



Science

COMPSCI 110 : Introduction to Computer Systems (15 POINTS)

Course Prescription

An introduction to the various layers that make up a modern computer system: encoding of data and instructions, hardware, low-level programming, operating systems, applications and communications.

Course Overview

Modern computers are both complicated and fast. This course explains how computers work and some of the things we can use them for. In order for us to understand computers we gradually examine a series of layers, each one built on the layer beneath. We start with looking at how data can be represented in binary, then see how we can make machines which can transform that data using simple circuits. Once we can control those circuits with instructions we have the basis for programming languages. The course extends the idea of a computer to how we connect computers together in networks such as the internet and we also touch on some research areas in Computer Science such as Artificial Intelligence and Computer Graphics.

This course is compulsory for students intending to major in Computer Science but is valuable to anyone who is interested in how computers work and what we can do with them.

Course Requirements

No pre-requisites or restrictions

Capabilities Developed in this Course

- Capability 1: Disciplinary Knowledge and Practice
- Capability 2: Critical Thinking
- Capability 3: Solution Seeking
- Capability 4: Communication and Engagement
- Capability 5: Independence and Integrity
- Capability 6: Social and Environmental Responsibilities

Graduate Profile: [Bachelor of Science](#)

Learning Outcomes

By the end of this course, students will be able to:

1. Describe the layers of a computer system, from hardware to the web. (Capability 1 and 4)
2. Convert standard data types into numeric formats and apply simple functions to them. (Capability 1)
3. Identify basic gates and be able to relate them to truth tables and simple combinational circuits.
(Capability 1 and 2)
4. Trace the execution of simple programs at the assembly language level. (Capability 1 and 2)
5. Produce pseudocode to specify solutions to simple programming tasks. (Capability 1, 2 and 3)
6. Describe the fundamental parts of an operating system and how they relate to applications. (Capability 1 and 4)
7. Explain the central ideas in computer science research areas (such as artificial intelligence, computer graphics and theory). (Capability 1 and 4)
8. Discuss ethical issues arising from the use of computers in society. (Capability 4, 5 and 6)

Assessments

Assessment Type	Percentage	Classification
Exam	50%	Individual Examination
Test	20%	Individual Test
Tutorials with group work	2%	Group & Individual Coursework
Assignments	20%	Individual Coursework
Essays	8%	Individual Coursework
5 types	100%	

Assessment Type	Learning Outcome Addressed							
	1	2	3	4	5	6	7	8
Exam	✓	✓	✓	✓	✓	✓	✓	
Test	✓	✓	✓	✓				
Tutorials with group work	✓	✓	✓	✓	✓	✓	✓	
Assignments	✓	✓	✓	✓	✓	✓	✓	
Essays								✓

Tuākana

For more information and to find contact details for the Computer Science Tuākana coordinator, please see <https://www.auckland.ac.nz/en/science/study-with-us/maori-and-pacific-at-the-faculty/tuakana-programme.html>.

Special Requirements

No special requirements.

Workload Expectations

This course is a standard 15 point course and Summer Semester students are expected to spend 20 hours per week involved in each 15 point course that they are enrolled in.

For this course, you can expect 6 hours of lectures, 2 hours of tutorials, 6 hours of reading and thinking about the content and 6 hours of work on assignments and/or test preparation.

Delivery Mode

Campus Experience

Attendance is required at scheduled activities including tutorials to receive credit for components of the course.

Lectures will be available as recordings. Other learning activities including tutorials will not be available as recordings.

The course will include live online events including group discussions in tutorials.

Attendance on campus is required for the test and exam.

The activities for the course are scheduled as a standard weekly timetable.

Learning Resources

Text book: Invitation to Computer Science 8th Edition, G.M. Schneider, J.L. Gersting, Cengage, 2019.

Student Feedback

During the course Class Representatives in each class can take feedback to the staff responsible for the course and staff-student consultative committees.

