



Prescription

The course provides a broad introduction to computer networks and a basic understanding of network application programming, with an emphasis on the working principles and application of computer networks. It covers a range of introductory topics including the essentials of data communication, computer network concepts, protocols, network applications and cloud computing. The course features an interactive laboratory component with projects starting from basic networking technologies leading into cloud application development.

Course learning objectives

Students who pass this course will be able to:

1. Explain the basics of networks and the design of their associated protocols (GA 3(a), 3(b), 3(d), 3(e), 3(f))
2. Explain how networks are utilised for various roles (GA 3(a), 3(b), 3(d), 3(e), 3(f)).
3. Explain the role of the application layer, the socket API and the basics of building networked, cloud, or distributed applications and the design of their associated protocols (GA 3(a), 3(b), 3(d), 3(e), 3(f)).
4. Implement applications that make use of the Socket API and Cloud computing, including at least two cloud service level paradigms.

Course content

This course introduces protocols and algorithms for networked and distributed systems. Specific emphasis will be placed on the basic elements of networking , application layer protocols, and distributed computation in the cloud .

Topics will include:

1. Introduction to Networks and the protocol stack (1)
2. Link Layer (2)
3. Network Layer (3)
4. Transport Layer (3)
5. Application layer (2)
6. Fundamental Network Services (1)
7. A taste of XML and JSON (2)
8. Cloud Services Architecture (2) - incl. high level datacenter designs/constraints/green computing
9. Containers (2)
10. Lambda (1)
11. Cloud Storage (2)
12. Infrastructure charging models, auto scaling and deployment considerations. (2) HPC over cloud (if time)

Please note: we are updating this course, so the prerequisites will change.

Withdrawal from Course

Withdrawal dates and process:

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

Lecturers

Kris Bubendorfer (Coordinator)

kris.bubendorfer@vuw.ac.nz 04 4636484

403 Cotton Bldg Gate 7 Kelburn Parade, Kelburn

Teaching Format

This course will be offered in-person and online. For students in Wellington, in person lectures and labs will be given as per the usual schedule. There will be 2 lectures per week on Tuesday and Friday. The lectures will also be recorded for those students who will be taking the course remotely and there will be zoom sessions with the lab tutors. There will also be three online tests for all students during the course, irrespective of locality.

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: 13 July 2020 - 18 October 2020
- Break: 17 August 2020 - 30 August 2020
- Exam period: 19 October 2020 - 25 October 2020

Class Times and Room Numbers

13 July 2020 - 16 August 2020

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

31 August 2020 - 18 October 2020

- **Tuesday** 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.

Recommended

- Andrew Tanenbaum, *Computer Networks*, 5th edition.
- James Kurose and Keith Ross, *Computer Networks: A top down approach featuring the Internet*, Fifth Edition.
- William Stallings, *Data and Computer Communications*, ninth edition.

Mandatory Course Requirements

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

- achieve at least an average of a **D** grade in the 3 tests to demonstrate achievement of all the CLOs of the 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

This course will be assessed through the following:

Assessment Item	Due Date or Test Date	CLO(s)	Percentage
Three online multiple-choice tests. 20-% ea.	Week 4, 8, 13 (assessment period)	CLO: 1,2,3	60%
Two Labs 0%, 20% each.	Week 6, 11	CLO: 1,2,3,4	40%

Penalties

Late Labs and Assignments will be penalised at a rate of 10% per calendar day late, up to a maximum of 5 days late, at which time the work will not be accepted for marking.

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 is 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

In order to maintain satisfactory progress in NWEN 243, 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: 2 or 3
- Laboratory: 2

- Practical work: 5

Teaching Plan

See https://ecs.wgtn.ac.nz/Courses/NWEN243_2020T2/LectureSchedule

Communication of Additional Information

All online material for this course can be accessed at https://ecs.wgtn.ac.nz/Courses/NWEN243_2020T2/

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: [19863](#)

Points: 15

Prerequisites: COMP 103.

Duration: 13 July 2020 - 25 October 2020

Starts: Trimester 2

Campus: Kelburn