

Advanced Network Applications - Course Outline

NWEN 304: 2013 Trimester 1

This document sets out the workload and assessment requirements for NWEN 304. 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 the techniques, paradigms and protocols for building secure, reliable and scalable network applications.

Topics will include:

1. Architectures for scalable network applications.
2. Middleware paradigms such as document-oriented, CRUD, hypermedia web services and the WS-* stack.
3. Caching and consistency protocols.
4. Role of transactions for reliable network applications.
5. Web security including authorisation and authentication protocols.

Objectives

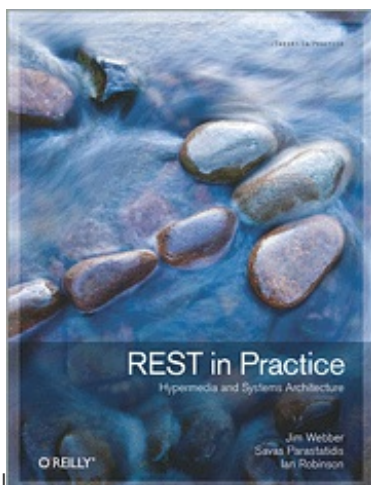
Advanced Network Applications is part of the Engineering program at Victoria University of Wellington. BE graduates are expected to exhibit a number of graduate attributes at the completion of the program. This course contributes to the graduate attributes (GA) as indicated below. A full table of these attributes is available at [Graduate Attributes](#).

By the end of the course, students should be able to:

1. Explain the need for security including the principles of authentication and authentication protocols (GA [3\(a\)](#)).
2. Explain the basics of building networked applications and the tradeoffs involved in choosing appropriate middleware paradigms for their implementations (GA [3\(a\)](#), [3\(e\)](#)).
3. Explain the role of caching and the tradeoffs involved in building scalable network applications (GA [3\(a\)](#), [3\(e\)](#)).
4. Explain the role of transactions in the development of fault tolerant network applications (GA [3\(a\)](#)).
5. Be able to analyse the scalability and robustness of a proposed network application architecture based upon knowledge gained during the course (GA [3\(c\)](#), [3\(e\)](#)).
6. Be able to develop and evaluate a network application implementation in terms of scalability and robustness (GA [3\(b\)](#), [3\(d\)](#), [3\(e\)](#), [3\(f\)](#)).
7. Present explanations in written and oral form (GA [2\(b\)](#)).

Textbook

We do not have a single textbook for the course. We will specify readings from a number of sources although for the first part of the course we make heavy use of **REST in Practice** and we recommend purchasing the ebook version.



REST in Practice -- Hypermedia and Systems Architecture, Jim Webber, Savvas Parastatidis and Ian Robinson. Publisher: O'Reilly Media, September 2010. E-book edition is available for approximately \$NZD 40.

In addition, we will draw upon material from:

- Distributed Systems: Principles and Paradigms by Tanenbaum and van Steen (will be available electronically).
- Operating Systems Concepts by Silberschatz, Galvin and Gagne (will be available electronically).
- 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

Lectures for NWEN 304 are:

4 Mar - 9 Jun 2013	Mon 1000-1050	New Kirk [Kelburn]	LT301
4 Mar - 9 Jun 2013	Fri 1000-1150	77 Fairlie Tce [Kelburn]	Room 306

There are no tutorial sessions for NWEN 304.

The scheduled labs for NWEN 304 are:

11 Mar - 9 Jun 2013	Either of Tues 1000 - 1150 or Fri 1410 - 1600	Cotton [Kelburn]	CO246
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You must sign up to ONE of the lab sessions.

Assessment

Your grade for NWEN 304 will be determined based on the following assessment weightings:

Item	Weight
Four Assignments	20%
Project 1	20%
Project 2	20%
Project 3	40%

Homework assignments will not be accepted after model answers have been posted on the website. There will be four assignments handed out to do, the overall assignment grade will be calculated using the four assignments submitted. This means that each of the four assignments is worth 5% of your final grade.

Project work will be penalised at a rate of 10% per day late. However, for project work you have up to three grace days over the period of the course covering Project 1 and 2 only. This is a total number of days, if you use all three days up on your first project the later late projects will be penalised.

