Network Applications - Course Outline
NWEN 243: 2015 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. Security, Public Key Cryptography, Authentication and Digital Signatures.
2. Introduction to Networking, Lans, Protocols, the protocol Stack.
3. TCP/IP and the socket API
4. Models of Networked Applications.
5. Media and Application requirements for Networked applications.
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 exhbit 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 following

- Computer Networking, Kurose and Ross, Addison Wesley, 6th Ed (This is the NWEN302 textbook).

and the 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 assignment due dates is available online

From/To	Days	Time	Building [Campus]	Room
13 Jul – 23 Aug 2015	Tue, Wed	0900 - 0950	Hugh Mackenzie [Kelburn]	LT104

Tutorials will be scheduled as needed. Please check before attending. Tutorials are:

From/To	Days	Time	Building [Campus]	Room
13 Jul – 23 Aug 2015	Thu	0900 - 0950	Hugh Mackenzie [Kelburn]	LT104

Timetable for labs

All labs will be held in co238,219, and 243 and start in week 2, you will need to sign up using MyAllocator (when ready)

Assignments and Projects

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

Workload

In order to maintain satisfactory progress in NWEN 243, you should plan to spend an average of at least *hours*hours per week on this paper. A plausible and approximate breakdown for these hours would be:
- Lectures and tutorials: 3
- Laboratory: 2
- Assignments and practical work: 5

School of Engineering and Computer Science

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

The notice board for NWEN 243is located on the second floor of the Cotton Building.

Staff

- *Kris Bubendorfer* (coordinator)
- AM 415
- +64 4 463 5045
- kris.bubendorfer@ecs.vuw.ac.nz
- There are no formal office hours, I run an open door policy, or email for an appt.

- *Aaron Chen*
- AM 405
- +64 4 463 5114
- aaron.chen@ecs.vuw.ac.nz

Class Rep

Miguel Orevillo mlgorevillo@yahoo.com

Announcements and Communication

The main means of communication outside of lectures will be the NWEN 243 web area at http://ecs.victoria.ac.nz/Courses/NWEN243_2015T2/. 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.

Assessment

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

Item	Weight
Labs (objectives 1,2, 3 & 4)	50%
Final Examination (objectives 1,2 and 3) 3 hr	50%

Late Submission

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

Tests and Exams

The <u>timetable for final examinations</u> 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 23 October - 14 November.

Practical Work

This course is built heavily around a practical component. There will be labs most weeks as specified below. The 2.5% lab projects will usually be carried out entirely within the lab session and marked off after it has been demonstrated to the lab tutor. The 10% labs will require additional work outside the lab, including answering related questions, and will be submitted electronically on the dates shown in the submission system.

week	Item	Weight
Demo in Lab 27-31 July	A little cryptography (demo)	2.5%
Electronically Submit 7 August	Frequency Analysis (hand in)	10%
Demo in Lab 10-14 August	Cnet (demo)	2.5%
Electronically Submit 4th September	Routing (hand in)	10%
Demo in Lab 7-11 September	TCP and UDP Clients (demo)	2.5%
Electronically Submit 25 September	TCP server (hand in)	10%
Demo 28 September - 2 October	Android application development	2.5%
Electronically Submit 16 October	Web service development (hand in)	10 %

Please refer to the submission system - as the dates there are authoritative

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 <u>School policy on Plagiarism</u>(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. You must achieve at least a D grade in the final examination.
2. You must pass (50%) at least 6 Lab projects.

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 24 July 2015. The last date for withdrawal without being regarded as having failed the course is Friday 25 September 2015-- though 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.

Course Outline as PDF