

Network Applications - Course Outline

NWEN 243: 2012 Trimester 2

This document sets out the workload and assessment requirements for NWEN 243. It also provides contact information for staff involved in the course. If the contents of this document are altered during the course, you will be advised of the change by an announcement in lectures and/or on the course web site. A printed copy of this document is held in the School Office.

This course introduces protocols and algorithms for networked and distributed systems. Specific emphasis will be placed on security, application layer protocols, and distributed algorithms.

Topics will include:

1. Introduction to Networking, Lans, Protocols, the protocol Stack.
2. TCP/IP and the socket API
3. Models of Networked Applications.
4. Media and Application requirements for Networked applications.
5. A little security, Public Key Cryptography, Authentication and Digital Signatures.
6. Application layer case studies: including the Domain Name System (DNS) and Hypertext Transport Protocol (HTTP)
7. Webservices, SOAP, REST.

Objectives

Network Applications is part of the Engineering program at Victoria University of Wellington. BE graduates are expected to exhibit a number of graduate attributes at the completion of the program. This course contributes to the graduate attributes (GA) as indicated below. The course is practically oriented, and therefore contains a significant weighting towards the practical elements of the coursework.

A full table of these attributes is available at [Graduate Attributes](#).

By the end of the course, students should 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 utilized 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 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, Webservices (SOAP and REST), and Networked Applications (Android).

Textbook

There is no official text book. However, we recommend the two following free online resources:

- Computer Networking : Principles, Protocols and Practice, <http://cnp3book.info.ucl.ac.be/>, Olivier Bonaventure, Universite catholique de Louvain.
- Android Developer Guide (<http://developer.android.com/guide/index.html>)

Lectures, Tutorials, Laboratories, and Practical work

A schedule of lecture topics, readings, and lab due dates is available online.

Lectures for NWEN 243 are:

| <u>Day</u> | <u>Time</u> | <u>Location</u> |
|------------|-------------|-----------------|
| Tuesday | 1000-1050 | HM LT105 |
| Thursday | 1000-1050 | Hunter LT119 |

Tutorials and lab introductions will take place Friday 1000-1050 in New Kirk LT301 (from week 2).

Attendance at lectures and tutorials is not compulsory, but should be viewed as an essential part of the learning process.

Labs for NWEN 243 are to be arranged.

You will need to sign up to **one** of the above lab times. You can sign up using the signups.vuw.ac.nz system from week 2 and labs start from week 3.

In the labs will develop applications for the Android programming platform as part of the laboratory work.

Assessment

Your grade for NWEN 243 will be determined based on the following assessment weightings:

| Item | Weight |
|-------------------|--------|
| Lab Assignments | 10% |
| Lab Projects | 30% |
| Test | 10% |
| Final Examination | 50% |

Lab assignments will be graded by tutors as either A, B, C or D. Lab projects will be awarded a mark out of 100 based on how much has been completed. Late submissions will be penalised at a rate of 10% per day, and will not be accepted more than five days after the due date. Late submissions will be accepted by prior arrangement with the course coordinator for valid reasons such as medical (doctors note required) and family emergencies.

The terms test will be held in the lecture room during the Friday tutorial session in the last week before the mid term break.

The final examination will assess your understanding of the material covered in lectures and labs, but have a focus on the theoretical side of this course.

Note: Bachelor of Engineering students should be aware that copies of their assessed work may be retained for inspection by accreditation panel.

Workload

In order to maintain satisfactory progress in NWEN 243, you should plan to spend an average of at least *10 to 12* hours per week on this paper. The course is 15 points, i.e. 150 hours of effort approximately overall for satisfactory progress. A plausible and approximate breakdown for these hours would be:

- Lectures: 2 hours
- Laboratory: 2 hours
- Practical work: 6-8 hours

The practical work includes the laboratory assignments and project work set by the lecturers.

School of Engineering and Computer Science

The School office is located on level three of the Cotton Building ([Cotton 358](#)).

Staff

The course organiser for NWEN 243 is [Ian Welch](#). The lecturer for the course is also [Ian Welch](#):

- [Ian Welch](#)
- [Cotton 337](#)
- +64 4 463 5664
- ian.welch@ecs.vuw.ac.nz

Announcements and Communication

The main means of communication outside of lecture will be the [course web page](#). There you will find, among other things, this document, the lecture schedule and assignment handouts, and the NWEN 243 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.

Final Examination

The final examination will assess your understanding of the material covered in lectures and labs, and will assess your ability to apply the knowledge gained using practical techniques.

The timetable for final examinations will be available from the University web site and will be posted on a notice board

outside the faculty office. The final examination will be three hours long. No computers, electronic calculators or similar device will be allowed in the final examination. Paper non-English to English dictionaries will be permitted. The examination period for trimester 2 is 26 Oct - 17 Nov.

Plagiarism

Working Together and Plagiarism

We encourage you to discuss the principles of the course and assignments with other students, to help and seek help with programming details, problems involving the lab machines. However, any work you hand in must be your own work.

The School policy on Plagiarism (claiming other people's work as your own) is available from the course home page. Please read it. We will penalise anyone we find plagiarising, whether from students currently doing the course, or from other sources. Students who knowingly allow other students to copy their work may also be penalised. If you have had help from someone else (other than a tutor), it is always safe to state the help that you got. For example, if you had help from someone else in writing a component of your code, it is not plagiarism as long as you state (eg, as a comment in the code) who helped you in writing the method.

Mandatory Requirements

1. Obtain at least 50% of the total available marks across all the assignments and projects;
2. Obtain a D grade or better in the final exam.

Passing NWEN 243

To pass NWEN 243, a student must satisfy mandatory requirements and gain at least a **C** grade overall.

Withdrawal

The last date for withdrawal from NWEN 243 with entitlement to a refund of tuition fees is Friday 27 July. The last date for withdrawal without being regarded as having failed the course is Friday 28 Sept. Later withdrawals may be approved by the Dean in special circumstances.

Rules & Policies

Find key dates, explanations of grades and other useful information at <http://www.victoria.ac.nz/home/study>.

Find out about academic progress and restricted enrolment at <http://www.victoria.ac.nz/home/study/academic-progress>.

The University's statutes and policies are available at <http://www.victoria.ac.nz/home/about/policy>, except qualification statutes, which are available via the Calendar webpage at <http://www.victoria.ac.nz/home/study/calendar> (See Section C).

Further information about the University's academic processes can be found on the website of the Assistant Vice-Chancellor (Academic) at <http://www.victoria.ac.nz/home/about/avcacademic>

All students are expected to be familiar with the following regulations and policies, which are available from the school web site:

[Grievances](#)

[Student and Staff Conduct](#)

[Meeting the Needs of Students with Disabilities](#)

[Student Support](#)

[Academic Integrity and Plagiarism](#)

[Dates and Deadlines including Withdrawal dates](#)

[School Laboratory Hours and Rules](#)

[Printing Allocations](#)

[Expectations of Students in ECS courses](#)

The School of Engineering and Computer Science strives to anticipate all problems associated with its courses, laboratories and equipment. We hope you will find that your courses meet your expectations of a quality learning experience.

If you think we have overlooked something or would like to make a suggestion feel free to talk to your course organiser or lecturer.
