
COMP 261
Algorithms and Data Structures
2024 Tri 1

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Menu

- Who are the People
- What's the course about?
- How does the course work?
- Introduction to first topic: Parsing.

The Team

- **Coordinator:**

- Xiaoying Gao (Sharon) : xgao@ecs.vuw.ac.nz

- **Lecturers:**

- Xiaoying Gao (Sharon) , week 1-6, xgao@ecs.vuw.ac.nz
- Jyoti Sahni weeks 7-9 Jyoti.Sahni@ecs.vuw.ac.nz
- Fanglue Zhang, weeks 10-12, Fanglue.Zhang@ecs.vuw.ac.nz
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- **Tutors:**

- 6 senior COMP/SWEN students, 4 PhD students

What's the course about?

- Algorithms and Data Structures
 - Builds on COMP 103,
 - Focuses more on algorithms, rather than data structures.
- Course Learning Objectives:
 - **Select, adapt, and implement** a wide range of standard **algorithms and data structures** to construct software solutions to complex problems
 - **Understand algorithms** described in pseudocode and to use **analysis of an algorithm's time and space requirements** to determine applicability to a problem
 - **Recognise the distinction between "easy" problems, 'hard' (NP) problems, and uncomputable problems** and the consequences for constructing algorithms and programs for such problems
 - Know and be able to implement important **algorithms related to graphs, searching, and parsing**

What's the course about?

- Building software is complex:
 - Complexity of large systems with lots of interacting parts
 - need to manage that complexity
 - (SWEN 221, 225, 301)
 - Complexity from intricate components – tricky algorithms.
 - small, but critical part of whole system.
 - (COMP 261, 361)
- Algorithms are traditionally at the core of the Computer Science discipline.
 - COMP 261: understanding and using them.
 - COMP 361: analyzing, designing, proving them.

What's the course about?

- Four sections:

1. Parsing, making sense of text, regular expressions
2. Graphs, path finding, graph algorithms
3. Network flow, and more graph algorithms
4. Compression, Coding, Fast Fourier Transform

Building on:

- (103: CPN calculator)
(103: Subway, Bus, Maze)
(103: morsecode,
102: image processor)

How does the course work?

- Lectures
- Tutorials
- Assessment
- Marking
- Getting Help

Lectures

- Lectures:
 - Monday, Tuesday, Thursday 1:10-2:00
 - HM 205
 - Recorded (access via Canvas/Nuku)
 - Some lectures will be review/details for the assignment or tests.

Tutorials

- Start from **week 2**
- 10 slots, see [timetable](#) in the course homepage
- Signup through [MyAllocator](https://www.victoria.ac.nz/students/study/timetables/tutorial-sign-up): <https://www.victoria.ac.nz/students/study/timetables/tutorial-sign-up>
 - Must do,
 - Used for tutorials and for in-person marking
- Work on problems in Small groups (20~30), with a tutor to guide and help.
- Important!
 - 3: marking
 - Others: preparing for the tests
 - Useful for assignments.

Assessment

Four assignments:

- Assig 1: (10%, due week 4) Parsing
- Assig 2: (10%, due week 7) Graphs, pathfinding and articulation points
- Assig 3: (10%, due week 10) Network flow and other Network/Graph algorithms
- Assig 4: (10%, due week 13) Compression, Coding, Fast Fourier Transform

Four Tests:

- 15% each, 1 hour
- Weeks 3, 6, 9, 12, Thursday 5-6 (MCLT101, MCLT103, KKLT303)
- In-person

Assignment deadlines and penalties

- Due on Fridays at 12 noon.
- Marking (in-person) will use the tutorials in week 6, 9, 12, 15 (check the schedule page)
- 3 "Late Days" for the whole course.
- For special circumstances, contact course organizer for extensions.
 - Minor issues should be covered by the late days
 - **having other assignments due at the same time is not special**
 - technical problems with the submission server will not count for late days (please report promptly)
- Penalty beyond the late days:
 - **up to 24 hours: capped at a C+; more than 24 hours: 0 marks**
- **You must get your assignment marked at a marking session.**

Assignment marking.

- Assignments must be marked in person.
- Marking will happen during your tutorial time (but in a designated lab CO241).
- If you miss your marking session, you *may* be able to get it marked at another tutorial time or the next marking session (but it depends on time and tutor availability!)
- Marking will be based partly on whether your program works correctly, but also on being able to explain key parts of your code to the tutor.
 - If you can't explain your code, you may get no marks!

Course Resources

- No “text book”!
- What can you use?
 - **Wikipedia** pages: extremely good resource on algorithms.
 - **Lecture notes** on the course website: https://ecs.victoria.ac.nz/Courses/COMP261_2024T1/
 - **Book: “Algorithms and Data Structures”** – a selection of chapters from various textbooks compiled by Alex Potanin, Pearson
(some copies may be around?)
- **Tutorials and helpdesks** will be very helpful

Getting Help

- Attend the tutorials!!
- COMP261-help@ecs.vuw.ac.nz
- Helpdesks:
 - Start in week 2
 - Check the timetable, open to everyone, no need to sign up

Workload

- 10 hours per week
 - Lectures and tutorials: 4 hours
 - Review and reading: 1 hour
 - Assignment: 5 hours
- Assumptions:
 - **COMP103**: collections (stack, queue, priority queue, ...), complexity (Big-O), searching and sorting
 - **Math161/ENGR123**: (graph notation, reasoning about costs/complexity)
 - Ability to find things out by yourself (**COMP261 is not spoon-fed as much as 102/103**)
- Start the assignment as early as possible!!!

Rules and Policies

- Plagiarism is **NOT tolerated**
 - Presenting someone else's work as your own, including
 - material from a published source such as a library book, a journal article, etc.
 - material from an on-line software library, web pages, AI tools, etc.
 - the work of another student, friend, relative, etc.
- Penalties:
 - **zero marks for the work to which it relates**
 - **greater penalties in accordance with the University's Statute on Student Conduct**
- If you got help or code from other students, non-students, web-sources, AI tools, etc, state it clearly to avoid plagiarism issue.
- AI tools (ChatGPT, copilot, etc). Tell us if you used them.
- <https://ecs.victoria.ac.nz/Main/ComputerSciencePlagiarism>

CLASS REP

COMP261 # 17

- **Become a Class Representative at Victoria University of Wellington!**
- Class Reps are the bridge between the course coordinator, lecturer, and the class to support and improve students' learning experiences in your course and at Victoria.
- REGISTER online: <http://www.vuwsa.org.nz/class-representatives/>
- Representing your class has many benefits; VicPlus points, Class Rep certificates, professional and personal growth, and links to other representation opportunities.
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What to do

- Sign up for tutorials
- Nuku engagement
 - Quiz: Introduce yourself
 - Submit one line of text
- Distance student enrolled in 2020-2022
 - Do the test in-person
 - If you have to do it remotely, email me your name, ID, Location, enrolment document,
 - Contact the lecture before each test