At the end of the course students will be invited to give feedback on the course and teaching through a tool called SET or Qualtrics. The lecturers and course co-ordinators will consider all feedback.

Your feedback helps to improve the course and its delivery for all students.

Digital Resources

Course materials are made available in a learning and collaboration tool called Canvas which also includes

reading lists and lecture recordings (where available).

Please remember that the recording of any class on a personal device requires the permission of the instructor.

Academic Integrity

The University of Auckland will not tolerate cheating, or assisting others to cheat, and views cheating in coursework as a serious academic offence. The work that a student submits for grading must be the student's own work, reflecting their learning. Where work from other sources is used, it must be properly acknowledged and referenced. This requirement also applies to sources on the internet. A student's assessed work may be reviewed against online source material using computerised detection mechanisms.

Copyright

The content and delivery of content in this course are protected by copyright. Material belonging to others may have been used in this course and copied by and solely for the educational purposes of the University under license.

You may copy the course content for the purposes of private study or research, but you may not upload onto any third party site, make a further copy or sell, alter or further reproduce or distribute any part of the course content to another person.

Inclusive Learning

All students are asked to discuss any impairment related requirements privately, face to face and/or in written form with the course coordinator, lecturer or tutor.

Student Disability Services also provides support for students with a wide range of impairments, both visible and invisible, to succeed and excel at the University. For more information and contact details, please visit the [Student Disability Services' website](http://disability.auckland.ac.nz) <http://disability.auckland.ac.nz>

Special Circumstances

If your ability to complete assessed coursework is affected by illness or other personal circumstances outside of your control, contact a member of teaching staff as soon as possible before the assessment is due.

If your personal circumstances significantly affect your performance, or preparation, for an exam or eligible written test, refer to the University's [aegrotat or compassionate consideration page](https://www.auckland.ac.nz/en/students/academic-information/exams-and-final-results/during-exams/aegrotat-and-compassionate-consideration.html) <https://www.auckland.ac.nz/en/students/academic-information/exams-and-final-results/during-exams/aegrotat-and-compassionate-consideration.html>.

This should be done as soon as possible and no later than seven days after the affected test or exam date.

Learning Continuity

In the event of an unexpected disruption we undertake to maintain the continuity and standard of teaching and learning in all your courses throughout the year. If there are unexpected disruptions the University has contingency plans to ensure that access to your course continues and your assessment is fair, and not compromised. Some adjustments may need to be made in emergencies. You will be kept fully informed by your course co-ordinator, and if disruption occurs you should refer to the University Website for information about how to proceed.

Level 1: Delivered normally as specified in delivery mode

Level 2: You will not be required to attend in person. All teaching and assessment will have a remote option. The following activities will also have an on campus / in person option: [Lectures, tutorials, office hours]

Level 3 / 4: All teaching activities and assessments are delivered remotely

Student Charter and Responsibilities

The Student Charter assumes and acknowledges that students are active participants in the learning process and that they have responsibilities to the institution and the international community of scholars. The University expects that students will act at all times in a way that demonstrates respect for the rights of other students and staff so that the learning environment is both safe and productive. For further information visit [Student Charter](https://www.auckland.ac.nz/en/students/forms-policies-and-guidelines/student-policies-and-guidelines/student-charter.html) <https://www.auckland.ac.nz/en/students/forms-policies-and-guidelines/student-policies-and-guidelines/student-charter.html>.

Disclaimer

Elements of this outline may be subject to change. The latest information about the course will be available for enrolled students in Canvas.

In this course you may be asked to submit your coursework assessments digitally. The University reserves the right to conduct scheduled tests and examinations for this course online or through the use of computers or other electronic devices. Where tests or examinations are conducted online remote invigilation arrangements may be used. The final decision on the completion mode for a test or examination, and remote invigilation arrangements where applicable, will be advised to students at least 10 days prior to the scheduled date of the assessment, or in the case of an examination when the examination timetable is published.