.

Note that the assessment has been changed since the beginning of the course: Assignment 5 was removed, Assignment 4 increased in weight, and Test 2 moved to the exam period.

| Assessment Item | Due Date or Test Date | CLO(s) | Percentage |
|----------------------------|-----------------------|--------------|------------|
| Assignments 1-3 (10% each) | TBC | CLO: 1,2,3,4 | 30% |
| Test 1 | Week 7 | CLO: 1,2,3,4 | 25% |
| Test 2 | 20 June (exam period) | CLO: 1,2,3,4 | 30% |
| Assignment 4 | Week 12 | CLO: 1,2,3,4 | 15% |

Penalties

Policy for Late Submissions:

Each student will have 3 "late days" which you may choose to use for any assignment or assignments during the course. There will be no penalty applied for these late days. You do not need to apply for these - any late days you have left will be automatically applied to assignments that you submit late.

The submission system will give you 72 hours worth of "seconds" to use throughout the five assignments, so this gives you more leeway and it will be automatically calculated and reported to you by the ECS Student Marks system.

After the 3 late days have used up, any assignment submitted up to 24 hours after the deadline will be penalised by 20% of your marks, and any assignment submitted between 24 and 48 hours after the deadline will be penalised by 40% of your marks. Any assignment submitted 48 hours or more after the deadline will not be marked and will get 0 marks.

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

The assignments will be marked in person: you will need to sign up for a 15 minute session with one of the markers for you to demonstrate your program and to talk about key details of your program with the marker. The marking slots will be announced closer to the time and will be posted outside the lab where the marking will take place. Please check the course web page for more information.

If you do not get your assignment marked in the marking slots assigned for that assignment, you will automatically get 10% penalty and if the assignment is not marked by the end of the course, you will get 0% for that assignment. **If you have any special circumstances you need to contact the course coordinator a.s.a.p. to see if alternative arrangements can be made if appropriate.**

The policy on late submission is as follows:

- Each assignment will be marked out of 100.
- Each assignment that is late (ie, submitted on the submission system after the deadline) will be penalised by 20 marks if it is up to 24 hours late, and penalised by 40 marks if it is between 24 hours and 48 hours late. Any work submitted more than 48 hours after the deadline will receive 0 marks.
- Each student will have 3 "late days" which you may choose to use for any assignment or assignments during the course. There will be no penalty applied for these late days. You do not need to apply for these - any late days you have left will be automatically applied to assignments that you submit late.
- The late days are intended to cover minor illnesses or other personal reasons for being late. You should only ask for extensions in the case of more significant or longer lasting problems (and you may need documentation). Do not waste "late days" on procrastination!

Workload

In order to maintain satisfactory progress in COMP 261, you should plan to spend an average of 10 hours per week on this paper. A plausible and approximate breakdown for these hours would be:

- Lectures and tutorials: 4 hours,
- Review and readings: 1 hour,
- Assignments: 5 hours.

Teaching Plan

See https://ecs.wgtn.ac.nz/Courses/COMP261_2022T1/LectureSchedule

Communication of Additional Information

The main means of communication outside of lectures will be the COMP 261 web page at https://ecs.wgtn.ac.nz/Courses/COMP261_2022T1/. There you will find, among other things, this document, the lecture schedule and assignment handouts, timetable for the lectures/tutorials/helpdesks, and the COMP 261 Forum. The forum is a web-based bulletin board system. Questions and comments can be posted to the forum, and staff will read these posts and frequently respond to them.

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-enrol/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: [18314](#)

Points: 15

Prerequisites: COMP 103, ENGR 123 or MATH 161

Duration: 28 February 2022 - 26 June 2022

Starts: Trimester 1

Campus: Kelburn