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

Assignments and Laboratories

Assignments and laboratories are to be submitted electronically using the School's electronic submission system.

The assignments allow you to demonstrate your understanding of concepts (meeting objectives 1-4).

Dates and weightings for the assignments are shown in the table below.

Assignment	Due	Weight
#1	24/03 23:59	5%
#2	15/04 23:59	5%
#3	17/05 23:59	5%
#4	31/05 23:59	5%

The laboratory projects allow you to demonstrate:

- That you can apply concepts in a practical context and evaluate what you have done (meeting objective 6).
- Your communication skills in demonstrations of your programs to the laboratory tutor (meeting objective 5).
- Your written communication skills through a written report (meeting objective 5).
- Your leadership and teamwork skills by working on project three in a small group (meeting objective 5).

Dates and weightings for the projects are shown in the table below. Submit your project code on the date specified. Project deliverables can include the code itself, a report and a demonstration.

Project	Submission date	Details	Weight
1. Building a "POXy" timetable reader	07/04 23:59	Submit code and report, demonstration in labtime following week	10% demo/code, 10% engineering report
2. Open individual project	05/05 23:59	Submit code and report, demonstration in labtime during the following week	10% demo/code, 10% engineering report
3. Group project	07/06 23:59	Submit design documentation	25% engineering report
	Week starting 24/06	Submit individual report on both individual and group contribution to the project and do a group presentation	15% presentation

Group Work

Projects 1 and 2 are carried out individually. Each individual's mark will be based upon how well they satisfied the project requirements and the quality of your work. This will be assessed by you demonstrating the project's functionality to a tutor and by submission of documentation that includes discussion of design decisions and testing.

Project three is carried out in a group made up of students from NWEN 304 and MDDI 352. The total share of the course grade based upon this group work is 40%. There are three major components: an individual reflective report (team process, roles and contributions of team members, personal role and contributions and lessons for future group work); documentation that includes discussion of design decisions; and, a presentation. The first two are marked individually and the last one is group assessment where all members of the group will receive the same mark. The group assessment is restricted to 15% of your total courses grade as per the VUW Assessment requirements for group working and will be modified based upon your individual report and the group report on you.

Working in groups is not always straightforward so if you encounter problems please talk to one of the lecturers for the course and we will attempt to resolve the problem as amicably as possible.

Final Exam

There is no final examination for this course. As much as practically possible, we will schedule the presentation day to take place after other examinations. Note that the examination period for trimester 1 is 14 June - 3 July.

Workload

In order to maintain satisfactory progress in NWEN 304, you should plan to spend an average of at least *10 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: 3 hours
- Laboratory: 2 hours
- Assignments and project work: 5 hours

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 304 is [Ian Welch](#). His contact details are:

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

The lecturer for NWEN 304 is [Kris Bubendorfer](#). His contact details are:

- [Kris Bubendorfer](#)
- [Cotton 338](#)
- +64 4 463 6484
- kris.bubendorfer@ecs.vuw.ac.nz

Announcements and Communication

The main means of communication outside of lectures will be the NWEN 304 web area at http://ecs.victoria.ac.nz/Courses/NWEN304_2013T1/. There you will find, among other things, this document, the [lecture schedule](#), [assignments](#), [laboratory material](#), and the [NWEN 304 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.

Mandatory Requirements

1. Submit all three projects.
2. Obtain a D grade or better in the individual reflective report.

Passing NWEN 304

To pass NWEN 304, a student must satisfy mandatory requirements and gain at least a **C** grade overall.

Withdrawal

The last date for withdrawal from NWEN 304 with entitlement to a refund of tuition fees is Friday 15 March. The last date for withdrawal without being regarded as failing the course is Friday 17 May -- though later withdrawals may be approved by the Dean in special circumstances.

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 304 is located on the second floor of the Cotton Building.

Staff

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- [Cotton 338](#)
- +64 4 463 5664
- ian.welch@vuw.ac.nz

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- [Cotton 337](#)
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There are two tutors on the course: James McVay and Cameron Owen.

A class representative will be chosen during the first week of teaching.

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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.

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.

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[Course Outline as PDF](#)
